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Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for Bull Trout in the Coterminous United States; Final Rule

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R1–ES–2009-0085]
[MO 92210-0-0009]

RIN 1018-AW88

Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for Bull Trout in the Coterminous United States

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service, are revising critical habitat for the bull trout (*Salvelinus confluentus*) under the Endangered Species Act of 1973, as amended (Act). We are designating a total of 31,750.8 km (19,729.0 mi) of streams (which includes 1,213.2 km (754.0 mi) of marine shoreline) and are designating a total of 197,589.2 ha (488,251.7 ac) of reservoirs and lakes. The areas designated as critical habitat are located in the States of Washington, Oregon, Nevada, Idaho, and Montana.

DATES: This rule becomes effective on November 17, 2010.

ADDRESSES: This final rule and the associated final economic analysis, as well as comments and materials received, and supporting documentation we used in preparing this final rule, are available on the internet *http://www.regulations.gov* (see Docket No. FWS–R1–ES–2009-0085; at *http://www.fws.gov/pacific/bulltrout/*; and by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office, 1387 S. Vinnell Way, Boise, ID 83709; telephone 208–378–5293; facsimile 208–378–5262.

FOR FURTHER INFORMATION CONTACT: Brian Kelly, State Supervisor, U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office (see **ADDRESSES**). If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Background

It is our intent to discuss only those topics directly relevant to the development and designation of critical habitat for the bull trout in this final rule. For more information on bull trout biology and habitat, population abundance and trend, distribution, demographic features, habitat use and conditions, threats, and conservation measures, please refer to the Bull Trout 5-year Review Summary and Evaluation, completed April 25, 2008, available at *http://ecos.fws.gov/docs/five_year _review/doc1907.pdf*. For information on bull trout critical habitat, and information on the associated draft economic analysis for the proposed rule to designate revised critical habitat, refer to the proposed rule to designate critical habitat for the bull trout published in the **Federal Register** on January 14, 2010 (75 FR 2269).

Description, Distribution, Habitat and Recovery

Bull trout are members of the char subgroup of the family Salmonidae and are native to waters of western North America. Bull trout range throughout the Columbia River and Snake River basins, extending east to headwater streams in Montana and Idaho, into Canada, and in the Klamath River basin of south-central Oregon. Bull trout historically occurred in the Sacramento River basin, and were more widespread in general than they are now. The distribution of populations, however, is scattered and patchy (Goetz 1989, p. 4; Ziller 1992, p. 6; Rieman and McIntyre 1993, p. 3; Light *et al.* 1996, p. 44; Quigley and Arbelbide 1997, p. 1176).

Bull trout have more specific habitat requirements than most other salmonids (Rieman and McIntyre 1993, p. 4). Habitat components that particularly influence their distribution and abundance include water temperature, cover, channel form and stability, spawning and rearing substrate conditions, and migratory corridors (Fraley and Shepard 1989, p. 138; Goetz 1989, p. 19; Watson and Hillman 1997, p. 247). Large patches of these components are necessary to support robust populations. This rule identifies those physical or biological features essential to bull trout conservation.

Bull trout exhibit a variety of migratory and nonmigratory life histories. Stream-resident bull trout complete their entire life cycle in the tributary streams where they spawn and rear. Most bull trout are migratory, spawning in tributary streams where juvenile fish usually rear from 1 to 4 years before migrating to either a larger river (fluvial) or lake (adfluvial) where they spend their adult life, returning to the tributary stream to spawn (Fraley and Shepard 1989, p. 133). Resident and migratory forms may be found together, and either form can produce resident or migratory offspring (Rieman and McIntyre 1993, p. 2). Historically most bull trout populations may have included a migratory component, and any resident-only forms found today may often reflect a loss of the migratory component due to impacts such as habitat loss or migration barriers (Muhlfeld 2010, pers.comm.).

Bull trout, coastal cutthroat trout (*Oncorhynchus clarkii clarkii*), Pacific salmon (*Oncorhynchus* spp.), and other species that migrate from saltwater to freshwater to reproduce are commonly referred to as anadromous. However, bull trout, coastal cutthroat trout, and some other species that enter the marine environment are more properly termed amphidromous. Unlike strictly anadromous species, such as Pacific salmon, amphidromous species often return seasonally to fresh water as subadults, sometimes for several years, before returning to spawn (Wilson 1997, p. 5; Brenkman and Corbett, 2005, p. 1075). The amphidromous life history form of bull trout is unique to the Coastal–Puget Sound population (64 FR 58921, November 1, 1999). For additional information on the biology of this life form, see the June 25, 2004, proposed critical habitat designation for the Jarbidge River, Coastal–Puget Sound, and Saint Mary–Belly River populations of bull trout (69 FR 35767).

The decline of bull trout is primarily due to habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, past fisheries management practices, impoundments, dams, water diversions, and the introduction of nonnative species (63 FR 31647, June 10, 1998; 64 FR 17112, April 8, 1999). Climate change may exacerbate some of these impacts. The bull trout 5–year review (Service 2008, p. 45) recommended that the recovery units identified in the 2002 draft recovery plan be updated based on assemblages of bull trout core areas (metapopulations, or interacting breeding populations) that retain genetic and ecological integrity and are significant to the distribution of bull trout throughout the conterminous United States. After consulting with biologists from States, Federal agencies, and Native American Tribes, and applying the best scientific information available, we identified six draft recovery units for bull trout in the conterminous United States. Please refer to the "Critical Habitat" section below for additional information on this topic.

Previous Federal Actions

On November 29, 2002, we proposed to designate critical habitat for the Klamath River and Columbia River bull trout populations (67 FR 71235). On October 6, 2004, we finalized the critical habitat designation for the Klamath

River and Columbia River bull trout populations (69 FR 59995). On June 25, 2004, we proposed to designate critical habitat for the Jarbidge River, Coastal–Puget Sound, and Saint Mary–Belly River bull trout populations (69 FR 35767). On September 26, 2005, we designated critical habitat for the Klamath River, Columbia River, Jarbidge River, Coastal–Puget Sound, and Saint Mary–Belly River populations of bull trout (70 FR 56212). Please refer to the above-mentioned rules for a detailed summary of previous Federal actions completed prior to publication of this final rule.

On January 5, 2006, a complaint was filed in Federal district court by the Alliance for the Wild Rockies, Inc., and Friends of the Wild Swan, alleging the U.S. Fish and Wildlife Service (Service) failed to designate adequate critical habitat, failed to rely on the best scientific and commercial data available, failed to consider the relevant factors that led to listing, and failed to properly assess the economic benefits and costs of critical habitat designation. Other allegations included inadequate analysis and unlawful use of exclusions under section 4(b)(2) of the Act. On March 23, 2009, the Service provided notice to the U.S. District Court for the District of Oregon that we would seek remand of the final critical habitat rule for bull trout based on the findings of an investigative report by the Department of the Interior's Inspector General (USDI 2008, pp. 10–38). On July 1, 2009, the Court granted our request for a voluntary remand of the 2005 final rule and directed a new proposed rule to be completed by December 31, 2009, with a final rule submitted to the **Federal Register** by September 30, 2010 (*Alliance for the Wild Rockies* v. *Allen*, 2009 U.S. Dist. LEXIS 63122 (D. Or., July 1, 2009)). On January 14, 2010, the Service published a proposed revised bull trout critical habitat rule (75 FR 2269). The comment period on the proposed rule was open for 60 days, ending March 15, 2010. On March 23, 2010, we reopened the comment period on the proposed rule for an additional 14 days, ending April 5, 2010 (75 FR 13715).

Summary of Comments and Recommendations

We requested written comments from the public on the proposed designation of critical habitat for the bull trout during two comment periods. The first comment period, associated with the publication of the proposed rule and announcement of availability of draft economic analysis (75 FR 2269, January 14, 2010), opened on January 14, 2010, and closed on March 15, 2010. We also reopened the comment period for an additional 15 days from March 23, 2010, to April 5, 2010 (75 FR 13715, March 23, 2010), to accommodate a request for a comment period extension. We also contacted appropriate Federal, State, tribal, and local agencies, scientific organizations, and other interested parties and invited them to comment on the proposed rule and the draft economic analysis. We held a public hearing in Boise, Idaho, on February 25, 2010, and held public meetings and open houses in Bend, Chiloquin, and LaGrande, Oregon; Post Falls, Idaho; Missoula, Montana; Elko, Nevada; and Wenatchee Washington. During the first comment period, we received a request for an additional public hearing from the Native Fish Society; however, section 4(b)(5)(E) of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*), only requires that one public hearing be held on a proposed regulation if any person files a request for such a hearing within 45 days after the date of publication of a proposed rule. Because of the court-ordered deadline, we were unable to hold an additional public hearing; however, we did conduct an additional open house and public information meeting in Vancouver, Washington, in response to the Native Fish Society's request.

We received several hundred comment letters and e-mails from individuals and organizations, and speaker testimony at the February 25, 2010, Boise, Idaho, public hearing. We also received comment letters from four peer reviewers, eight State agencies, several Native American Tribes, and seven Federal agencies, including the U.S. Navy.

We coordinated the proposed revision of critical habitat with federally recognized Tribes on a government-to-government basis in accordance with the President's memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments" (59 FR 22951); Executive Order 13175; and the relevant provision of the Departmental Manual of the Department of the Interior (512 DM 2). We contacted all Tribes potentially affected by the proposed designation and met with a number of these Tribes to discuss their ongoing or future management strategies for bull trout.

All substantive information provided during comment periods has either been incorporated directly into this final designation or addressed below. Comments we received were grouped into general issues specifically relating to the proposed critical habitat designation for the bull trout, and are addressed in the following summary and incorporated into the final rule as appropriate.

Peer Review

In accordance with our policy published in the **Federal Register** on July 1, 1994, (59 FR 34270), we solicited opinions from four knowledgeable individuals with scientific expertise that included familiarity with the species, the geographic region in which the species occurs, and conservation biology principles. We received responses from each of the peer reviewers we contacted. We reviewed all comments we received for substantive issues and new information regarding bull trout critical habitat. We have addressed peer reviewer comments in the following summary and have incorporated them into this final rule as appropriate.

The peer reviewers generally agreed we relied on the best scientific information available, accurately described the species and its habitat requirements (primary constituent elements (PCEs)), and accurately characterized the reasons for the species' decline and the threats to its habitat, and the peer reviewers generally concurred with our critical habitat selection criteria. Peer reviewer comments addressed several topics, including the importance of off-channel habitats and information on specific waterbodies, climate change, migratory corridors and connectivity, historical and contemporary range, disturbance processes, primary constituent elements, and threats.

Comments from Peer Reviewers

(1) *Comment:* The Service should discuss uncertainty in our knowledge of habitat use by bull trout and what habitat features are important to bull trout. Peer reviewers expressed concern about how new information (e.g., regarding bull trout occupancy, and habitat requirements and use) should be integrated into critical habitat protections. Because we do not know what type of disturbance will occur where, or how long those effects may last, there are uncertainties regarding future habitat viability (i.e., what is good habitat today might not be suitable in the future, and vice versa).

Some specific comments include the following. The term "migratory corridors" implies that fish do not occupy these areas for extended periods of time during their life history, but mainstem river habitats are critical for rearing and overwintering. Subadults stay for months and years in these areas

to grow to maturity. Bull trout depend critically on large patches of suitably cold habitat; cold habitat is necessary, but it also has to be very large as well. In addition to connectivity, this is a landscape characteristic that defines the species' local occurrence. In areas where anadromous fish are extirpated or endangered, bull trout have been affected through the loss of abundant prey in the form of parr and smolts, and by a severe reduction in marine-derived nutrients that adult anadromous fish formerly annually returned to interior basins. The PCEs do not address habitat requirements for fry-parr rearing, fry-parr overwintering, adult staging, and adult overwintering. PCE 6 needs to address cobble/boulder substrates with a few fines and abundant interstitial spaces as essential for overwintering bull trout juveniles and resident bull trout. The actual range of spawning temperature is wider and often noted in field observations, but less frequently published. Studies found that fish in cold water did not move outside of cold water to other spawning areas, but there is probably more variation than indicated in the proposed rule (75 FR 2278, January 14, 2010). The implication is that a wider range of habitats may be important for spawning. Finally, it appeared to reviewers that there was an arbitrary distinction drawn between foraging, migration, and overwintering (FMO) and spawning and rearing habitat. In addition, peer reviewers provided additional bull trout life-history information.

Our Response: The Service agrees there are many uncertainties in the identification and protection of essential bull trout habitat. Uncertainties include an incomplete understanding of important features, uncertainty of future disturbance effects, a lack of data to clearly distinguish between spawning and rearing and FMO habitats, and a lack of information on how the absence of or a reduction in anadromous fish abundance affects bull trout. The PCEs in this final rule represent our best current understanding of habitat requirements for bull trout. The PCEs were developed by working with a broad array of local experts to identify both occupied habitat that contains physical or biological features essential to bull trout conservation, and unoccupied habitat that is essential to conservation. We acknowledge that potential disturbances such as wildfire or invasive species introductions are difficult to predict, but may affect bull trout habitat. To address this concern, we designated critical habitat areas we believe will be sufficient to address variability in the habitat function of individual portions of these habitats over time, based on the best available scientific information. Should it become necessary, we can revise critical habitat to address more complete or additional information (if and when such information becomes available) relative to bull trout conservation.

We have revised the PCEs based on the peer review and other comments, and believe they address all life-history components and habitat needs for bull trout, including the need for large patches of suitably cold habitat. Given the wide range of circumstances and habitats to which PCEs may apply, they necessarily lack absolute specificity and detail. The sections on **Primary Constituent Elements**, **Effects of Critical Habitat Designation**, and *Application of the Jeopardy and Adverse Modification Standards*, below, provide additional context for how the PCEs will be interpreted and implemented.

We acknowledge an imprecise understanding of the distinction between spawning and rearing habitat and FMO habitat on a general and site-specific basis. This final rule acknowledges that bull trout typically spawn over a narrow time window of a couple weeks during periods of decreasing water temperatures, but clarifies that spawning ranges from August to November depending on local conditions (Swanberg 1997, p. 735). When we discuss migratory corridors in this rule, we generally refer to FMO habitat, which includes more than just habitat for migration at limited times of year. We agree that there is considerable uncertainty regarding the role FMO habitat plays in any particular area. We anticipate the need to include spatial and temporal considerations regarding the role of FMO habitat for particular areas during section 7 consultation, and modify those consultations accordingly.

We have a limited understanding of the effects that the loss of anadromous fish had on bull trout, although bull trout appear to continue to thrive in some areas where anadromous fish have been eliminated. However, bull trout populations may have been more robust where anadromous fish were historically also present, or present in greater numbers. For the purposes of this designation, we believe identifying essential habitats regardless of the historic or current presence of anadromous fish provides an opportunity to protect those essential habitats. We anticipate evaluating more closely the role anadromous fish may play in bull trout conservation during recovery planning.

(2) *Comment:* Climate change should be identified as an existing stressor that compounds other stressors, contributing to bull trout decline. Due to the complex interaction of climatic responses and the high degree of uncertainty associated with climate projections, there needs to be some type of criteria (e.g., maximum summer temperatures) in deciding to deemphasize some habitats. One peer reviewer commented the current analysis of climate impacts does not help in thinking about localized climate impacts; it provides a big picture view that is probably a lot more apocalyptic than might actually occur (for example, air may respond a lot more strongly to climate impacts than water temperatures). Maximum air and water temperatures are not always correlated, and changes to air temperatures may not reliably indicate changes to water temperature. Lower-elevation, warmer, marginal habitats should not necessarily be excluded from critical habitat because they still may serve as important migratory corridors during certain times of the year that could link isolated populations. Not including these habitats as critical habitat could result in further habitat fragmentation, population isolation, and associated threats (e.g., reduced genetic diversity.). The Service should address the extent to which such habitats are valued and may be accounted for in recovery planning.

Our Response: We are unable to predict the site-specific effects of climate change on bull trout habitat throughout the range of the species with certainty, but we did consider climate change as we developed the proposed rule (75 FR 2280, January 14, 2010). For areas that were marginal in terms of adequately providing PCEs for the bull trout, which we believe would be further degraded as a result of climate change, we chose not to identify those areas as critical habitat. However, this rationale was applied only in a few instances. We agree with the peer review comments that these warmer habitats can be essential to bull trout conservation because they facilitate connectivity among otherwise isolated headwater populations of bull trout. In the Klamath Basin, we are designating a larger amount of unoccupied habitat of this type specifically for this reason. In most cases, these areas can serve as migratory corridors in a few cooler months of the year with higher water flows. Also, providing cold-water habitat during low-flow summer months may never have been an important feature of this kind of habitat for bull trout.

(3) *Comment:* While the presence of nonnative invasive species is likely

detrimental to bull trout in most cases, areas with nonnative species present should not necessarily be excluded from critical habitat, as seems to be suggested under PCE 9. Nonnative species can serve as an important forage base where the native fish assemblage has been fractured. The Service should address more clearly how nonnative species impact our evaluation of whether habitats are essential.

Our Response: We agree with peer reviewer's comments and have revised PCE 9 to reflect the concern. We considered the impact of invasive species to evaluate areas that may have been marginal habitat to begin with. If these areas were additionally compromised because of robust populations of invasive species that would be difficult to control, we are not designating the area as critical habitat if bull trout populations were not reasonably recoverable and the area was not needed for recovery. In some cases bull trout occur in good habitat that is primarily impacted by invasive species. If these populations are essential to recovery and special management actions can be reasonably implemented to control invasive species, we are designating the area as critical habitat. More importantly, this PCE is included here as one key bull trout habitat protection element. So, for example, a Federal action that would introduce an invasive species such as brook trout in a watershed with bull trout critical habitat would be inconsistent with the recovery needs of the species in that area.

(4) *Comment:* The Service should ensure that confining the lateral extent of the critical habitat designation in streams to the bankfull elevation addresses habitat needs. The Service should also clarify what is meant by habitat complexity under PCE 4, and develop appropriate metrics that relate to habitat complexity. In some basins, off-channel habitats may be critical for providing low-velocity habitats for rearing small fish, and the accessibility of these habitats will change with flow. Many of the constituent elements identified for bull trout depend on watersheds as a whole, and other contributing tributaries, not just the reaches that bull trout use. Consequently, it may be difficult or impossible to conserve bull trout by limiting habitat protection and restoration only to the reaches that they use.

Peer reviewer comments related to threats included observations that roads can increase the likelihood of poaching; herbicides and pesticides cause additional agricultural effects; screening of diversions may reduce the impacts of irrigation; negative impacts of flow modifications associated with hydropower and flood control operations, and summer augmentation, may occur in downstream areas; and road crossings may create barriers in addition to barriers already in place from dams.

Our Response: Activities above the ordinary high water mark can, and often do, impact bull trout critical habitat. Off-channel habitats may be seasonally important for bull trout, and upland management practices such as road construction, use, and maintenance or timber harvest can affect aquatic habitat. Actions that occur upstream in a watershed above bull trout occurrence reaches can also adversely affect designated habitat if not properly conducted. We will implement this rule consistent with our understanding of these effects, and work closely and cooperatively with Federal agencies to ensure any such actions do not adversely modify designated critical habitat.

When we discuss bull trout habitat complexity, we refer to a diversity of pool, riffle, and run habitats in streams, and gravel, cobble, and boulder stream substrates with open interstitial spaces. We also refer to stream channels and their associated riparian habitat areas that collectively function to provide important features such as undercut stream banks, shade, overhanging cover, and large woody debris in streams and other waterbodies. Any Federal actions that would adversely modify these features would be inconsistent with this rule. Examples of these actions could include activities that introduce sediment into streams that clog interstitial spaces, discharge dredged or fill material into stream pool habitat, degrade stream banks, and reduce or remove large woody debris. Because of this habitat complexity across the range of the species, we determined and quantified the habitat needs of the bull trout and defined the PCEs to include the needs of the species across all types of waterbodies within the full range of the bull trout. We have presented additional information for Federal agencies in the sections on **Primary Constituent Elements** and *Section 7 Consultation*, below, to help them consider their future actions and ongoing actions where they have continuing discretionary involvement with regard to conserving the PCEs. With regard to the comment that it may be difficult or impossible to conserve bull trout by limiting habitat protection and restoration only to the reaches that they use, we do not limit the critical habitat designation to occupied habitat. We are designating approximately 1,323.7 km (822.5 mi) of streams and 6,758.8 ha (16,701.3 ac) of unoccupied habitat to address bull trout conservation needs in specific geographic areas.

(5) *Comment:* It is unclear where occupied habitats that are not proposed for designation are located, or where historical populations of bull trout once occurred. It is reasonably arguable that some critical habitat is more critical to the conservation needs of the species than other critical habitat.

Our Response: Section 3(5)(A) of the Act defines critical habitat, in part, as the specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features essential to the conservation of the species which may require special management considerations or protection. Based on this definition, the proposed rule identified a large majority of habitat that was known to be occupied by bull trout at the time of listing. It is uncertain how much habitat may have been historically occupied but is no longer occupied. We used the best scientific information available to include occupied habitat with the features essential to the conservation of the species, as well as unoccupied areas also essential to the conservation of the bull trout. All areas designated as critical habitat in this final rule are essential to the conservation of the species, based on the best available information.

(6) *Comment:* Peer reviewers questioned whether restoration activities in areas that are not designated as critical habitat could be counted as progress in terms of recovery, and whether all areas designated as critical habitat would have to be recovered before declaring overall bull trout recovery. One peer reviewer recommended that the final rule address how bull trout will be protected in reintroduction sites, such as the Clackamas River in Oregon, and how these areas may or may not be linked to the persistence of populations.

Our Response: These comments will be fully considered as we engage in the recovery planning process. Please see the *Relationship of Critical Habitat to Recovery Planning* section of this rule for more information regarding this effort.

(7) *Comment:* One peer reviewer stated that it wasn't clear whether areas outside of critical habitat are essential to conservation of bull trout, and that if not, biological consultations and

recovery planning and implementation should incorporate these considerations.

Our Response: This rule designates as critical habitat areas that we have determined to meet the definition of critical habitat under section 3(5)(A) of the Act, except for those areas we have identified and expressly excluded under section 4(b)(2) of the Act. A critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be required for recovery of the species. Areas that support populations, but are outside the critical habitat designation, may continue to be subject to conservation actions we implement under section 7(a)(1) of the Act, and are subject to the regulatory protections afforded by the section 7(a)(2) jeopardy standard. Please see the **Effects of Critical Habitat Designation** section in the rule for further information.

(8) *Comment:* The Service should explain what has changed from 2005 to 2010 that enabled a determination that unoccupied habitats were essential for the conservation of bull trout in certain areas.

Our Response: As stated in the proposed rule (75 FR 2273, January 14, 2010), in the 2005 final rule we did not designate any unoccupied critical habitat because the Secretary concluded that it was not possible to make a determination that such lands were essential to the conservation of the species. In the proposed rule and this rule, we were able to identify several habitats not occupied at the time of listing that we believe are essential for restoring functioning migratory bull trout populations based on currently available scientific information. These areas often include lower main stem river environments that can provide seasonally important migration habitat for bull trout. This type of habitat is essential in areas where bull trout habitat and population loss over time necessitates reestablishing bull trout in currently unoccupied habitat areas to achieve recovery.

(9) *Comment:* More detailed and recent literature should be reviewed to support the habitat needs discussion. Updated citations and references that list research and other new information obtained since the original listing should be incorporated into the critical habitat rule.

Our Response: We agree, and have done so in this final rule.

Comments from States

Section 4(i) of the Act states, "the Secretary shall submit to the State agency a written justification for his failure to adopt regulations consistent with the agency's comments or petition." Comments we received from States regarding the proposal to designate revised critical habitat for the bull trout are addressed below. We received comments from the Nevada Division of Wildlife, Montana Fish Wildlife and Parks, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Washington Department of Natural Resources (WDNR), Idaho Department of Lands, Idaho Office of Species Conservation, and Idaho Department of Fish and Game related to biological information for specific waterbodies, critical habitat exclusions, and economics. These agencies provided additional information and made recommendations for revisions to the final critical habitat designation in several specific areas. Two agencies expressed specific support for the Service's approach to designating critical habitat.

(1) *Comment:* We received several comments from State resource agencies presenting site-specific biological information on areas that should or should not be considered essential habitat, and the underlying rationale for those recommendations.

Our Response: The information received from our State resource agency partners was very helpful, and enabled us to refine our understanding of habitat essential to the conservation of the species, and in the case of occupied habitat, habitat that contains physical or biological features that may require special management considerations or protections. We based the proposed rule on the best available information at that time; we requested technical input from a variety of partners, including the States, to help us refine the final critical habitat designation. The final rule has been adjusted, accordingly, including modifying boundaries of critical habitat units, based on our partners' site-specific biological expertise with the species.

(2) *Comment:* We received comments from some State agencies identifying concerns with the draft economic analysis, which included failure to consider costs related to bull trout recovery, failure to request economic information from the State prior to publication of the proposed rule, and costs to forest land management.

Our Response: These comments have been addressed below in the section of the final rule that responds to all comments we received on the draft economic analysis.

(3) *Comment:* Some commenters recommended that we exclude lands subject to State conservation planning efforts, or that we rely on existing habitat protections, such as State forest practice rules, rather than designating critical habitat in those areas.

Our Response: We disagree. It would be inappropriate to rely on other protections such as state forest practice rules or similar large-scale programs that have not been subject to review under the Act as an alternative to critical habitat designation, based on the uncertainty of protections that would be afforded to the physical or biological features essential to bull trout conservation. Uncertainty regarding future funding, and revisions and implementation of those plans is also a concern. However, some State conservation planning efforts related to finalized habitat conservation plans (HCPs) have resulted in our exclusion of areas from critical habitat designation under section 4(b)(2) of the Act. Please see the **Exclusions** section below for additional information.

(4) *Comment:* One State agency commented that the Service proposed a vast and over-reaching critical habitat designation without first acquiring the requisite site-specific information required by the Act. The State agency also commented that, without future refinement, the designation would lead to unnecessary regulation on otherwise lawful activities. The agency also expressed concern that the Service ignored information regarding the agency's position when forming the basis for the revised critical habitat designation.

Our Response: As required by section 4(b)(2) of the Act, we used the best scientific data available in determining areas that contain the features essential to the conservation of bull trout for the proposed rule. Data sources included research published in peer-reviewed journals and previous Service documents, including the final listing determination (64 FR 58909, November 1, 1999), the bull trout draft recovery plan (Service 2002), and the bull trout 5–year review (Service 2008). In the proposed rule, we requested comments or information from the public, other concerned government agencies, the scientific community, industry, and other interested parties, which included a specific request for information regarding areas essential to the conservation of the species. Because of the court-ordered deadline for delivery of a proposed rule to the **Federal Register**, our strategy was to work closely with our resource management partners after publication of the proposed rule, and use their biological expertise to help us refine the final critical habitat designation. This final

rule incorporates that information, as appropriate.

(5) *Comment:* One State agency commented that the designation of critical habitat for bull trout invites the potential for additional regulatory burdens to be placed on landowners, persons holding public land permits, and industries. The agency also commented that while the Service is already consulting on projects with a Federal nexus under section 7 of the Act, the bar is now arguably raised as reinitiation of consultation will be required to ensure permitted activities do not adversely modify critical habitat.

Our Response: The Service believes any additional regulatory burdens resulting from the designation of critical habitat in occupied areas will be minimal. The rationale for this determination is that the species was listed under the Act because of threats to habitat, and section 7 consultations are already required to address any habitat-related impacts associated with Federal actions. Although it is theoretically possible, we have been unable to identify any specific type of Federal action that could adversely modify critical habitat in occupied areas that would not also result in a jeopardy finding for the same action. Accordingly, we do not believe the regulatory bar has been raised in occupied areas. Designating critical habitat adds educational value in these areas by identifying habitats that should be prioritized for recovery actions as opportunities arise. While critical habitat may result in additional conservation requirements for Federal actions in unoccupied areas, we do not believe this would be a significant impact because these areas constitute only 4 percent of the total critical habitat area being designated in this final rule. Federal agencies will need to consider the adverse modification of critical habitat in future section 7 consultations, and may need to reinitiate consultation on existing actions where they have continued discretionary involvement or control if the activity may affect designated critical habitat. However, we anticipate the overall result of reinitiation will be minor because of the similarity between measures needed to avoid the destruction or adverse modification of critical habitat and measures needed to avoid jeopardizing the species. In addition, consultation tools such as streamlining and programmatic consultations are commonly implemented to minimize the administrative costs associated with consultation within the range of bull trout.

(6) *Comment:* Concern was expressed that if all unoccupied critical habitat had to be recolonized and recovered before bull trout could be delisted, the uncertainties and potential costs associated with this requirement would be high.

Our Response: One of the greatest conservation benefits of critical habitat is the designation of unoccupied habitat that is essential to the conservation of a listed species. For bull trout, unoccupied habitat plays an important role in restoring connectivity between currently isolated headwater populations via lower mainstem river habitats. The Service does not believe all designated unoccupied habitat would necessarily need to be recolonized and restored to declare recovery, and we would take into consideration the status of adjacent populations (e.g., their robustness in relation to threats). For example, nearby occupied habitats could currently be in an imperiled status, but by restoring bull trout in adjacent unoccupied habitat, the overall recovery potential in that area could be improved. We anticipate that the bull trout recovery planning process and our continued progress towards achieving recovery goals will provide more precision with regard to identifying the restoration needs of specific habitat areas.

(7) *Comment:* Two State agencies expressed support for the Service's approach to designating critical habitat, stating that: (1) The approach generally provides the breadth of habitat necessary to support bull trout in a fully recovered state and includes significant portions of aquatic habitat that are currently not occupied or disconnected due to anthropogenic (i.e., human-caused) factors; and (2) the approach contains those areas essential for the conservation of the bull trout.

Our Response: We appreciate this support from our partners, and the helpful site-specific information they presented in response to the request for information in the proposed rule.

(8) *Comment:* The Washington Department of Natural Resources presented information supportive of excluding lands covered under the final State HCP and the final Forest Practices HCPs. The Montana Department of Natural Resources presented information supportive of excluding streams and rivers intersecting forested Montana State Trust lands that would be covered under a draft HCP from the final bull trout critical habitat rule.

Our Response: Please refer to the discussion of the Forest Practices HCPs in our responses to Public Comments below and in the *Application of Section 4(b)(2) of the Act* section under **Exclusions** in this final rule. The WDNR State lands HCP is discussed under the *Application of Section 4(b)(2) of the Act* in this rule.

When considering HCPs, draft land-management plans, and draft conservation agreements, the Service can consider the certainty of implementation or the lack thereof, especially if there are no established procedures to ensure that the final instrument will produce the anticipated benefits. The Service believes that, in general, it is inappropriate exclude areas that are covered by draft conservation programs or plans, because their proposed conservation measures are subject to change. Without a high degree of assurance that conservation measures will be implemented and effective for a particular species and its habitat, we cannot complete a meaningful analysis under section 4(b)(2) of the Act.

Federal Agency Comments

Bureau of Land Management

(1) *Comment:* The Service should exclude Bureau of Land Management (BLM)-administered lands from critical habitat designation.

Our Response: The Secretary of the Interior may exclude an area from critical habitat designation under section 4(b)(2) of the Act after taking into consideration the economic impact, the impact on national security, and any other relevant impact if he determines the benefits of exclusion outweigh the benefits of specifying such area, unless he determines the exclusion would result in the extinction of the species concerned. The primary benefit of including an area within critical habitat designation is the protection provided by section 7(a)(2) of the Act that directs Federal agencies to ensure that their actions do not result in the destruction or adverse modification of critical habitat. The benefit of designating critical habitat is limited if the areas under consideration occur on private lands for which there may not be a Federal nexus to invoke the protections of section 7(a)(2) of the Act. Federal lands by default have a Federal nexus, and the intent of section 7 of the Act is to require Federal agencies to consult on any action authorized, funded, or carried out by such agency to ensure that the action will not jeopardize a listed species or destroy or adversely modify its critical habitat. In addition, section 7(a)(1) of the Act states, in part, "Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act

by carrying out programs for the conservation of endangered and threatened species." Therefore, the benefits of inclusion of these areas are greater because they are Federal lands.

We requested specific information from the BLM describing: (1)Activities being conducted and planned that conserve bull trout or the physical or biological features identified in the proposed critical habitat rule; (2) the status of management plans, including the geographic area covered, date finalized, date implementation was initiated, timeline for future revisions, and the amount of critical habitat affected by the plan; (3) specific management measures that conserve the physical or biological features in the plan area; (4) conservation benefits associated with the plan; (5) information on plan implementation, including the level of certainty and uncertainty that exists with regard to conservation commitments and funding assurances continuing into the future; and (6) the plan's effectiveness related to biological goals and objectives, implementation progress, monitoring, adaptive management provisions, and schedule. We also requested specific examples of completed projects that have improved the status of bull trout within a particular plan area.

Although specific information was not presented, we did receive some information from the BLM on Areas of Critical Environment Concern (ACEC) Plans, the Wild and Scenic River Management (WSR) Plans for the Deschutes and Lower Crooked Rivers in Oregon, and the Willamette Basin Water Quality Restoration Plan (WBWQ) to support their request for the exclusion of BLM-administered lands from critical habitat designation. The BLM also resubmitted comments that were prepared for the Service's consideration for the 2005 bull trout final critical habitat rule; those comments summarize several management plans and guidance documents, such as agency memorandums, BLM Manual chapters, Land Health Standards, Pacific Anadromous Fish Strategy (PACFISH), Inland Fish Strategy (INFISH), National Fire Plan, Healthy Forests Restoration Act of 2003 (16 U.S.C. 6501 *et seq.*), Wilderness Study Areas, Interior Columbia River Basin Ecosystem Management Project, Road Density and Land Management recommendations, and Regional Executive/Line Manager Oversight/Communication roles. We have reviewed the information that was submitted in light of the October 3, 2008, Memorandum Opinion from the Department of the Interior's Office of the Solicitor "The Secretary's Authority to Exclude Areas from a Critical Habitat Designation under section 4(b)(2) of the Endangered Species Act" (DOI 2008), and the best available information. We were unable to confirm that the BLM's management plans and guidance documents provide a conservation benefit for bull trout comparable to critical habitat designation, or that designation of critical habitat on BLM lands would present a disproportionate economic or other relevant impact. The Secretary has elected not to exercise his discretion under section 4(b)(2) of the Act to exclude BLM-administered lands from this revised critical habitat designation. However, we are committed to working efficiently and proactively with the BLM to address their program administration needs, in light of the conservation needs of bull trout.

(2) *Comment:* The BLM commented, "The BLM does not agree and the guidance issued in the October 3, 2008, Solicitors Opinion does not support the conclusion that if something meets the Federal agency obligation under section 7(a)(1) it should automatically be precluded from exclusions under section 4(b)(2)."

Our Response: The proposed rule does not state that actions taken to comply with section 7(a)(1) of the Act preclude consideration of those actions for purposes of section 4(b)(2) of the Act; however, it does state that Federal land management plans, in and of themselves, are generally not an appropriate basis for excluding essential habitat. Federal agencies have an independent responsibility under section 7(a)(1) of the Act to use their programs in furtherance of the Act and to utilize their authorities to carry out programs for the conservation of endangered and threatened species. In areas where Federal land management agencies actively manage for bull trout and its habitat, conduct specific conservation actions for the species at a level comparable to critical habitat designation, provide assurances that a plan will remain in effect for a relevant period of time, and show that a disproportionate impact would result from the designation, exclusion under section 4(b)(2) of the Act may be appropriately considered by the Secretary.

(3) *Comment:* Conservation measures within the Northwest Forest Plan (NWFP), Aquatic Conservation Strategy (ACS), and PACFISH/INFISH are currently still in place and continue to be adequate to provide for the conservation of bull trout.

Our Response: We recognize the extensive planning and development that has been invested in these efforts, and commend the BLM's efforts to conserve federally listed species on their lands. However, as stated in the proposed rule (75 FR 2273), large-scale Federal land management plans such as the NWFP and its aquatic component (the ACS), and other plans such as PACFISH/INFISH, are in and of themselves generally not an appropriate basis for excluding essential habitat. These plans typically guide agency activities, and provide some level of conservation benefit in occupied bull trout habitat areas, but are fluid documents that may or may not be revised, based on resource availability, management emphasis, and changes in management direction to respond to changing agency priorities.

(4) *Comment:* The designation of critical habitat would not offer any additional protections to bull trout beyond those currently provided.

Our Response: We acknowledge in the proposed rule that since the primary threat to bull trout is habitat loss or degradation, the jeopardy analysis under section 7 of the Act for a project with a Federal nexus will most likely evaluate the effects of the action on the conservation or functionality of the habitat for bull trout. We also stated that, in many cases, the analysis of a project to address designated critical habitat would be comparable to the jeopardy analysis, and for many circumstances the outcome of the consultation to address critical habitat would not result in any significant additional project modifications or conservation measures (75 FR 2291, January 14, 2010). A possibility exists that a section 7(a)(2) consultation on a future BLM project would result in a determination that an action would result in the destruction or adverse modification of bull trout critical habitat. In accordance with our current policy, in cases where the Secretary determines the benefits of inclusion (designation) are equal to or outweigh the benefits of exclusion, he may not make an exclusion (USDOI 2008, p. 24).

(5) *Comment:* The designation of critical habitat would impose additional regulatory burdens that would increase the process and administrative costs, and this money would be more appropriately directed at implementing protection measures on the ground.

Our Response: The analyses that result from the consultation provisions under section 7(a)(2) of the Act constitute a regulatory benefit of critical habitat, and Federal agencies must consult with the Service on discretionary actions that may affect listed species. Federal agencies must

also analyze the effects of an action on critical habitat, which is a separate and different analysis from that of the effects to the species. We anticipate that, in some cases, this consultation would translate to the implementation of on-the-ground bull trout conservation measures. Avoiding the costs associated with the designation of critical habitat would be the principal benefit of excluding an area under section 4(b)(2) of the Act. We appreciate the BLM's concern that the designation of critical habitat may impose additional regulatory burdens and increase administrative costs; however, the BLM did not present any information characterizing the magnitude of that impact. In order to make a section 4(b)(2) exclusion or critical habitat designation determination, the Secretary must gather the available information about the economic and other relevant impacts that would result from his decision (DOI 2008, p. 15). We have no information available that would indicate that the regulatory and administrative burden that may result from the designation of critical habitat on BLM lands presents a disproportionate impact to the agency that outweighs the regulatory benefit of designating critical habitat on those lands.

(6) *Comment:* The conservation benefit of designating critical habitat would only be realized when the Service determines the action would destroy or adversely modify critical habitat and reasonable and prudent alternatives are issued, which is rare.

Our Response: We agree that adverse modification determinations are rare, because in the majority of section 7 consultations the Service is able to work in partnership with Federal agencies to identify ways to accomplish agency management objectives, comply with the Act, and conserve species and their habitats on managed lands. However, in some cases, we may determine a proposed Federal action would alter the physical or biological features of critical habitat to an extent that appreciably reduces its conservation function for bull trout. Under these circumstances, an adverse modification finding for the proposed action would be warranted. There may be additional conservation benefits to consultation on adverse effects that is not limited to adverse modification situations, because an agency may modify an action in advance to avoid any effects to critical habitat and avoid the need for consultation.

(7) *Comment:* Because any conservation benefits realized through the section 7(a)(2) process would already be occurring in areas occupied by bull trout, additional conservation benefit would only occur in areas designated as critical habitat where the species is not present.

Our Response: As stated in the proposed rule, when consulting under section 7(a)(2) of the Act, independent analyses are conducted for jeopardy to the species and adverse modification of critical habitat (75 FR 2291, January 14, 2010). In occupied bull trout habitat, any adverse modification determination would likely also result in a jeopardy determination for the same action. As such, project modifications that may be needed to minimize impacts to the species would coincidentally minimize impacts to critical habitat. Accordingly, in occupied critical habitat, it is unlikely, although possible, that an analysis would identify a difference between measures needed to avoid the destruction or adverse modification of critical habitat from measures needed to avoid jeopardizing the species. Alternatively, in unoccupied critical habitat, we would not conduct a jeopardy analysis. However, measures to avoid the destruction or adverse modification of critical habitat may be necessary to ensure that the affected critical habitat area can continue to serve its intended conservation role for the species, or retain the physical or biological features related to the ability of the area to periodically support the species (75 FR 2291, January 14, 2010).

U.S. Forest Service

(1) *Comment:* The U.S. Forest Service (USFS) believes excluding Federal lands continues to be a valid procedure. They recommended that we exclude from critical habitat designation all occupied bull trout habitat on all USFS-managed lands, as well as unoccupied habitat in the Northwest Forest Plan area, but the USFS acknowledged other factors are used by the Service to decide which lands and waters meet the criteria for critical habitat designation or exclusion.

Our Response: We have reviewed USFS request in light of the October 3, 2008, Memorandum Opinion from the Department of the Interior's Office of the Solicitor "The Secretary's Authority to Exclude Areas from a Critical Habitat Designation under section 4(b)(2) of the Endangered Species Act" (DOI 2008), and the best available information. We are unable to confirm that the USFS' management activities under the NWFP or other management plans provide a conservation benefit for bull trout comparable to critical habitat designation, or that designation of critical habitat on USFS lands would present a disproportionate economic or other relevant impact. In light of the foregoing, the Secretary has elected not to exercise his discretion under section 4(b)(2) of the Act to exclude USFS-managed lands from this revised critical habitat designation. However, we are committed to working efficiently and proactively with the USFS to address their program administration needs, in light of the conservation needs of bull trout.

(2) *Comment:* The guidance issued in the 2008 Solicitor M-Opinion does not support a conclusion that if something meets the Federal agency obligation under section 7(a)(1), it should automatically be precluded from exclusions under sections 4(b)(2) of the Act.

Our Response: See response to BLM comment (2) above.

(3) *Comment:* Conservation measures within the Northwest Forest Plan, Aquatic Conservation Strategy, and PACFISH/INFISH are currently still in place and continue to be adequate to provide for the conservation of bull trout.

Our Response: See response to BLM comment (3) above.

(4) *Comment:* Because any conservation benefits realized through actions that used the section 7(a)(2) process would already be occurring in areas occupied by bull trout, The USFS believes the additional conservation benefits of designation would occur only in areas designated as critical habitat that are not actually occupied by bull trout.

Our Response: See response to BLM comment (4) above.

(5) *Comment:* After the final rule, the USFS will need time to reinitiate and conclude interagency cooperation on many ongoing Federal actions involving critical habitat, and to initiate and conclude new consultations for actions in the process of being developed in occupied and unoccupied critical habitat areas. To facilitate this consultation workload, the USFS requested that the effective date of the final rule be delayed for 120 days (similar to the National Marine Fisheries Service's (NMFS) final rule designating critical habitat for listed anadromous fish populations).

Our Response: Although we appreciate the concern, we have no authorization under the court's remand order to delay the effective date of the rule. However, the Service is committed to working closely and efficiently with our Federal agency partners to meet both their management needs and the conservation needs of bull trout in designated critical habitat areas affected by their actions.

(6) *Comment:* Because critical habitat, by definition, includes those habitats essential to the conservation, and ultimately restoration, of the species, the USFS believes streams on Federal lands that meet critical habitat criteria should be explicitly designated by rule, rather than relying on other planning processes to "de-facto" cover these essential conditions. This helps clarify priority areas, internally and with partners, for habitat conservation and improvement-related efforts that will support recovery planning and implementation. The USFS expressed support for designation of critical habitat on National Forest System lands where bull trout can logically be expected to recover. The agency also supported the designation of critical habitat for all areas that are known to have existing populations of bull trout and the designation of tributaries that drain into known spawning habitats.

Our Response: We appreciate the comment, and are designating critical habitat on certain National Forest System lands.

(7) *Comment:* The six new recovery units seem too large to measure recovery should it take place, or be a reachable goal. The old set of 27 smaller recovery units made sense because they were at a scale that is realistic to manage and evaluate the effects of recovery actions.

Our Response: This comment is beyond the scope of the final rule. However, there may be a need to revise the existing draft recovery plan or consider alternative recovery unit boundaries to effectively manage and evaluate the effects of recovery actions in each critical habitat unit. We are conducting preliminary work to develop a revised draft recovery plan, with the goal of developing a final bull trout recovery plan in the future.

Bureau of Reclamation

(1) *Comment:* For existing dams, it is unclear how the current condition of the habitat with the dam in place can threaten the physical or biological features of the specific areas being designated as those areas, if occupied, can only be designated if the physical or biological features essential to the conservation of the species are found under the existing conditions (i.e., with the dams in place). The Bureau of Reclamation (BOR) recommended the following language for inclusion in the final rule: "While critical habitat is designated in streams and reservoirs where flows and volumes fluctuate due to water management activities, these are existing conditions that were found at the time of listing. The lateral extent described for those streams and reservoirs influenced by water management activities is considered the upper limit of the critical habitat designation and changes in flows and volumes are acceptable."

Our Response: To qualify as critical habitat, an occupied area need not contain all PCEs; one is sufficient. We acknowledge that the adverse modification standard would not require an action agency to create PCEs in occupied areas where such PCEs were wholly absent at the time the areas were designated as critical habitat. Moreover, not all adverse effects on PCEs that are present would rise to the level of adverse modification. We must be cautious, however, not to imply that fluctuating conditions would never constitute an adverse modification of designated habitat for the reason that "these are existing conditions that were found at the time of listing." This would be a flawed approach, for two reasons:

(1) The fact that an existing Federal project is not presently adversely modifying critical habitat does not mean that the same operations would not result in adverse modification under future circumstances. As the section 7 regulations make clear, analysis for jeopardy and adverse modification is heavily dependent on context, and relies on consideration, not only of the effects of the Federal action itself, but also the current baseline, the effects of interrelated and interdependent actions, and the cumulative effects of future non-Federal activities (50 C.F.R. §402.02). Thus, a stream that has adequate flows now, despite Federal diversions, might not have adequate flows in the future as a result of drought or non-Federal diversions. Even if the amount of the Federal diversion does not change, its effect on the PCEs could be more substantial if the context changes. Context plays a critical role in the adverse modification analysis, and it would be improper to prejudge the outcome of future consultations.

(2)Such an approach might lead to the erroneous conclusion that, if a designated area contains essential features, those features are already in a condition that is ideal for bull trout, and therefore any Federal action that maintains the status quo would not cause adverse modification. It is possible for an area to be less than ideal for bull trout, yet contain features that are essential to the species' conservation, because there is no better habitat available to serve an essential function such as migrating, spawning or rearing. An area designated for spawning habitat, for example, might have sufficient clean gravel to provide for some spawning, yet still be suffering some degradation as a result of sedimentation from roads. Depending on the context, a Federal action that causes such sedimentation to continue could constitute adverse modification.

Specifically, the lateral extent of critical habitat in lakes and reservoirs is defined by the perimeter of the waterbody as mapped on standard 1:24,000 scale topographic maps, and the Service assumes in many cases this is full pool level. Defining the lateral limits in reservoirs and lakes in this manner is consistent with the approach taken for streams. Within streams, the critical habitat designation includes the stream channels within the designated stream reaches with the lateral extent defined by the bankfull elevation on one bank to the bankfull elevation on the opposite bank. In cases where the bankfull elevation is not evident on either bank, the ordinary high-water line determines the lateral extent of critical habitat. Conditions at some lakes or reservoirs allow a range of flows to occur. However, a full range for one reservoir may operate from full pool to run-of-river (zero pool) annually, while another reservoir may operate from full pool with a built-in minimum conservation pool to address specific water quality requirements. Reservoir operational requirements related to bull trout critical habitat would be evaluated during the section 7 consultation process on a specific lake or reservoir basis. Accordingly, we are unable to include the statement in the final rule that was requested by the BOR, because the section 7 consultation process has not been concluded.

(2) *Comment:* Lake Cascade and Phillips Reservoir should not be designated as either occupied or unoccupied critical habitat, because they would at best minimally provide two or three PCEs on a seasonal basis and the abundance and spatial arrangement of the minimal PCEs provided would not rise to the level of providing the physical or biological features essential for conservation.

Our Response: We are designating stream segments and lakes or reservoirs that contain habitat seasonally to connect and to promote bull trout migratory life-history expression. Maintaining connectivity between bull trout local populations through the restoration and protection of main stem

rivers is a major emphasis for bull trout recovery. The designation of critical habitat in occupied habitat is based on whether lakes or reservoir contain one or more PCEs either seasonally or year-round. We identified two major habitat types (spawning and rearing, and FMO); both of these reservoirs were identified as FMO habitat in the proposed rule. We have determined that Phillips Reservoir is essential for the conservation of the species, because it provides FMO habitat seasonally, during the fall, winter and spring.

In a comment letter we received from the Oregon Department of Fish and Wildlife (ODFW) (March 10, 2010), they specifically recommended inclusion of Phillips Reservoir: "ODFW recommends extending critical habitat designations downstream to the confluence with the Snake River. Specifically we recommend including the mainstem Powder River from Phillips Reservoir downstream to the mouth including Phillips and Thief Valley Reservoirs. This designation would provide the opportunity for connectivity among local populations and full life history expression and to provide consistency with application of the seven guiding principles for bull trout conservation, as well as consistency with other designations in the state." We agree with their assessment. Inclusion of Phillips Reservoir is key to restoring connectivity between local bull trout populations, which is essential to maintaining a viable bull trout population in the Powder River core area.

However, based on the best available scientific information (including new site-specific biological information provided by the BOR), we are not designating Lake Cascade as critical habitat. We agree with the BOR that Lake Cascade lacks several of the essential habitat features, is not confirmed to be occupied by bull trout, and poses too many obstacles to be useful in bull trout conservation. Habitat connections essential for metapopulation dynamics and genetic interchange, which are important to maintaining a viable bull trout population, are lacking. Exotic species have also extensively colonized Lake Cascade, further complicating bull trout recovery (BOR 2010, pers. comm.).

(3) *Comment:* The BOR provided site-specific biological information on bull trout use in the Powder River, Malheur River, and Southwest Idaho River Basins Units, and made several recommendations for clarifications and revisions in the final rule.

Our Response: The Service received numerous comments from various Federal agencies including the BOR. The Service reviewed all site-specific comments, and we have revised the final critical habitat designation based on information contained in our files and new information received during the comment period, as appropriate. The final critical designation for the Powder River, Malheur River, and Southwest Idaho River Basins fully considered the information presented by the BOR.

Department of Energy, Bonneville Power Administration

(1) *Comment:* The Federal Columbia Power System (FCRPS) hydropower dams operating under the Service's and the National Oceanic and Atmospheric Administration's (NOAA) Biological Opinions for the FCRPS and Willamette River and within congressionally authorized operating ranges are part of the environmental baseline. Given the extensive management of operations of the FCRPS reservoirs consistent with bull trout and salmonid Biological Opinions, the Service should clarify that the FCRPS reservoirs are managed in a manner that is sufficiently protective to achieve the biological features essential to the conservation of bull trout.

Our Response: The Service will assess whether the current management of the FCRPS is sufficient to conserve bull trout with regard to the action described in the biological assessment after we participate in section 7 analyses with the appropriate action agencies involved. The purpose of critical habitat is to identify specific geographic areas that contain the physical or biological features essential for the conservation of an endangered or threatened species and that may require special management considerations or protection. Biological opinions are not conservation plans and do not have specific measures that address the long-term conservation needs of bull trout with regard to PCEs, but rather, they evaluate the effects of particular projects on listed species or its critical habitat. Biological opinions are the formal basis for disclosing NOAA's or the Service's opinion on whether the Federal action will result in jeopardy of a species or adverse modification of critical habitat, and are specific to a particular proposed Federal action. See *Section 7 Consultation*, below, for additional information.

(2) *Comment:* The Bonneville Power Administration (BPA) requested that the Service identify any likely instances where the current FCRPS operations under the Biological Opinions might be detrimental to bull trout critical habitat, and address any potential conflict between two or more listed species and the requirements of two regulatory agencies. The BPA also requested that the Service address whether the current FCRPS or Willamette operations may have to be substantially altered from operations that would otherwise be required under the relevant Biological Opinions. If alterations are identified, the Service should describe how those alterations have been considered in the economic analysis of the impacts of designation.

Our Response: It is possible that some future operational alterations may be undertaken as a result of bull trout critical habitat designation, although the specific extent to which project modification costs for the FCRPS or Willamette Project will increase as a result of this designation is unclear. We did not receive any specific data from BPA that would facilitate additional analysis; however, this potential concern is particularly complex because most of the proposed area on the Upper Willamettte River was designated as critical habitat in 2005. The Final Economic Analysis (FEA) applied the best available information and methods to estimate potential incremental impacts. Although section 4 of the Act establishes requirements for listing species and designating critical habitat, it does not address Federal agency requirements under section 7 of the Act, which addresses the need for Federal agencies to consult on the effects of their actions on listed species. Potential FCRPS operations will be analyzed for their effects on bull trout critical habitat once section 7 consultation is reinitiated.

(3) *Comment:* The bankfull width for streams and perimeter of the water as mapped on standard 1:24,000 scale topographic map definitions for the lateral boundaries of critical habitat could imply that any drawdown or lowering of those levels would adversely affect the designated critical habitat. Lake and reservoir drawdown is within the authorized range of FCRPS and other hydro projects and is required to meet Federal project purposes such as flood control, irrigation, power production, and at times to meet requirements under FCRPS biological opinions. These activities do not necessarily negatively affect bull trout, and in some circumstances, may actually benefit bull trout.

Our Response: Section 7 of Act requires that Federal agencies confer or consult with the Service on their actions; it is during such conference or consultation that the effects of the action on critical habitat will be analyzed. This designation does not

result in modifications of current biological opinions, but may result in the need for reinitiation of consultation in some cases. A determination regarding the beneficial, neutral, or detrimental nature of effects of a particular Federal action would be made during section 7 consultation for that specific activity.

U.S. Small Business Administration, Office of Advocacy

(1) *Comment:* The U.S. Small Business Administration's Office of Advocacy encouraged the Service to conduct outreach to county governments and other small municipal bodies to further examine the economic impact of the critical habitat designation to determine whether any reasonable alternatives exist that would accomplish conservation goals while providing needed regulatory relief to small entities. The Office indicated that, through these discussions, the Service may determine to exclude particular areas from critical habitat designation under section 4(b)(2) of the Act.

Our Response: As noted as in the final economic analysis (FEA), there are numerous baseline regulations in place for several fish species whose ranges overlap bull trout, including conservation protections for salmon and steelhead, that provide coincident protections for bull trout and its critical habitat. These protections apply to most of the lands currently occupied by bull trout (96 percent). Annualized incremental impacts to small entities considered represent 51 percent of total incremental impacts estimated in the rest of the FEA, and less than 0.6 percent of annual revenues for all activities. Given the history of regulation and baseline protections already in place, we do not believe county governments or small municipal bodies will experience any appreciable incremental economic impacts from this designation. Accordingly, no areas are being excluded from critical habitat designation based on economic impacts. Please refer to the section below that addresses comment responses to the economic analysis for further information in this regard.

Department of the Navy

(1) *Comment:* The U.S. Department of the Navy commented that national security impacts would occur if critical habit were to be designated in the Dabob Bay Range Complex (DBRC), Quinault Underwater Tracking Range (QUTR), and Crescent Harbor. The additional regulatory requirements imposed by the designation may delay, restrict, or prohibit the implementation of required training and testing in these areas. The Navy requested that the Service exclude the existing training areas and the proposed extensions of the DBRC and QUTR areas currently being evaluated in their Environmental Impact Statement from designation as critical habitat under section 4(b)(2) of the Act.

Our Response: Under section 4(b)(2) of the Act, we are required to consider whether there are lands owned or managed by the Department of Defense where a national security impact might exist if such areas are designated as critical habitat. Please see the *Application of Section 4(b)(2) of the Act* section below for more information regarding the analysis of the above Navy facilities.

National Park Service

(1) *Comment:* Crater Lake National Park, a unit of the National Park Service, indicated that designation of critical habitat in Annie Creek is appropriate based on historic records and the connectivity of Annie Creek with other stream networks known to contain bull trout. The Park supported returning the lower Sun Creek irrigation canal to a more natural alignment to increase connectivity and benefit recovery of the Sun Creek population. The Park noted that designation of critical habitat within the irrigation system should not preclude efforts to restore the natural Sun Creek channel.

Our Response: The Service has been working with Federal, State, and local partners to develop a plan for reconnecting Sun Creek with its historic (i.e., natural) connection with the Wood River. This connection would allow movement of bull trout between Sun Creek, the Wood River, and Annie Creek. These unoccupied areas that were identified in the proposed rule are essential for the conservation of bull trout in the Upper Klamath Lake critical habitat subunit, and are being designated as critical habitat.

Comments from Native American Tribes

(1) *Comment:* In response to the tribal coordination identified in the **Summary of Comments and Recommendations** section above, we received comments from several Tribes, including the Confederated Tribes of the Umatilla Indian Reservation, Puyallup Tribe of Nations, Confederated Tribes and Bands of the Yakama Nation, Jamestown S'Klallam Tribe, Quinault Indian Nation, Upper Skagit Indian Tribe, Lower Elwha Klallam Tribe, Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, Swinomish Indian Tribal Community, Nisqually Indian Tribe, Coeur d'Alene Tribe, Nez Perce Tribe, Kalispel Tribe of Indians, Blackfeet Tribe, Muckleshoot Indian Tribe, and Burns Paiute Tribe. We also received a comment letter from the Northwest Indian Fisheries Commission. Most Tribes requested exclusion from critical habitat designation based on: (1) Secretarial Order 3206, which states, in part, that critical habitat shall not be designated in areas that may impact tribal trust resources, tribally-owned fee lands, or the exercise of tribal rights unless it is determined essential to conserve a listed species; (2) section 4(b)(2) of the Act; and (3) existing tribal resource management plans that are protective of bull trout. Other Tribes expressed support for the proposed critical habitat revision and did not request exclusion of their lands. One Tribe requested exclusion of their lands, except for the portion of tribal land that shares a boundary with nontribal interests.

Our Response: Federal agencies are obligated to consult with Tribes based on their unique relationship with the Federal government. We have evaluated the Tribes' past and ongoing efforts to conserve bull trout and have weighed the benefits of including or excluding tribal lands in the designation under section 4(b)(2) of the Act. We have also taken into consideration the requirements under Secretarial Order 3206; however, any exclusions have been considered only under section 4(b)(2) of the Act, as that is the only statutory authority that provides the Secretary the discretion to exclude areas from critical habitat designation. Please see the *Application of Section 4(b)(2) of the Act* section below for more information regarding this analysis.

Public Comments

(1) *Comment:* We received several comments comparing the 2010 proposed rule to the 2005 final rule. Most pointed out the irregularities in the rulemaking process identified in a December 2008 Interior Department Inspector General's report, and felt that science played a more prominent and effective role in the 2010 proposed rule. Other commenters indicated the more restricted designation in the 2005 final rule was more appropriate.

Our Response: This final rule fully considers the findings in the 2008 Inspector General's report, the language in the court's remand order, and comments we received from peer reviewers and others. This final critical habitat designation for bull trout is based on the best scientific information available, as required by section 4(b)(2) of the Act.

(2) *Comment:* We received many comments that presented biological information relevant to the designation of critical habitat, and site-specific information regarding particular waterbodies. Comments also addressed rangewide issues such as information on biological needs in general, PCEs, and the effects of specific types of actions on bull trout. Issues raised included the threats that contributed to listing bull trout under the Act.

Our Response: We appreciate the information submitted and issues raised. We will address specific issues, including information regarding particular waterbodies and specific threats, in our responses below. In general, past efforts to eradicate bull trout contributed to their decline and led to their protection under the Act. Since the bull trout is now protected under the Act, those eradication efforts can no longer legally occur, and habitat threats are currently the most serious threats. However, we address habitat threats in this final rule.

(3) *Comment:* We received comments on the threat of fine sediment impacts to bull trout stream habitat.

Our Response: Taking measures to limit the introduction of fine sediment in bull trout critical habitat is important. A PCE has been developed to address this specific concern, and there is a continuing need to evaluate and assess site-specific information to determine the effects of any particular Federal action on sediment delivery and bull trout critical habitat, using the best scientific information available.

(4) *Comment:* We received comments and information regarding the cold water requirements of bull trout.

Our Response: Bull trout require among the coldest water temperatures of any native salmonid in the Pacific Northwest, and we have developed a PCE to address this specific need.

(5) *Comment:* We received comments on reservoir operations and their effects on bull trout.

Our Response: In our proposed rule (75 FR 2291, January 14, 2010), we did not mean to imply that reservoir operations would have to be consistently at full pool to avoid adverse modification of critical habitat. Project-specific analyses would be the best tool to identify bull trout critical habitat protection needs with regard to the relevant PCEs in a particular area. We have included clarifying language in this rule to address the issue. See the response to Bureau of Reclamation comment (1) and the *Adverse Modification Standard* section below for additional information with regard to section 7 consultation considerations for bull trout critical habitat.

(6) *Comment:* We received a number of comments recommending the designation of the upper Clark River in Montana between Flint Creek and Warm Springs Creek, based on ongoing restoration efforts directed toward re-establishing a migratory corridor for bull trout and restoring adequate stream flow and temperature regimes. The restoration is anticipated to re-establish a migratory corridor and essential foraging and overwintering habitat for bull trout, and provide additional genetic diversity for bull trout populations that have been fragmented by the construction of Milltown dam for nearly a century.

Our Response: Bull trout are present in the upper reaches of Warm Springs Creek and Flint Creek, tributaries at the upstream extent of this section of the upper Clark Fork River. The likelihood of migratory bull trout occupancy in the upper Clark Fork River has increased as a result of the 2008 removal of Milltown dam. The condition of the physical or biological features essential to the conservation of the species has improved as a result of the dam removal and will continue to improve with the ongoing restoration activities in the Clark Fork River. This area provides an important migratory corridor and will provide for increased genetic exchange between migratory bull trout populations in the Clark Fork River, meets the definition of critical habitat, and meets the selection criteria for inclusion in critical habitat. Consequently, we agree with the commenters that this reach of the Clark Fork River is essential for the conservation of bull trout. The inclusion of this 100.8 km (62.7 mi) reach of the upper Clark Fork River increases the critical habitat designation for the Clark Fork River basin by less than 2 percent. We have long recognized the importance of this reach of the upper Clark Fork River as an historical migratory corridor for bull trout, which we have considered potentially occupied but undocumented bull trout habitat. This area was proposed as critical habitat in the November 29, 2002, proposed rule (67 FR 71331), and identified as Unit 2, Clark Fork River Basin, Subunit iv – Upper Clark Fork River. We did not include this area in the September 26, 2005, final critical habitat designation (70 FR 56212), because at that time we did not find the PCEs present and therefore this area did not meet our selection criteria. No unoccupied habitat was designated in the 2005 final rule. In preparing the January 14, 2010, reproposal (75 FR 2269), we re-examined the record, including the State of Montana's MFISH database, and found that hard documentation of bull trout occupancy of this reach over the last 20 years was lacking. However, the sampling was not comprehensive and we acknowledge that low levels of undocumented bull trout occupancy likely occur in this lengthy stream reach. The determination not to include this reach in the 2010 proposed rule was a difficult choice, based on a decision to not propose any critical habitat in Montana where occupation by bull trout could not be documented with fish survey records or other hard documentation. Due to the known presence of bull trout in the upper reaches of Warm Springs Creek at the upstream extent of this section of the upper Clark Fork River, at least a portion of which are thought potentially represent the migratory life history form, there is further circumstantial evidence that migratory bull trout may temporarily or seasonally occur in this reach of the upper Clark Fork River. Accordingly, section 7 consultation is conducted on Federal actions that may affect bull trout. The likelihood of bull trout occupancy has also increased since 2008, as a result of the removal of Milltown Dam, which removes a barrier to bull trout migration in this reach. Because of the removal of Milltown Dam and the ongoing and planned habitat restoration actions, we no longer believe that the PCEs in this reach of the Clark Fork River are limiting to occupancy by migratory bull trout, on at least a seasonal basis. Based on comments and data we received in response to our request for information in the January 14, 2010, reproposal (75 FR 2269), we now find PCEs present in this area and determine that this area does meet the selection criteria and is essential for the conservation of the species. Therefore, we are including it in our final designation.

(7) *Comment:* We received many comments from a variety of sources suggesting we consider designating critical habitat upstream of Big Falls on the mainstem Deschutes River in Oregon.

Our Response: Under section 3(5)(A) of the Act, specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions under section 4 of the Act can be designated as critical habitat, if such areas are essential to the conservation of the species. We are not designating bull trout critical habitat in the Deschutes River basin upstream of Big Falls on the mainstem Deschutes River. The lower Deschutes River bull trout populations

are some of the healthiest and most stable populations in Oregon, and the designation of unoccupied habitat in this area is not essential to the conservation of the species. However, we have initiated a feasibility assessment to evaluate the capability of the upper Deschutes River to support bull trout, and support recovery of bull trout populations in the upper basin to the extent practicable.

(8) *Comment:* We received several comments related to climate change. Most said that it is an important issue and bull trout may be disproportionately affected because they have the coldest water temperature requirements of any native salmonid in the Pacific Northwest. Some commenters deny that climate change is occurring, question the underlying science, and reject its consideration in this rule.

Our Response: The earth's climate has changed throughout history, and an overwhelming proportion of climate scientists worldwide agree change is continuing today. We acknowledge this is a complex issue, and there may be some uncertainty over all the causes and precise manifestations of change. Given these uncertainties, one objective of this final rule was to identify and protect those habitats that we believe will provide resiliency for bull trout use in the face of climate change. We will undoubtedly have to adapt management approaches as we learn more. We agree that bull trout management actions should stem the impacts of climate change where opportunities to do so exist. Bull trout may be among the species most sensitive to the effects of climate change, and protection of bull trout cold-water habitat would help protect the ecosystems upon which they and other species depend. Some of the least disturbed watersheds may serve this purpose.

(9) *Comment:* We received two requests for an additional public hearing near Portland, Oregon, to supplement the hearing that was conducted in Boise, Idaho, on February 25, 2010. We also received four requests for an extension of the comment period.

Our Response: Because of time constraints related to our court-ordered deadline for submittal of a final rule to the **Federal Register**, we were unable to conduct an additional public hearing. However, we did hold a public meeting near Portland, Oregon, during the public comment period, and reopened the comment period from March 23 through April 5, 2010, to provide additional opportunity for interested parties to provide information to the Service.

(10) *Comment:* We received several comments regarding connectivity of bull trout habitats to provide for migration between key habitat types. The comments either emphasized the need for connectivity to recover bull trout, or expressed concern that in some cases, connectivity could harm bull trout by allowing introgression of invasive species or disease.

Our Response: Bull trout are highly migratory, and connectivity among patches of occupied habitat is essential to their conservation. Accordingly, we are designating critical habitat to facilitate connectivity in this final rule. However, connectivity may be limited in scope and degree in areas where FMO habitat provides the necessary PCEs for only a few months of the year, and perhaps only in higher water flow years. Limited or sporadic historical connectivity is likely reflected in the high degree of genetic distinctness among bull trout populations in relatively close proximity to one another, which is greater than expected when compared to other species, such as salmon and steelhead. However, some degree of connectivity over time may allow refounding of populations that are either at risk of becoming extirpated or that have become extirpated. We agree that in some cases, restoring connectivity might be detrimental to bull trout, if it introduces nonnative predatory or competitive species into those habitats. We will evaluate these areas on a case-by-case basis using the best scientific information available, to ensure we maximize bull trout conservation potential.

(11) *Comment:* We received several comments regarding the extent of critical habitat, specific waterbodies that may or may not be essential, or areas that may or may not have the physical or biological features essential to bull trout conservation.

Our Response: As required by section 4(b)(2) of the Act, we used the best scientific data available in determining areas that contain the features essential to the conservation of bull trout. In occupied habitat, each of the areas we are designating either contains those physical or biological features essential to the conservation of the species, which may require special management considerations or protection, or in the case of unoccupied habitat, has been determined to be essential for the conservation of the species. This final rule applies the best scientific information available to identify those areas, including the extent of critical habitat needed to conserve the species.

(12) *Comment:* We received comments concerning the need for numerical ranges or standards for PCEs, and PCE interpretation.

Our Response: Due to the range of habitat required for bull trout across all types of waterbodies and across the range of the species, we have not identified narrow-range, specific-to-one-area PCEs for the bull trout, but rather have identified broader, more general PCEs that are required for all life-history needs and stages of the bull trout, and which apply throughout the range of the bull trout. Moreover, water quality and quantity and other habitat needs are often influenced by the type of habitat used by bull trout (e.g., spawning and rearing) and season of use (e.g., May or June migratory habitat). Additionally, wet or dry water years may significantly influence the quality of habitat potentially available to bull trout. We have included language in the **Primary Constituent Elements** section of this final rule that identifies the physical, hydrological, and biological conditions the PCEs have been designed to protect, to provide context for PCE interpretation and application.

(13) *Comment:* We received comments related to the role of critical habitat in recovery.

Our Response: Critical habitat designation can contribute to the overall recovery strategy for a species. However, it does not, by itself, achieve all recovery plan goals. In developing this final rule, we considered the conservation relationship between critical habitat and recovery planning. The designation of critical habitat can help prioritize recovery tasks and focus recovery efforts in areas essential for conservation. Habitat restoration actions may compete more successfully for Federal funding if they occur in areas designated as critical habitat for species listed under the Act. Please see the section below on *Relationship of Critical Habitat to Recovery Planning* for additional information.

(14) *Comment:* We received comments related to critical habitat and section 7 consultation requirements.

Our Response: Please see the section below on the **Effects of Critical Habitat Designation** for information related to section 7 consultation requirements.

(15) *Comment:* We received comments regarding the effects of specific actions on bull trout related to stream hydrograph, stream flow, and stream temperature requirements. There was also a concern that maintaining a naturally functioning hydrograph conflicts with protecting spring flows.

Our Response: PCE 7 is designed to address hydrologic functions that

conserve bull trout by identifying the importance of peak, high, low, and base flows that fall within historic and seasonal ranges, or if controlled, minimize flow departures from a natural hydrograph. However, we do not believe maintaining a naturally functioning hydrograph conflicts with protecting natural spring flows. To the contrary, the flexible and inclusive language of PCE 7 can encompass protecting the natural hydrograph associated with these discharges. Since some streams flood annually and others do not, different special management prescriptions may be appropriate, depending on particular circumstances. These special management needs would appropriately be considered during section 7 consultation, as discussed later in this final rule.

(16) *Comment:* We received several comments on the exclusion of specific areas from this designation, with some arguing for exclusion of specific habitats or broader categories of habitats, while others argued against the same.

Our Response: Please refer to the **Exclusions** section below for a detailed discussion of this issue.

(17) *Comment:* Some commenters specifically opposed the exclusion of the lands covered by the Washington State Forest Practices Habitat Conservation Plan (FPHCP) from critical habitat designation. One commenter and the State of Washington supported the exclusion of the FPHCP. Opponents of exclusion commented that the needs of anadromous salmon and steelhead, not bull trout, largely dictated the final forest practice rule set in the FPHCP, and that the forest practice rules are not sufficiently protective of headwater streams and near-surface ground waters, springs, and seeps in headwater catchments. They also stated that Washington's forest land is being converted to other uses at an alarming rate, and that failure to designate critical habitat on lands currently covered by the FPHCP would deprive habitats essential for bull trout recovery from protection. One commenter stated HCPs are not required to provide a net benefit to the species. One commenter stated the FPHCP does not protect bull trout from activities that cause or contribute to global warming and global climate change, and stated the HCP does not protect bull trout or its habitat from the widespread application of pesticides and herbicides that occur on forestlands. They were also concerned the implementation of the HCP is not advancing at an adequate level, and that the lack of progress has been the focal point of attention at the highest levels of the State agencies charged with overseeing its implementation. One commenter stated current economic conditions related to Washington State's budget and reduced Federal funding have resulted in future funding of the adaptive management plan being severely reduced or even unlikely, and that crucial monitoring and adaptive management studies have already been postponed or cancelled by the State.

Other commenters stated critical habitat designation does not provide any greater protection or enhancement of bull trout habitat for forest management activities on private and State lands in Washington beyond what is already provided by the FPHCP, and designating critical habitat would discourage similar partnerships and weaken stakeholder support for the existing plan. They also stated that the Service should concentrate resources on participation and technical support for the FPHCP adaptive management program, rather than expending them on administrative requirements.

Our Response: HCPs are considered one of the tools available that can help effect recovery. In order to obtain a permit under section 10 of the Act, an applicant must meet the issuance criteria identified at 50 CFR 17.32, which include minimizing and mitigating any incidental take of listed species to the maximum extent practicable while conducting their covered activities. One of the commenters noted that HCPs are not required to provide a net benefit; however many HCPs do provide a net benefit compared to the alternative of no HCP and no incidental take permit. The FPHCP rules and program as a whole require the maintenance and restoration of aquatic and riparian habitat. Among the multiple goals of the FPHCP is the goal to restore and maintain riparian habitat on non-Federal forest lands to support a harvestable supply of fish. The FPHCP was developed with an emphasis on salmonids, including bull trout, and focuses on providing needed flows, temperature, substrate, habitat, and connectivity by addressing habitat protection and natural processes and regimes, which benefits bull trout and other native species. The role of adaptive management in HCPs is often poorly understood. In some cases, adaptive management may specify the direction of change either through requiring additional measures or reducing measures. While the Service may at times rely on adaptive management in evaluating an HCP, in the FPHCP, we evaluated conservation measures that were already dictated by the forest practice rules enacted by the State of Washington and by the assurances that the conservation measures would occur. We have reviewed the funding budgeted by the State for adaptive management studies under the FPHCP, and believe that it is adequate for purposes of bull trout conservation. The Service anticipated some delays and implementation issues as a program this large is applied over time, and we continue to monitor the progress of this adaptive program. See the **Exclusions** section in this final rule for additional discussion and evaluation of the benefits of the FPHCP.

(18) *Comment:* We received several comments on the role of Federal lands, most of which requested that we include Federal lands in this designation rather than excluding them as was done in the 2005 final rule. One commenter suggested that designating critical habitat on Federal lands could empower third parties to litigate more effectively.

Our Response: Exclusion of Federal lands from the 2005 final rule was one of the primary reasons for litigation, and one of the primary inconsistencies found by the Inspector General in his 2008 report. As previously discussed, the Service agrees Federal lands should not be excluded from critical habitat designation based solely on large-scale land management plans. In addition, the Service believes by collectively implementing a proactive and collaborative approach to addressing the recovery needs of bull trout, the risk of litigation should be minimized.

(19) *Comment:* We received some comments expressing concern about the effects of wildfire on bull trout and the landscape, and that this designation may impact the ability to manage landscapes susceptible to fire.

Our Response: The Service will continue to facilitate implementation of ongoing or preventative fuel reduction projects through the Act's section 7 consultation requirements, and we have been doing so since bull trout was listed in 1998, and since critical habitat was designated in 2005. These cooperative efforts include annual meetings with action agencies and meetings conducted on a project specific basis.

(20) *Comment:* We received several comments from individual citizens, Native American tribes, States, environmental groups, and groups representing interests such as ranching, logging, and agriculture, which supported protection of bull trout habitat, and doing so in a manner sensitive to the needs of local residents and resource users.

Our Response: The Service agrees that protecting bull trout critical habitat will have multiple, wide-ranging benefits,

and commits to working with all interested parties to protect habitat in a way that respects the interests and needs of local residents and resource users.

(21) *Comment:* We received several comments discussing the relationship between bull trout and other species, including other anadromous fish; the impacts of bull trout on other species; and the impacts of other species on bull trout.

Our Response: Protecting ecosystems upon which bull trout depend may also conserve other native species that share those ecosystems. We believe efforts to conserve bull trout will generally be complementary to efforts to conserve other native species that coevolved with bull trout, including salmon, steelhead, and Klamath Basin suckers, because each species would have developed traits and behaviors allowing them to coexist. Anadromous fish likely provided a significant input of energy into the ecosystems upon which bull trout depend, but we do not fully understand how their reduction or loss affects bull trout populations. However, we believe the restoration of ecosystem components and the implementation of salmon recovery actions will also help recover bull trout populations.

(22) *Comment:* We received comments on threats posed by invasive species and concerns that further spread of invasive species may affect some bull trout populations. Commenters also stated that restoring each of the habitat components that favor bull trout may reduce the competitive effects in bull trout habitat where invasive species are already present.

Our Response: Invasive species include potential competitors such as brook trout and brown trout, which represent a threat to bull trout populations. In some cases, currently isolated populations could be threatened if restoring connectivity allows invasive species to access currently isolated habitats. The Service will consider and encourage management of bull trout populations to address this concern, and is working with Federal partners to better understand why bull trout and invasive competitors are able to coexist in certain areas and not in others. The results of this research will help to inform recovery actions with respect to the removal of nonnative species and bull trout recovery.

(23) *Comment:* Some commenters stated that the effects of livestock grazing can negatively impact bull trout habitat quality. Alternatively, other commenters believe grazing and habitat conservation can co-occur.

Our Response: The bull trout listing rule for the Klamath River and Columbia River Distinct Population Segment (63 FR 31647, June 10, 1998), and the Jarbidge River Distinct Population Segment (64 FR 17110, April 8, 1999) acknowledge that livestock grazing contributed to the decline in bull trout abundance and distribution. Depending on how it is managed, grazing in riparian areas can reduce cover, reduce streambank stability, increase stream temperatures, reduce fish prey, and change stream geometry by making channels wider and shallower. We do not believe livestock grazing and fish and fish habitat conservation are mutually exclusive in all cases, provided appropriate special management needs for particular areas are implemented.

(24) *Comment:* We received comments expressing concern about the potential effects of timber harvest and mining on bull trout habitat, and effects of critical habitat designation on those activities.

Our Response: The Service agrees that forestry and mining practices can impact bull trout habitat. We will continue to work cooperatively with land managers and operators to implement bull trout conservation measures in a manner consistent with the operators' needs to the maximum extent practicable.

(25) *Comment:* We received several comments regarding the public participation process for this rule. Some commenters expressed concern over the opportunity to comment, some expressed concern with the quality of maps provided in the proposed rule, some expressed frustration with having to navigate the Federal website to submit their comments, and others stated that compliance with the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 *et seq.*) was required.

Our Response: Service outreach efforts began in late 2009 and continued in early 2010. We issued press releases, published legal notices in local newspapers, contacted and coordinated with Native American Tribes, met with State officials, and communicated through a variety of means to individuals with interest in commenting on the rule. The initial comment period was extended to accommodate further input from interested private individuals, State and Federal agencies, or others. One public hearing was conducted in Boise, Idaho, and several public meetings were conducted at centralized locations within areas affected by the critical habitat designation. With regard to NEPA, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not prepare environmental analyses as defined by NEPA in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt*, 48 F.3d 1495 (Ninth Cir. 1995), cert. denied 516 U.S. 1042 (1966)). As suggested by commenters, the Service has published simplified maps in the **Federal Register** with this final rule, and has made more detailed maps available on its web site, *http://www.fws.gov/pacific/bulltrout/*, or by request from the Oregon Fish and Wildlife Field Office, 2600 S.E. 98th Ave, Suite 100, Portland, OR 97266, telephone 503-231-6179.

(26) *Comment:* We received several specific comments on road impacts to bull trout habitat.

Our Response: Roads and other activities above the ordinary high water mark or bankfull elevation of streams, and upstream in watersheds can directly or indirectly impact bull trout habitat in streams. The construction, use, and maintenance of roads may impact bull trout habitat in several ways; for example, roads can act as vectors for introducing sediment to streams and road culverts can block fish passage. To protect bull trout habitat, the Service will continue to evaluate impacts on a site-specific basis and develop appropriate avoidance, minimization, and mitigation measures during section 7 consultation on Federal actions.

(27) *Comment:* We received comments supporting the more prominent role science played in this designation when compared to the 2005 designation, and comments expressing concern over how science was used to identify essential habitat and PCEs. Concerns were also expressed regarding the differences between the 2005 designation and this designation, and the amount of critical habitat proposed in some areas.

Our Response: We believe the information we relied on to develop this final rule is consistent with accepted scientific standards. The rationale behind the differences between the 2005 final rule and the 2010 proposed rule are explained in the *Summary of Changes from the Previously Designated Critical Habitat* of the proposed rule (75 FR 2273, January 14, 2010), and are primarily associated with fewer section 4(b)(2) exclusions in this rule compared to the 2005 rule. Additional scientific information from peer reviewers, State

fish and wildlife agencies, and Federal agency biologists was used to identify areas with the physical or biological features essential to the conservation of bull trout and additional unoccupied areas essential to the conservation of bull trout in each of the critical habitat units.

(28) *Comment:* We received several comments regarding special management needs for bull trout, most of which addressed concerns over what may be required and how we would regulate management activities to conserve bull trout. We also received comments related to the impact of critical habitat designation on private lands.

Our Response: In occupied critical habitat areas, special management considerations or protection are required. In some cases, (e.g., Congressionally-designated Wilderness Areas), continued implementation of wilderness designation management measures may be necessary to ensure adequate protection of key spawning and rearing streams, but in other cases avoiding creation of fish passage impediments may be required. Broad prohibitions of any specific actions across the range of bull trout would be inappropriate because the effects of actions can vary widely throughout the range of the species, and the special management needs in those areas may vary accordingly. Although special management considerations and protections are not implicitly required in unoccupied critical habitat areas, we will work collaboratively with Federal agencies to identify ways to ensure unoccupied critical habitat can continue to serve its intended conservation purposes, in light of agency actions that may be proposed in those areas.

Designating critical habitat will help inform private landowners more specifically of the needs and opportunities for bull trout conservation. Private landowners can protect fish and wildlife habitat quickly and efficiently, and they often choose to do so, sometimes in cooperation with and with support from the Service and other government agencies. We agree with the need to work cooperatively with landowners to conserve bull trout.

(29) *Comment:* We received several comments advocating for and against designating unoccupied critical habitat, and comments questioning the regulatory effects of unoccupied habitat designation on Federal agency actions.

Our Response: The Service believes it is essential to designate unoccupied habitat in order to achieve bull trout recovery. In most cases, this includes lower elevation main stem river FMO habitats important for seasonal connectivity among existing upstream populations. We anticipate that many of these FMO habitats may only be important during certain times of year to support bull trout migration. With regard to the regulatory effect of designating unoccupied habitat, when consulting under section 7(a)(2) of the Act in designated critical habitat, independent analyses are conducted for jeopardy to the species and adverse modification of critical habitat (75 FR 2291, January 14, 2010). In unoccupied critical habitat, Federal agencies may need to implement measures to avoid the destruction or adverse modification of critical habitat to ensure the affected critical habitat area can continue to serve its intended conservation role for the species. Any management needs would be addressed on a case-by-case basis, relative to the specific Federal action under consultation.

(30) *Comment:* We received several comments suggesting that rather than designating critical habitat, we should rely on other protective measures to meet the need for bull trout conservation. Examples included measures that protect critical habitat designated for salmon and steelhead species, State forest practice rules, Federal land management protections, and other commitments to conserve fish habitat within the range of bull trout.

Our Response: The Service is aware that several other regulatory protections are currently in place in many parts of the range of bull trout, and we appreciate those efforts. We evaluated many of the protective measures suggested by commenters within the context of section 4(b)(2) of the Act, and do not believe any significant new regulatory requirements will result from designating bull trout critical habitat. Nonetheless, under section 7(a)(2) of the Act, Federal agencies are required to ensure that actions they fund, authorize, or carry out are not likely to destroy or adversely modify critical habitat. There may also be educational benefits associated with informing the public of those areas that are most important to bull trout conservation.

(31) *Comment:* We received several comments on the effects of water use on bull trout, and the regulatory effect the designation of critical habitat could have on water use. Most commenters were concerned that their ability to use water for irrigated agriculture might be impacted by this designation, and recommended that we carefully evaluate effects of water use on a site-specific basis, and work closely with irrigators and State agencies.

Our Response: Any water use effects to designated critical habitat from Federal actions will be addressed on a case-by-case basis through consultation with Federal agencies under section 7 of the Act. The Service intends to work cooperatively with Federal agencies, irrigators, and State agencies to ensure bull trout conservation needs are compatible with their program needs and interests to the maximum extent practicable. In our experience, working collaboratively to address bull trout stream flow requirements provides significant conservation benefits to bull trout. Special management needs in bull trout critical habitat areas would be addressed on a case-by-case basis, but are generally expected to be similar to existing measures that provide protection for this species.

(32) *Comment:* One commenter stated that, in the 2005 rule, the Service excluded a segment of the Clark Fork River in Montana from critical habitat because that segment was in a designated Superfund site, subject to cleanup under the Superfund statute, but the mainstem Coeur d'Alene River was proposed as critical habitat in this rule, even though it, like the Clark Fork, is a listed Superfund site. The commenter stated that the Service has never explained its inconsistent treatment of the Clark Fork River and the Coeur d'Alene River Superfund sites.

Our Response: We disagree that the 2005 final critical habitat rule excluded a segment of the Clark Fork River because the segment was in a Superfund site, subject to cleanup under the Superfund statute (42 U.S.C. 103, §§ 9601–9628). The 2005 final critical habitat rule states that the segment of the Clark Fork River in question was excluded because it did not have sufficient PCEs to support at least one of the species' essential biological activities, not because it was a Superfund site. In contrast, the mainstem Coeur d'Alene River is identified as a migratory corridor and provides the PCEs necessary for seasonal use (primarily spring and late fall) by migrating bull trout.

Comments on the Draft Economic Analysis

The Service published a draft economic analysis (DEA) concurrent with the proposed rule (75 FR 2269, January 14, 2010). Of the 1,111 public comments we received, 128 were on the DEA. We initially grouped these comments into two main categories: comments on the economic analysis, and comments on economic costs and benefits of critical habitat. We then

performed a separate analysis of all these comments, and further broke down subject matter into 34 separate responses. Comments from each of the 34 economic-related categories are summarized, below, with the Service's responses.

(1) *Comment:* One commenter was concerned that the baseline approach to the economic analysis has been rejected by courts.

Our Response: As stated in Chapter 2 of the final economic analysis (FEA), the U.S. Tenth Circuit Court of Appeals instructed the Service in 2001 to conduct a full analysis of all of the economic impacts of proposed critical habitat, regardless of whether those impacts are attributable co-extensively to other causes. Since that decision, however, courts in other cases have held that an incremental analysis of impacts stemming solely from the critical habitat rulemaking is proper. For example, in the March 2006 ruling that the August 2004 critical habitat rule for the Peirson's milk-vetch (*Astragalus magdalenae* var. *peirsonii*) (69 FR 47329, August 4, 2004) was arbitrary and capricious, the United States District Court for the Northern District of California stated, "That case also involved a challenge to the Service's baseline approach and the court held that the baseline approach was both consistent with the language and purpose of the Act and that it was a reasonable method for assessing the actual costs of a particular critical habitat designation. . . 'To find the true cost of a designation, the world with the designation must be compared to the world without it.'" More recently, in *Arizona Cattle Growers' Association* v. *Salazar*, No. 08-15810 (9th Cir. 2010) (Mexican spotted owl 2004 critical habitat designation), the Court of Appeals upheld the Service's use of the baseline approach in preparing the economic analysis and making the ultimate section 4(b)(2) decision. The Ninth Circuit disagreed with the Tenth Circuit's opinion requiring a co-extensive analysis. The Ninth Circuit thought it was more logical to use the impacts resulting from listing the species as a baseline and to limit consideration of areas for exclusion to those where there were impacts above those imposed by listing. It noted that considering costs imposed by the listing of the species made no sense because those listing costs would still be present if the area in question were excluded from critical habitat. Also, on May 27, 2010, the U.S. District Court ruling in *Otay Mesa Property* v. *USDOI* – CV 08-383(RMC)(D.D.C.) stated in part that "FWS has explained its preference for the baseline method and fully explained the analyses that underlie the critical habitat designation for the San Diego fairy shrimp. It need do no more."

In order to address the divergent opinions of the courts and provide the most complete information to decision-makers, the final economic analysis reports both (a) the baseline impacts of bull trout conservation from protections afforded the species absent critical habitat designation; and (b) the estimated incremental impacts precipitated specifically by the designation of critical habitat for the species. However, the data used in determining our regulatory flexibility analysis reflects only the incremental costs which may be attributable to the designation of critical habitat for the bull trout.

(2) *Comment:* One commenter stated that the economic analysis did not consider the potential for the curtailment of mining production and employment on the main stem and North Fork Coeur d'Alene River, or the upstream tributaries. The commenter also noted the potential for impacts to waste water treatment plants, storm water requirements, other point and nonpoint source discharges, and potential impacts to plans for a Superfund cleanup site located in the Coeur d'Alene basin, which include plans for bank stabilization, channel realignment, and dredging projects.

Our Response: The mainstem Coeur d'Alene River and North Fork Coeur d'Alene Rivers have been designated as critical habitat for bull trout since September 26, 2005 (70 FR 56212). This critical habitat revision extends the designation into several tributaries of the North Fork Coeur d'Alene and St. Joe Rivers, but does not revise existing critical habitat on the mainstem or North Fork. The commenter did not present any substantive economic information regarding potential impacts of extending the designation, and we have no data indicating that designating critical habitat in the tributaries would have any impacts on mining or other activities beyond those attributable to listing.

(3) *Comment:* Several commenters stated that the economic analysis should incorporate the recent ruling in the Ninth Circuit Court of Appeals, *Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service,* 378 F.3d 1059 (9th Cir. 2004), amended by 387 F.3d 968 (9th Cir. 2004). Specifically, commenters point out that the court decided "the jeopardy standard should be applied with reference to whether the proposed action appreciably diminishes the likelihood of both the survival and recovery of a species. By contrast, the prohibition against destruction or adverse modification of critical habitat is triggered at a lower threshold—when sufficient critical habitat is lost so as to threaten a species' recovery even if there remains sufficient critical habitat for the species' survival." Commenters state much of the analysis is predicated on the idea that a project that would likely jeopardize bull trout would also likely adversely modify its critical habitat and vice versa. Commenters stated that because the jeopardy standard and the adverse modification standard are not synonymous, the DEA should not rely on the assumption that there will be few incremental costs in occupied areas.

Our Response: As stated in Chapter 2 of the FEA, incremental effects of critical habitat designation are determined using the Service's December 9, 2004, interim guidance on "Application of the 'Destruction or Adverse Modification' Standard Under section 7(a)(2) of the Endangered Species Act" and information from the Service regarding what potential consultations and project modifications may be imposed as a result of critical habitat designation over and above those associated with the listing of bull trout (Appendix E of the final economic analysis). Specifically, in *Gifford Pinchot Task Force* v. *United States Fish and Wildlife Service*, the Ninth Circuit invalidated the Service's regulation defining destruction or adverse modification of critical habitat, and the Service no longer relies on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. In occupied critical habitat, it is unlikely that a section 7 consultation would identify a difference between measures needed to avoid the destruction or adverse modification of bull trout critical habitat from measures required to avoid jeopardizing the species. This conclusion is based on numerous regulatory protections and associated conservation activities that are already occurring in those areas for listed salmon and steelhead, as discussed in the FEA. Alternatively, in unoccupied critical habitat, a jeopardy analysis would not be conducted during section 7 consultation. However, measures to avoid destruction or adverse modification may be necessary to ensure unoccupied areas can continue to serve their intended conservation role for the species.

(4) *Comment:* Several Tribes submitted comments expressing concern about the potential economic impact of the designation on tribal lands. One Tribe requested the

economic analysis specifically address the economic impacts on the Tribe, the Reservation, and tribal trust resources, taking into account "the unique nature of Reservation economies," and stated "in particular, the analysis must fully analyze the Tribe's ability to use its water, including potential future uses and the effective reallocation of water rights priorities that may be caused by the designation and the cost to the Tribe of such."

Our Response: Under Secretarial Order 3206, we consult with affected Indian Tribes when considering the designation of critical habitat in an area that may impact tribal trust resources, tribally-owned fee lands, or the exercise of tribal rights. The Secretarial Order states that critical habitat shall not be designated in such areas unless it is determined essential to conserve a listed species, and that in designating critical habitat, the Services shall evaluate and document the extent to which the conservation needs of the listed species can be achieved by limiting the designation to other lands. To estimate the incremental costs of conservation efforts, the economic analysis focuses on activities in areas considered to be unoccupied by bull trout. Incremental costs are those efforts above and beyond the costs undertaken due to existing required or voluntary conservation efforts being undertaken due to other Federal, State, and local regulations or guidelines. In particular the analysis focuses on those areas that do not overlap with salmon critical habitat, since the primary constituent elements identified for salmon are similar to those identified for bull trout, and additional conservation measures in those areas would unlikely be necessary.

To the extent possible, potential impacts to tribal areas are considered in the FEA as part of the unit in which the tribal lands are located. For example, section 7 consultations that may have been undertaken with tribal entities have been included in calculations of administrative costs for applicable units. Information provided in public comments related to particular tribal concerns has been incorporated into Chapters 3 and 4 of the FEA.

(5) *Comment:* Several commenters stated the economic analysis fails to recognize the benefits that might derive from critical habitat designation. Other commenters state it is unclear why benefits have not been quantified. Several comments indicated the Service should have presented a cost-effectiveness analysis or a cost/benefit analysis. A few comment letters also state that by analyzing only the costs associated with the designation, the Service cannot meet the requirements of the Act, and that without analyzing benefits it is arbitrary for the Service to exclude areas from critical habitat designation on the basis of economic impacts.

Our Response: There are no areas proposed as critical habitat that are being excluded from designation on the basis of economic impacts. Chapter 6 of the DEA discusses the types of benefits that could result from designation of critical habitat for bull trout and explains methods that could be used to estimate benefits and the data that would be required to calculate such estimates. As discussed in Chapter 6 of the DEA, data are not currently available to estimate the incremental economic benefits that could result from designation of critical habitat for bull trout. The primary intended benefit of critical habitat is to support the conservation of endangered and threatened species. Thus, attempts to develop monetary estimates of the benefits of the bull trout critical habitat designation would focus on the public's willingness to pay to achieve the conservation benefits to the bull trout resulting from this designation. Quantification and monetization of species conservation benefits requires information on the incremental change in the probability of bull trout conservation that is expected to result from the designation. No readily available models or studies exist that provide such information. Even if this information existed, the published valuation literature does not support monetization of incremental changes in conservation probability for this species. Similarly, none of the alternative methods suggested (e.g., methods to evaluate losses from fish kills, the Service's Habitat Evaluation Procedures Model, fish market or restaurant value, and replacement cost) would overcome the fact that information is not available to predict the extent and timing of bull trout recovery that could result from designation of critical habitat. The Office of Management and Budget has acknowledged that it may not be feasible to monetize or quantify benefits because there may be a lack of credible, relevant studies, or because the agency faces resource constraints that would make benefit estimation infeasible (U.S. OMB, "Circular A-4," September 17, 2003, available at *http://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a004/a-4.pdf*).

(6) *Comment:* Several commenters suggested that economic benefits of a restored bull trout fishery have been estimated to be $215 million, based on an economic benefits section that was removed from the previous draft 2004 economic analysis.

Our Response: The Service removed the benefits analysis from the 2004 DEA because of concerns from the Office of Management and Budget (OMB) and the Department over the contingent valuation and benefits transfer methods used. A contingent valuation involves asking someone how much they would pay to continue a specific activity that is threatened by pollution or other factors. For example, one might ask an angler how much he or she would spend to continue fishing for bull trout in clean rivers. Some economists doubt the accuracy of such analyses because of their hypothetical nature and because respondents do not have to follow up their answers with actual payments. Therefore, they may tend to over-value the benefit. The 2004 DEA's discussion of the value of bull trout recreational fishing was a benefits-transfer analysis. A benefits-transfer analysis uses research conducted for one species or purpose to extrapolate results for another species or purpose. OMB's guidelines on the use of benefits transfer state that although benefit-transfer can provide a quick, low-cost approach for obtaining desired monetary values, the methods are often associated with uncertainties and potential biases of unknown magnitude. It should therefore be treated as a last resort option and not used without explicit justification (OMB Circular A-4). As such, these estimates are not included in the FEA. Chapter 6 of the DEA discusses the types of benefits that could result from designation of critical habitat for bull trout and explains methods that could be used to estimate benefits and the data that would be required to calculate such estimates. As discussed in Chapter 6 of the DEA, the Service believes that sufficient data are not currently available to enable us to estimate the incremental benefits that could result from designation of critical habitat for bull trout. Specifically, information is not available to predict the extent and timing of bull trout recovery that could result from designation of critical habitat.

General Comments on Economic Analysis

(1) *Comment:* Several commenters believed the DEA failed to consider the full extent of potential impacts that may occur as a result of the designation of critical habitat. Some commenters stated the DEA only addresses impacts to Federal agencies, and does not consider other impacts to private landowners or

the costs of recovery. Other commenters stated that the DEA did not consider additional impacts to activities such as flood control, including the increased risk of catastrophic flood; and fire management.

Our Response: Chapter 5 of the FEA estimates the costs associated with section 7 consultation for the bull trout, while Chapter 4 discusses potential incremental impacts (i.e., impacts that are not expected to occur absent critical habitat). The FEA quantifies potential impacts to private landowners, including timber companies, cattle ranchers, crop farmers, and mining companies, that may be affected by the designation. Exhibit 4-4 of the FEA outlines potential conservation measures, affected action agencies, and affected third parties.

The FEA considers impacts that are probable and reasonably foreseeable. While the FEA does not estimate impacts associated with damage resulting from catastrophic flood or fire events, this type of catastrophic event is largely unpredictable. Moreover, the analysis assumes the relevant agencies actively manage to prevent these events, and that these management actions will not be precluded by the designation. The analysis quantifies the potential costs to these agencies of implementing project modifications as well as undergoing section 7 consultation.

Specifically, administrative costs associated with considering possible impacts to fuels reduction and other fire management activities are considered in Chapter 5 of the FEA. As noted in Exhibits D-2 through D-4, more than 21 formal section 7 consultations, 38 informal consultations, and 12 technical assistance efforts are forecast annually related to forest management activities. In addition, forest management costs as quantified in Chapters 3 and 4 of the FEA include project modifications associated with fuel reduction projects, including biologist monitoring time for work occurring within buffer zones.

Administrative costs associated with flood control, bank stabilization, and other instream construction work, are included under "other activities" in Chapter 5 of the FEA. As noted in Appendix D, more than 325 section 7 actions are forecast for "other activities." Potential incremental project modifications associated with flood control activities are summarized in section 4.1 of the FEA.

(2) *Comment:* A number of commenters noted the proposed designation is likely to have a significant economic impact, citing a potential for $1 billion in impacts. Given the current state of the economy, other commenters expressed concern about impacts related to bull trout conservation placing additional stress on already economically vulnerable industries and areas. Several commenters stated that funds spent on bull trout protection efforts would be better used for other purposes.

Our Response: The Service acknowledges that the current economic situation creates conditions in which local and regional economies may be less able to absorb any additional regulatory burden. However, this analysis examines a 20–year timeframe, with expected impacts distributed across the entirety of this time period. Moreover, incremental impacts are expected to be relatively small, at approximately $5 to $7 million a year, distributed across 87 counties and four States. Finally, the bulk of these incremental impacts are likely to be borne by Federal and State agencies rather than private landowners. While the analysis also forecasts the potential for approximately $100 million in annualized baseline costs, these impacts are expected to occur regardless of critical habitat designation for bull trout.

(3) *Comment:* One comment suggested the DEA overstated incremental conservation costs associated with the proposed critical habitat and provided various examples to illustrate this. The comment states the range of annualized incremental costs should have been narrower, and that certain costs are inappropriately included as incremental conservation costs. The commenter further states mitigation costs for sediment controls should not be considered incremental since they would be incurred due to forest management practices already in place. Also, the comment states incremental costs above Condit Dam should not be included since this dam is scheduled for removal.

Our Response: As described in section 4 of the FEA, the analysis of incremental costs focuses on identifying costs that would be associated with unoccupied critical habitat designated in areas that do not overlap with salmon habitat. The range of incremental costs is due to various uncertainties underlying the expected types and costs of conservation measures. Where reliable information was available to narrow this range it was incorporated in the analysis. However, as discussed in the 2004 final economic analysis for the final Columbia and Klamath DPS critical habitat designation (69 FR 59995, October 6, 2004), in the case of costs associated with potential changes to irrigation withdrawals, the likelihood of these costs occurring is not known, leading us to estimate a wide range of impacts. Similarly, we estimated a range of incremental costs associated with forest management projects because the exact scope and type of projects were uncertain. Due to these uncertainties, the high-end scenario may overstate incremental impacts. While there is uncertainty in the estimates of incremental conservation costs presented in the DEA, the Service believes these estimates to be based on the best information currently available, and has made corrections as appropriate based on information provided in public comments.

As discussed in Chapter 3 of the FEA, forest management conservation costs associated with baseline regulations include the Idaho, Washington, and Oregon Forest Practices Acts, and many other Federal regulations. The methodology applied in the analysis was designed to separate out as incremental those costs that would not be incurred but for the critical habitat designation. Thus, based on historical consultation efforts and discussions with the U.S. Forest Service, forecast incremental forest management conservation costs are those costs associated with section 7 consultations that would not occur but for the designation of bull trout critical habitat in unoccupied areas.

We agree with the commenter that once the Condit Dam has been removed, there will not be incremental impacts associated with the area above the dam. As discussed in the FEA (section 4.2.2), incremental impacts in the Lower Columbia River Basin unit are expected to minimal. Once the Condit Dam is removed, projects will need to consider impacts to listed salmon species as well as bull trout.

(4) *Comment:* Several commenters indicated the DEA should not rely on the 2004 and 2005 economic analyses because the information is out of date and because national and regional economies have changed drastically since these analyses were published. Another commenter stated the DEA does not account for the drastic economic downturn in the Northwest, and provided information regarding how the timber industry has changed in the recent past. Also, this commenter indicates the use of the GDP deflator is not appropriate and the DEA should use a more up-to-date regional factor to convert costs to 2010.

Our Response: In developing the DEA, research was conducted to ensure that the conservation costs forecast in the earlier 2004 and 2005 economic analyses were applicable. Where more

recent relevant information was available, this was incorporated, as appropriate. The 2004 final economic analysis of the Columbia and Klamath populations critical habitat designation was reviewed by three independent technical advisors: Dr. Joel Hamilton, Emeritus Professor of Agricultural Economics and Statistics, University of Idaho; Dr. Lon Peters, president of Northwest Economic Research, Inc., a Portland-based firm that provides economic consulting services to electric utilities; and Dr. Roger Sedjo, senior fellow and the director of Resources for the Future's forest economics and policy program. Similarly, the 2005 economic analysis of the Coastal-Puget Sound, Jarbidge River, and Saint Mary-Belly River populations final critical habitat designation was peer reviewed by Dr. Peters and Dr. Hamilton, as well as by Dr. Bruce Lippke, Professor Emeritus School of Forest Resources, University of Washington. Feedback from these reviewers was incorporated into the 2004 and 2005 final economic analyses as appropriate. The information provided by the commenter regarding changes in the timber industry consisted of articles published in 1999 and 2000, prior to 2004 and 2005 when the original research for this FEA was conducted, and as such, we did not use this information to update the report.

No specific information was provided regarding how the economic downturn in the Northwest is different than the economic conditions in the rest of the country, or how this downturn should be factored in differently in the DEA for the bull trout. The commenter did not provide any regional conversion factor, as suggested, which we could evaluate. Given the large geographic scale of this designation and the types of potential impacts, we determined that the national GDP deflator was the most appropriate figure for use in inflating the conservation costs. We believe we have taken the correct approach by updating costs to current dollars since the previous reports by using the GDP deflator, which takes into account the current state of the national economy.

(5) *Comment:* Several comments indicated confusion about what conservation costs were included as baseline costs. In particular, one commenter is concerned that the DEA did not assess potential economic impacts stemming from State laws that limit activities in designated critical habitat areas. A comment indicated that the DEA did not take into account land and resource management plans (i.e., Land and Resource Management Plans (LRMP) and Resource Management Plans (RMP)) as part of the baseline regulatory conditions. While one commenter is concerned that the DEA did not take into account baseline impacts that could result from reinitiated consultation on the Washington Forest Practices Habitat Conservation Plan (FPHCP), another commenter indicated that costs associated with HCPs should not be included in the analysis. Another commenter notes that it is unclear whether costs associated with the bull trout critical habitat finalized in 2005 are included in the baseline. Various other commenters provided details on baseline conservation costs that were not included in the DEA. In particular, one commenter notes that they have incurred significant expenses providing protection to bull trout under the Idaho Forest Practices Act since 2004, which should have been included in baseline impacts.

Our Response: The State laws that may limit activities in designated critical habitat are discussed in section 3 of the FEA. The analysis considers State laws, LRMPs, and RMPs as part of the baseline regulatory environment. LRMPs and RMPs are generally developed under the Federal Land Policy and Management Act (43 U.S.C. 1701 *et seq.*) listed in Exhibit 3-4. As discussed in section 5.2.2, incremental administrative costs quantified in the FEA include administrative costs associated with reinitiated consultations, such as reinitiation of consultation on the FPHCP. However, incremental conservation costs associated with reinitiation of consultation for the FPHCP are not anticipated, and therefore none are quantified. As discussed in section 2.3.2 of the FEA, no specific plans to prepare new HCPs in response to this critical habitat designation were identified; therefore, no conservation costs associated with HCPs are included in FEA.

Text has been added to section 2 of the FEA to clarify that the analysis considers and estimates the impacts of the rule as proposed and as if the existing 2005 critical habitat designation did not exist. In other words, this analysis considers and estimates the impacts associated with designating areas as critical habitat versus not designating these areas. This analysis is intended to assist the Secretary in determining whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation. These particular areas also include those already designated as critical habitat under the 2005 designation and which are subject to re-examination by the Secretary.

The commenter is correct that the analysis does not fully account for nor include all baseline costs. Section 2.3 of the FEA discusses the Service's approach to conducting the economic analysis and notes that due to extensive overlap between the current proposed designation and the past bull trout critical habitat proposals, and due to the existence of two detailed economic analyses of those past proposals, the FEA focuses on incremental impacts expected to occur after we finalize this designation of critical habitat. Because baseline costs are not solely attributable to the proposed designation, they are considered in the FEA primarily for purposes of providing context, while the incremental impacts are considered to be of primary importance for decision-making purposes. As discussed in section 3.3.1 of the FEA, costs associated with not-before-analyzed occupied areas as well as unoccupied habitat that overlaps with salmon habitat are included in the baseline, but were not expressly quantified in the current FEA. Nonetheless, where additional relevant information on baseline costs not captured in the report was provided in the public comments, it has been added to the FEA.

(6) *Comment:* Several commenters were concerned about potential costs to property owners that could result from the uncertain nature of future regulation. One commenter was concerned that critical habitat designation will result in decreased property values. In particular this commenter states that with the Act's regulation in the background it is reasonable to expect reduced property values of $100 per acre or more. This commenter states that a loss of $100 per acre could reduce their property values by $80 million in Idaho. On the other hand, another commenter states that impacts related to stigma and regulatory uncertainty are unlikely. This commenter further suggests that critical habitat could increase property values, for example by increasing the likelihood of Federal or State subsidies for conservation projects, or by increasing interest in the property for purchase for conservation easements.

Our Response: Stigma and uncertainty impacts are discussed in section 2.3.2 of the FEA. While there is potential for uncertainty impacts associated with the designation of critical habitat for bull trout, as discussed in the FEA, information is not available to quantify these impacts. Thus, impacts related to uncertainty are not calculated in the FEA. The FEA does not predict or

quantify any impacts related to stigma that could result from the designation of critical habitat for the bull trout. As discussed in the FEA, public attitudes about the limits or restrictions that critical habitat may impose can cause real economic effects to property owners, regardless of whether such limits are actually imposed. However, as the public becomes aware of the true regulatory burden imposed by critical habitat, the impact of the designation on property values may decrease. The analysis considers the implications of public perceptions related to critical habitat on private property values within the proposed designation.

The FEA finds that the bull trout critical habitat designation is unlikely to cause property value losses because much of the property proposed for designation is already being managed in ways consistent with what would be required if adjacent streams were designated bull trout critical habitat. For example, as noted as in the FEA, there are numerous baseline regulations in place that provide protections for bull trout and its critical habitat including conservation protections for salmon and steelhead. In addition, most of the lands are currently occupied by bull trout (96 percent), and 87 percent of the proposed critical habitat was included in previous critical habitat proposals. Thus, given the history of regulation and baseline protections already in place, property value impacts resulting from this critical habitat designation are not considered reasonably foreseeable. The commenter did not provide supporting information for the estimate that critical habitat results in reduced property values of $100 per acre; thus the validity of this estimate cannot be evaluated.

(7) *Comment:* Several commenters noted the DEA did not provide estimates of impacts at a detailed geographic level. As a result, the commenters could not determine how the designation may affect specific stream segments and geographic areas (e.g., individual counties).

Our Response: The FEA presents impacts based on the 32 units outlined by the Service in the proposed rule. Because the analysis covered almost 37,000 river kilometers (km) (23,000 miles (mi)) and more than 200,000 hectares (ha) (500,000 acres (ac)), and followed a 20–year time horizon, project forecasts and other data were not available at a sufficiently specific level to project impacts by individual stream mile. To the extent possible, the FEA identifies costs to specific areas when information was available. Where potentially affected projects or sites were identified, the FEA attributes impacts associated with these projects to the relevant unit. For example, project modifications associated with facilities that form part of the Federal Columbia River Power System are attributed to the relevant units. Other impacts that are expected to fall on specific types of lands (e.g., lands managed by the U.S. Forest Service) are distributed across the designation based on river mile.

(8) *Comment:* Several commenters stated the DEA failed to consider impacts on economic activities occurring upstream or downstream of critical habitat areas.

Our Response: The DEA considers potential impacts to activities that may threaten the bull trout as identified by the Service. As discussed in section 2.3.2, the analysis considers indirect impacts to the extent it is possible to identify these types of impacts. Additional detail has been added to Chapters 3 and 4 of the FEA qualitatively discussing potential impacts on upstream and downstream activities. Since 96 percent of designated habitat is occupied by bull trout, any incremental effect of this regulation protecting bull trout habitat would likely be small. However, given data limitations and geographic scope, the DEA analysis does not answer the question of whether impacts to mining or other upstream operations are likely (i.e., the probability of such impacts), or define the expected magnitude of these impacts in any one area.

(9) *Comment:* A commenter states that the numbers in the 2009 report cannot be replicated from the results in the 2004 report.

Our Response: There are several important reasons why the results of the previous economic analyses are not directly transferable to the current FEA. In particular, to update conservation costs forecast in previous reports, we had to account for three major differences between the current and previous reports. First, the geographic distribution of the proposed designation and unit definitions are different. Second, the framework underlying the economic analysis has changed. Previous reports included co-extensive costs, whereas the current FEA distinguishes between baseline and incremental costs. Third, the timeframe covered by the current analysis has been expanded to 20 years. In order to assist readers in understanding how the previous results are allocated to the new critical habitat units, we have added an appendix to the FEA providing additional information on the connections between previous reports and the current one. With the addition of this appendix, we believe all of the relevant assumptions and information used to predict the baseline and incremental costs are available in the 2010 FEA and the 2004 and the 2005 final economic analyses of bull trout critical habitat.

(10) *Comment:* A commenter notes the source of the 3 and 7 percent discount rates applied in the previous economic analyses is not explained.

Our Response: Information has been added to Chapter 2 of the FEA to explain the source of the 3 and 7 percent discount rates applied in the analysis. To discount and annualize costs, guidance provided by the Office of Management and Budget (OMB) specifies the use of a real rate of 7 percent. In addition, OMB recommends conducting a sensitivity analysis using other discount rates such as 3 percent.

Economic Benefits Comments

(1) *Comment:* A commenter suggested the Service should have hired a renowned natural resource economist, such as Dr. John Loomis, to calculate the existence values of bull trout. This commenter also suggested the Service should have undertaken a willingness-to-pay study to quantify the benefits of recreational fishing.

Our Response: As discussed in section 6.1 of the FEA, the existing economics literature does not provide the data necessary to quantify the value the public would place on actions taken to enhance the probability of recovery of bull trout. The estimation of the existence value of bull trout would require primary research involving formal approval from the Office of Management and Budget under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*), more than a year to conduct a survey and analyze the results, and significant resources in excess of those allocated to the preparation of the FEA. Similar efforts would be required to conduct a willingness-to-pay study to quantify the benefits of recreational fishing. Such primary research is beyond the scope of this economic analysis. Furthermore, biological models estimating the change in the likelihood of recovery that would result from the designation of critical habitat and information necessary for a credible estimate of willingness to pay are also not readily available. Thus, existing data do not allow for the quantification or monetization of the conservation value that is incremental to the designation of critical habitat.

(2) *Comment:* Commenters suggest that water originating from streams that may be designated as bull trout critical habitat has a value of at least $1.4 to

$1.5 billion based on a report by the U.S. Forest Service.

Our Response: This U.S. Forest Service report estimates the total volume of water available for use on all Forest Service lands, and applies marginal values for instream and offstream water uses. In order to utilize this information for the purposes of quantifying the benefits of the critical habitat designation for bull trout, additional information would be necessary. Specifically, to apply a marginal value of water to estimate benefits of critical habitat designation we would need quantified estimates of incremental changes in the amount and quality of clear cold water resulting from the designation. The impact of the designated bull trout critical habitat on water quality and quantity has not been modeled.

(3) *Comment:* Various commenters provided information about specific benefits that should have been included in the DEA. In particular, commenters suggested that the analysis should have included benefits such as the value of bull trout as subsistence for tribal members, the reduction in likelihood that other aquatic species will be added to the endangered species list, benefits from closing Forest Service roads, and benefits of mitigating for climate change impacts through efforts to protect bull trout critical habitat. Another commenter suggests the DEA should capture potential benefits such as lower costs to upgrade to municipal water treatment facilities to meet water quality standards. This commenter also indicated that the cost-savings associated with improved productivity, less absenteeism, and reduced public and private health care costs resulting from improved water quality should be predicted.

Our Response: Chapter 6 of the FEA describes the categories of economic benefit that may derive from the conservation of affected aquatic species and habitats, and discusses the research methods that economists employ to quantify these benefits. As noted in the FEA, additional information would be required in order to quantify these benefits as they relate to designation of bull trout critical habitat. The FEA (section 6.4.3) includes discussion of the potential for benefits related to improved water quality including benefits to other species, lower costs of water treatment, and human health benefits. Similarly, the report discusses the fact that managing activities in riparian areas such as road maintenance could lead to benefits associated with improved water quality. Finally, the FEA has been modified to include discussion of the potential for benefits such as improved subsistence fishing opportunities and mitigation for climate change.

(4) *Comment:* Several commenters indicate the DEA should have included estimates of benefits resulting from increased recreational fishing opportunities. In particular, a commenter states that a recovered bull trout fishery would result in 218,000 to 295,500 bull trout angling days per year within the Columbia River basin and 3,000 to 4,000 days per year in the Klamath River basin. The commenter also estimates potential recreational fishing benefits for Montana. Based on anglers spending $44 per day fishing and fishing 11.7 days per year, the commenter suggests benefits could total $9.8 million to $12.1 million in direct income, and $18 to $22 million after applying an economic multiplier.

In addition, various commenters provided information on the economic value of recreational fishing in the proposed critical habitat area. One comment provided an estimate of $69.8 million of travel-generated expenditures for fishing, hunting, and wildlife viewing in Deschutes County, Oregon (2009). Another commenter supplied information on the economic value of recreational fishing in the five States containing proposed bull trout critical habitat, which totals $2 billion based on the Service's 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. Several commenters stated that recreational fishing in the State of Idaho results in economic benefits of $283 million.

Our Response: It appears that the estimates of angling days in the Columbia and Klamath river basins that would result from a recovered bull trout fishery cited in one comment may be based on a 2007 Defenders of Wildlife study titled, "Conservation Pays: How Protecting Endangered and Threatened Species Makes Good Business Sense." However, the source cited does not appear to support the estimated angler days. Therefore, we have not included information from this study in the FEA. Further, the Service determined that data needed to reasonably estimate the increase in the number of angling days that would result from the critical habitat designation are not available. There is insufficient biophysical information to support such an analysis for the areas proposed for critical habitat designation. The timing and extent to which the bull trout population would be expected to recover is unknown, both in total and at the critical habitat unit level. Further, the relationship of the designation of critical habitat to the recovery of the species is unknown.

As discussed in Chapter 6 of the FEA, additional information would be required to quantify benefits from increased recreational fishing opportunities, including: (1) Detailed forecasts of the timing and extent of expected bull trout population increases resulting from critical habitat designation; (2) any associated expected changes in fishing regulations, and (3) the responsiveness of anglers to a new target species. These data are not currently readily available.

To the extent that conservation efforts lead to increased open space, aesthetic benefits, or improved water quality, which in turn prompt an increase in visitation to the region (e.g., for recreation such as fishing, hiking, or wildlife-viewing), the economy and employment may benefit from increased regional spending, as discussed in Chapter 6 of the FEA. However, general estimates of travel-generated expenditures for fishing, hunting, and wildlife viewing are not applicable for estimating benefits that could result from designation of critical habitat for bull trout. In particular, these types of estimates are not specific to rivers or lakes included in the proposed critical habitat, nor are they specific to fishing for bull trout. As such, we have not incorporated these values provided by commenters into the FEA.

(5) *Comment:* Two comments suggested that a study of the tailwater fishery on the San Juan River in New Mexico could be used to estimate benefits on the Upper Deschutes River.

Our Response: These two comments refer to potential benefits associated with the Upper Deschutes River, which was not included in the proposed critical habitat, and as such was not considered in the economic analysis. Thus, we did not incorporate this information in the FEA.

(6) *Comment:* A commenter stated that recreational fishing opportunities are not dependent on changes to fishing regulations; thus, the analysis should be able to quantify benefits associated with recreational fishing. The commenter further noted fishing opportunities evaluated should not be limited to lethal harvest. This commenter also noted an error in the reported percentage of trout fishing days in Montana in 2006.

Our Response: Potential benefits related to increased bull trout fishing opportunities are discussed in section 6.3 of the FEA. As noted in the FEA, increased recreational fishing opportunities would most likely occur in the form of catch-and-release fishing, given the status of the species; however,

the analysis notes that current management approaches could be altered at some point to allow some anglers in some areas to harvest bull trout.

Additional information would be required to quantify these benefits, including: (1) Detailed forecasts of the timing and extent of expected bull trout population increases resulting from critical habitat designation; (2) any associated expected changes in fishing regulations; and (3) the responsiveness of anglers to a new target species. At this time, the Service is not able to forecast how critical habitat designation may affect the future population of bull trout in critical habitat areas. Further, specific changes, including timing, to fishing regulations are uncertain. Given the dearth of available information, the Service chose not to quantify the potential benefits associated with the increased recreational fishing.

Information on how fishing regulations might change (e.g., the likelihood that States would allow fishing for bull trout, as well as where and when) is considered an important factor in forecasting angler days that could result from a recovered bull trout fishery. Without this information, it would be difficult to predict how much recreational fishing would be allowed in critical habitat areas. For example, if fishing regulations were very restrictive, the increase in recreational fishing due to critical habitat could be very small.

The commenter is correct in noting that the reported percentage of trout fishing days in Montana in 2006 was a typographical error. This percentage has been revised in the FEA.

(7) *Comment:* Several commenters indicated the DEA should have included estimates of benefits resulting from increases in jobs that could result from implementation of restoration activities such as road reconstruction, culvert replacement, and fence building. Commenters state the analysis fails to recognize economic benefits that healthy native fisheries and increased spending at local businesses by the recreational fishing public can provide to regional economies. One commenter suggested that Federal expenditures to protect bull trout habitat contribute to the economy of northeastern Nevada.

Our Response: We agree some level of regional economic benefits could result from conservation efforts resulting from bull trout critical habitat designation, as discussed in section 6.3 of the FEA. To the extent conservation efforts lead to increased open space, aesthetic benefits, or improved water quality, which in turn prompt an increase in visitation to the region (e.g., for recreation such as fishing, hiking, or wildlife-viewing), the economy and employment may benefit from increased regional spending. However, based on the assessment of incremental costs related to the proposed rule, any incremental benefits related to the rule would be expected to be limited (i.e., with few incremental project modifications resulting from the designation, the scale of economic benefit is expected to be modest). As discussed in Chapter 6 of the FEA, the Service determined the data needed to reasonably estimate benefits resulting from a potential increase in recreational fishing that would result from the critical habitat designation are not available.

(8) *Comment:* Several commenters noted that the incremental impacts projected are relatively small in comparison to the potential benefits of the designation. The commenters pointed to potential benefits that may result from the designation such as improvements in water quality and revitalized fisheries.

Our Response: The Service agrees that incremental impacts (i.e., impacts that would not occur absent critical habitat) are expected to be relatively minor. As noted in Exhibit ES-2 of the FEA, potential incremental impacts are estimated at $56.3 to $80.9 million over the next 20 years (discounted at 7 percent). On an annualized basis, incremental impacts are estimated at approximately $5 to $7 million. These impacts are discussed in greater detail in Chapter 4 of the FEA.

The FEA acknowledges potential benefits may occur as the result of the designation; Chapter 6 discusses these benefits qualitatively. As discussed in section 2.3.3, the Service believes that the direct benefits of the proposed rule are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking. A direct comparison of incremental impacts to potential benefits in dollar terms is not possible because of a lack of detailed understanding of the change in the probability of bull trout recovery likely to result from the designation.

Administrative Costs

(1) *Comment:* Several commenters provided additional information related to the number of forecast section 7 consultations and associated costs. One commenter stated the number of forecast consultations was too high because of changes in the Northwest economy and because regional and programmatic consultations covering multiple projects may be used. In addition, the commenter believes forecast consultations in unoccupied areas are "theoretical." A second commenter noted that they complete between 10 and 15 consultations a year, and that this number would increase if unoccupied areas were designated. Two commenters noted that costs of participating in section 7 consultation as a third party were greater than the estimates used in the DEA, while another commenter stated that the DEA's estimated costs of addressing adverse modification in a consultation were too high.

Our Response: The comments providing information related to the number and costs of consultation for specific entities were incorporated into the report in Chapter 5 of the FEA. In general, the DEA used a range of administrative costs developed from hours estimates based on a review of consultation records from several Service field offices. The portion of administrative costs attributed to considering critical habitat were based on the Service's estimate that, for every three hours spent considering jeopardy, an additional hour is spent considering adverse modification. This represents the best available information on relative proportion of time spent considering adverse modification in section 7 consultations.

To develop forecasts of future consultations, this analysis relies on section 7 consultation records provided by the Service. This record includes more than 4,000 section 7 consultations conducted for bull trout over the past 7 years. In many cases, the location of future projects, the type of section 7 consultation (i.e., programmatic, formal, informal, or technical assistance), and the associated level of administrative effort needed is not known. The historical rate of consultation is assumed to be a reasonable proxy for the frequency and type of future consultations because it is likely that similar types of projects and entities will occur in the future as in the past. While one commenter notes that shrinkage of the timber industry should reduce the number of forest management consultations, the number of forest management consultations actually increased over the last 4 years. Forest management consultations, in fact, consider a broad suite of activities, including recreation, road maintenance and transportation, and fire management, among other activities.

It is unclear how critical habitat would likely increase the rate of future programmatic consultations. Programmatic consultations are frequently used as a tool to reduce consultation workload, and are part of

the consultation records providing the basis for forecasts of future consultation activity in this analysis.

As noted in Exhibit 5-5 of the FEA, some units in occupied areas have estimated incremental administrative costs because of the incremental effort associated with considering adverse modification in consultations that would already be expected to occur. The distribution of costs between baseline and incremental is outlined in section 5 of the FEA.

Impacts to Small Entities

(1) *Comment:* One commenter expressed concerns about certain assumptions underlying the Initial Regulatory Flexibility Analysis (IRFA). In particular, the commenter noted that some consultations may involve more than one small entity (e.g., for consultations on grazing activities); that administrative costs are often not passed on to small entities by Federal and State agencies and may otherwise be subsidized; that the Small Business Administration (SBA) thresholds used are inflated; and that location of small entities participating in activities such as grazing and mining may not correlate with population as assumed in the DEA. Another commenter encouraged outreach with small entities that submitted comments during the public comment period, including addressing these comments in the Final Regulatory Flexibility Analysis (FRFA) prepared for the final rule.

Our Response: The Initial Regulatory Flexibility Analysis (IRFA) has been revised to a Final Regulatory Flexibility Analysis (FRFA). In addition to the information previously provided in the IRFA, the FRFA provides a summary of comments submitted by small entities in response to the proposed rule and DEA. The purpose of the FRFA is to assist the Service in determining the extent to which incremental impacts resulting from critical habitat designation may be borne by a substantial number of small entities. As discussed in section A.1, the FRFA developed two potential estimates of small entities that may be affected depending on the pattern of future consultations and the extent to which impacts are passed on to small entities. Given the breadth of the proposed designation, the number of counties potentially affected, and the more than 70,800 small businesses falling within these counties, primary data collection efforts on the location of each of these businesses and their individual revenues were not feasible and outside the scope of this analysis.

Scenario 1 is based on the estimated number of small entities falling within the designation. To derive this estimate, Appendix A of the FEA uses best available data on such factors as the size and annual sales of businesses in the area, as collected by Dun & Bradstreet. These data are available on a county-wide basis. Because counties may include areas that are not part of the critical habitat designation, the number of small entities within the county is scaled by the percentage of the county's population living within the proposed critical habitat boundaries. The commenter correctly points out that some industries may not correspond to population patterns. For example, agricultural, grazing, and mining operations may be located in more rural and less populated areas. Exhibit A-3 in the FEA provides a summary of all small entities located in the relevant counties, including 416 mining operations, 14,402 agricultural operations, and 1,468 grazing operations. If potential incremental impacts were benchmarked against all of these businesses, the estimated impact per small entity would be less than $700 per entity, representing less than 0.01 percent of revenues. Scenario 2 is based on the forecast number of consultations, assuming one small entity per consultation except in the case of agricultural operations. As the commenter points out, grazing consultations also may involve more than one small entity. This comment has been addressed in Exhibit A-1 of the FEA.

As stated in section A.1.1 and Exhibit A-1, the portion of administrative costs expected to be borne by Federal and State agencies is excluded from impacts considered in this section as well as any project modification costs likely to be borne by Federal agencies. For example, as noted in Exhibit A-1 of the FEA, impacts associated with Federal dam projects are excluded. In total, annualized incremental impacts to small entities considered in Appendix A are only 51 percent of total incremental impacts estimated in the rest of the report. While the commenter believes that the impacts are overstated, they still represent less than 0.6 percent of annual revenues under both scenarios and for all activities.

Finally, the small business size standards noted in Exhibit A-2 in the FEA are taken directly from the US Small Business Administration website (*http://www.sba.gov/idc/groups/public/documents/sba_homepage/serv_sstd_tablepdf.pdf*). The size standards are used to determine the number of businesses that may qualify as small entities under the RFA (see, for example, the "regulated small entities in county" column in Exhibit A-3 of the FEA). The Service recognizes that many small businesses may have revenues that fall well below this size standard. Therefore, Appendix A uses estimates based on revenue data provided by Risk Management Association to refine its revenue estimates (see Row [B] in Exhibit A-1 of the FEA).

Water Use

(1) *Comment:* Various comment letters expressed concern the designation could result in flow management changes which could impact agricultural operations. For example, several commenters state the DEA fails to take into account negative impacts that could result from changes in reservoir operations on the Boise, Payette, and Weiser Rivers, which could affect agriculture in this section of Idaho. Another commenter expressed concern about the economic impacts associated with a loss of irrigation water in Adams County, Idaho. One commenter states the DEA should analyze potential future reallocation of water rights priorities that may be caused by the designation, and any associated costs to the Blackfeet Tribe. On the other hand, a commenter states reductions in instream flows are unlikely and there is no reason to believe that this will occur on public and private lands.

Our Response: As discussed in section 4.1, the FEA forecasts potential incremental impacts resulting from modifications to irrigation diversions across the proposed critical habitat designation. As discussed in the 2004 final economic analysis for the Columbia and Klamath River DPS final critical habitat designation, the Service, USFS, and BLM have indicated that reductions in irrigation to protect bull trout critical habitat are unlikely. To date, there have not been any section 7 consultations with USFS or BLM where irrigation diversions have been altered to benefit bull trout or its critical habitat. Because of the large degree of uncertainty as to whether consultations regarding irrigation diversions would occur, what volume of water might be reallocated to instream flows, and what the primary use of the diverted water would be (e.g., crops or pasture irrigation), the FEA estimates a range of outcomes. The low end scenario assumes the Service would not recommend any changes to irrigation withdrawals, while the high end scenario assumes there could be project modification costs associated with 10 irrigation diversion projects over the 20–year timeframe of the analysis. This estimated range recognizes such

consultation outcomes are unlikely, but that if a limited number were to occur, the impacts on individual operators could be substantial.

(2) *Comment:* One commenter questioned the assumption that alternative water supplies would be available to replace irrigation water that could be reallocated as a result of bull trout critical habitat designation. The commenter further suggested it would be better to apply a value for lost farm income, assuming that replacement water would not be available. The commenter suggested lost farm income should be estimated using a value of $100 to $400 per acre depending on the type of crops being grown. Also, storage for irrigation could be curtailed under the worst case scenario, which could result in a direct economic impact of $50 million at $100 per acre, based on the more than 500,000 acre feet of water stored for diversions in the Boise and Payette river systems. Similarly, another commenter stated the DEA should estimate the impacts of withdrawn lands taken out of agricultural production. One commenter stated there is no extra water to attempt any change in the customary operations of their area. Finally, a commenter stated Idaho does not have instream flow rights laws under their State water law administration.

Our Response: As discussed in the 2004 final economic analysis for the Columbia and Klamath River DPS critical habitat designation, the high end scenario forecasted potential changes to instream flows that could result from bull trout critical habitat designation. The analysis estimated average annual loss in irrigation withdrawals of 2,656 acre-feet per year per consultation based on three biological opinions completed by NOAA Fisheries where instream flows in Washington were specified primarily to protect anadromous species. The analysis applied an upper-end estimate of water lease values from the Washington State Department of Ecology of $127 per acre-foot. Because of uncertainty about timing and location, the high end scenario assumed the consultations would all occur in the first year of the analysis and the costs are spread over all USFS lands within the proposed critical habitat. The portion of costs that are incremental was then calculated based on the portion of critical habitat unit that is considered unoccupied.

As discussed above, the $127 per acre foot is based on actual observed sales of water rights. While these values are based in part on purchases, they are reflective of the opportunity cost of foregone water use (e.g., the value of crop losses) and are consistent with other approaches to valuing water, such as a production function or farm budget approach. Accordingly, their use in the analysis is consistent with the case where the irrigator loses the use of the usual source of water and is unable to purchase water elsewhere (the irrigation-related increment to production is lost). The agriculture irrigation-related sections of the 2004 final economic analysis were reviewed by a technical advisor on agriculture and water resource economics, Dr. Joel Hamilton, Emeritus Professor of Agricultural Economics and Statistics at the University of Idaho. Dr. Hamilton reviewed the analytical methodology and the validity of the results, and opined that the value of $127 per acre-foot likely overestimates the impacts. Further, we note the use of this figure is consistent with the suggested range of $100 to $400 per acre for lost farm income, given that in the Pacific Northwest in 2008 roughly 2 acre-feet of water are applied to each acre irrigated based on the 2007 Census of Agriculture.

In addition, we note that in areas within the proposed critical habitat, water transactions to benefit endangered species have occurred. The report titled "Economics of Water Acquisition Projects" referenced by one of the commenters indicates that Oregon and Washington water trusts have recently brokered a number of annual water leases for the purpose of augmenting instream flows, and includes examples in the Deschutes River Basin. As discussed in this report "Agencies, politicians and current right holders seem to concur that if water is needed it should be purchased from willing sellers, rather than rely on government regulatory powers or taking provisions." This report also confirms that Oregon, Idaho, and Washington all allow water rights to be changed from irrigation to instream flow use.

Forecast impacts to irrigation do not include curtailing water storage in the Boise and Payette river systems. This is not considered a reasonably foreseeable outcome of the critical habitat designation. Given that there is no basis for assuming the 50,000 acre feet of stored water would be affected by the critical habitat designation, we determine the suggested direct economic impact of $50 million is not applicable.

(3) *Comment:* Several commenters were concerned about potential loss in tax revenues as well as ripple effects that could result from impacts of the designation on agricultural activities. Several comment letters suggested regional economic impacts could occur if irrigation for agriculture is affected by the critical habitat designation. In addition, numerous commenters provided information about the value of irrigated agriculture. One commenter indicated any reallocation of irrigation diversions would negatively impact the economy in Canyon County (Boise City and Treasure Valley), Idaho, and provided information on the value of agricultural receipts as $325 million in Canyon County. One commenter indicates the total value of irrigated agriculture is nearly $1 billion in Kittias, Yakima, and Benton Counties (WA). Another commenter was concerned 1 to 10 percent of the $1.261 billion direct income to farmers and ranchers in Yakima and Klickitat Counties of Washington State will be affected by this designation. Another commenter provided data on the estimated gross crop revenue of about $12 million within the boundaries of the Middle Valley Ditch Corp. in Idaho. One comment stated Black Canyon Irrigation District contributed about $60 million dollars from agriculture in Gem, Payette, and Canyon Counties in Idaho. Another commenter expressed concern that agriculture and related industries will be affected, which represent 30 percent of Payette County economy.

Our Response: Irrigated agriculture is an important industry in the vicinity of some bull trout critical habitat units. Chapter 1 of the FEA has been expanded to include some discussion of the socioeconomic background of the critical habitat areas, including the contribution of irrigated agriculture. As stated in section 2.3 of the FEA, the analysis focuses on incremental impacts expected to occur after the designation of critical habitat is finalized. The basis for assuming the entire value of irrigated agriculture in counties that contain critical habitat are at risk from the proposed designation of critical habitat does not appear to be warranted given the history of bull trout management. Similarly, commenters do not provide any justification for assuming that 1 percent or 10 percent of these values are at risk due to critical habitat.

Because of the large degree of uncertainty as to whether consultations regarding irrigation diversions may occur, what volume of water might be reallocated to instream flows, and what the primary use of the diverted water would be (e.g., crops or pasture irrigation), the FEA estimates a range of outcomes. The low end scenario assumes the Service would not recommend any changes to irrigation withdrawals, while the high end scenario assumes there could be project

modification costs associated with 10 irrigation diversion projects over the 20–year timeframe of the analysis. This estimated range recognizes that such consultation outcomes are unlikely, but that if a limited number were to occur, the impacts on individual operators could be substantial. Because of the large region across which these impacts are spread, however, significant regional impacts of these consultations are not anticipated even under the high end scenario. The analysis does not model the potential regional economic impacts associated with other baseline conservation efforts that may be undertaken, which may be much larger in scale. Because baseline costs are not solely attributable to the proposed designation, they are considered in the FEA primarily for purposes of providing context, while the incremental impacts are considered to be of primary importance for decision-making purposes.

(4) *Comment:* A commenter stated that costs for mitigation of projects in the Upper Willamette River Basin should not be considered incremental as these costs would be incurred whether or not bull trout critical habitat is designated in this area. The commenter further disagreed with the assumption in the DEA that one-third of the costs of project modifications undertaken by the Bonneville Power Administration (BPA) at the Upper Willamette project are related to bull trout.

Our Response: Estimated incremental costs in the Upper Willamette River Basin unit are dominated by project modification costs associated with the Willamette River Basin Flood Control Project, including fish passage (trap and haul operations and construction of a fish ladder), temperature control projects, and bull trout studies. The FEA includes discussion of the uncertainties underlying the estimation of incremental impacts in the Upper Willamette River critical habitat unit, recognizing that some or all of these actions are likely to occur even without critical habitat designation. The specific extent to which project modification costs for the Willamette Project will increase as a result of this designation is unclear; this distinction is particularly complex because most of the proposed area on the Upper Willamettte was designated as critical habitat in 2005. It is feasible that some of the planned future actions would not have been undertaken but for bull trout critical habitat designation. As such, section 4 of the analysis uses the best available information and methods to estimate potential incremental impacts.

(5) *Comment:* Several comment letters expressed concern the DEA does not appear to consider impacts to hydroelectric projects. In particular, one commenter expressed concern about impacts to the Flint Creek Hydroelectric project, which is in the final stages of licensing with the Federal Energy Regulatory Commission (FERC). This commenter stated the DEA does not mention impacts to the Flint Creek hydroelectric project, which the commenter maintained would be greater than the incremental annualized costs for the entire Clark Fork CHU. Other commenters expressed concern the critical habitat designation could increase the costs to hydropower users and their customers. One commenter stated the Energy Impact Analysis does not adequately address the impacts of the rule on energy production, distribution, or marketing.

Our Response: The FEA considers whether the proposed critical habitat would impact hydropower projects. As stated in Chapter 4 of the FEA, incremental conservation costs associated with hydropower projects are estimated to be $2.12 to $2.52 million (annualized at 7 percent). Detailed information regarding the potential impacts to these projects are provided in section 4.2.6 of the 2004 final economic analysis of the Columbia and Klamath DPS final critical habitat designations as well as section 3.4.1 of the 2005 final economic analysis of the Coastal-Puget Sound, Jarbidge River, and Saint Mary-Belly DPS final critical habitat designation. As appropriate, these impacts have been allocated to the new proposed critical habitat units. As noted in the FEA, substantial impacts to hydropower production are anticipated under the baseline for this analysis. The commenter is correct that the economic analysis does not forecast any incremental conservation costs associated with the Flint Creek Hydroelectric Project. In a letter dated March 26, 2010, from the Service to FERC, the Service concurred with the determination that the project is not likely to adversely affect bull trout or modify its proposed critical habitat. Additional conservation efforts are not expected to be undertaken as a result of bull trout critical habitat. Therefore, the only incremental impacts related to this project are administrative costs which have been accounted for in the forecast consultation efforts discussed in Chapter 5 of the FEA. The Energy Impact Analysis has been revised to more clearly identify incremental impacts of critical habitat designation for bull trout on energy production, distribution, and marketing. In addition, the Energy Impact Analysis now also recognizes the more substantial potential impacts on hydropower production expected under the baseline.

(6) *Comment:* Several comment letters expressed concern that the DEA does not appear to consider impacts to municipal water systems and users. In particular, a commenter expressed concern that the designation of Buck Creek will have significant cost impacts for the City of White Salmon municipal water system and its residents and small businesses. Another commenter was concerned about potential negative impacts on the potential loss of water to cities and industrial users from changes to reservoir operations on the Boise, Payette, and Weiser Rivers.

Our Response: In developing the DEA, we considered whether impacts to municipal water systems are likely to result from critical habitat designation for bull trout. Specifically, section 3.4 of the 2004 final economic analysis for the Columbia and Klamath DPS final critical habitat designation included discussion of the potential for consultations for bull trout involving water system improvements. Based on the section 7 consultation history, there have not been project modifications or formal consultations for this type of activity. As such, the 2004 economic analysis forecasted only informal consultations for water treatment system improvement, and no project modifications associated with bull trout or bull trout critical habitat were expected. Based on the findings of this previous analysis, and current research regarding newly proposed critical habitat areas, we determined incremental impacts to municipal water systems were not reasonably foreseeable; thus, conservation costs associated with this type of activity were not forecast in the FEA.

(7) *Comment:* One commenter was concerned that any changes to BOR's Klamath Project would have significant economic impacts, which was not addressed in the DEA.

Our Response: As discussed in responses to comments on the earlier economic analysis published in the **Federal Register** on September 26, 2005 (70 FR 56222), BOR staff were contacted and consulted on the likelihood of projects requiring section 7 consultation, as described in section 4.2.4 in the final economic analysis of the Columbia and Klamath DPS final critical habitat designation. When contacted, BOR staff in Klamath Falls stated no significant consultation activity concerning bull trout was anticipated. As a result, the analysis

assumes impacts resulting from designation of bull trout critical habitat are not reasonably foreseeable for a BOR project on Agency Lake Ranch. Further, as stated in the 2010 final economic analysis, because Unit 9 (Klamath River) is included in proposed critical habitat for the Lost River sucker and shortnose sucker, action agencies have been conferencing with the Service on federally funded activities in this area for the past 15 years. In most instances we do not anticipate we would ask for or require any modifications above or beyond those measures already in place for the protection of the two sucker species. We therefore do not expect any changes other than increased administrative costs to address bull trout critical habitat in that unit.

Other Economics-Related Comments

(1) *Comment:* Several commenters were concerned the critical habitat designation may limit the availability of grazing lands. For example, one commenter noted that, if timing restrictions were imposed on when allotments could be grazed, it could negatively impact the viability of their grazing lands. Other commenters stated the DEA failed to consider the potential costs of fencing grazing allotments, noting that fencing on permitted allotments would cost $4,000 per acre with additional costs related to weed control, fence repairs, livestock water installations, and maintenance costs.

Our Response: The FEA considers potential impacts to grazing activities on lands managed by the BLM and the USFS. Specifically, it estimates the potential costs of monitoring, fencing, and off-stream watering requirements, and then forecasts the number of grazing projects per year that are likely to be asked to undertake these requirements, both under the baseline and incrementally due to critical habitat. For BLM lands, the analysis forecasts that three grazing projects per year will undertake these project modifications across the designation. For USFS lands, the analysis forecasts that two grazing projects per year will undertake project modifications. Estimated costs per grazing consultation are based on a review of the suggested project modifications in past bull trout section 7 consultations, and on information obtained from BLM and USFS representatives on the likelihood that future consultations will be similar in scope and cost.

We recognize that restricting the timing of grazing activities would effectively reduce the allowable grazing levels on Federal lands, and have the potential to impact associated private land values. However, in most cases the FEA does not anticipate timing restrictions on grazing activities or limits on allowable grazing levels as a result of critical habitat for bull trout.

(2) *Comment:* One commenter stated the project modification costs associated with the Blue Bridge pipeline project are overstated because they assume pipeline crossings will be through streams rather than employing directional boring to avoid conservation costs associated with critical habitat.

Our Response: As discussed section 4.2.2 of the FEA, the Blue Bridge pipeline is expected to cross several streams in the proposed critical habitat; however, specific future project modifications associated with that project are currently unknown. The FEA incorporates assumptions from the 2005 final economic analysis for the Coastal-Puget Sound, Jarbidge River, and Saint Mary-Belly DPS final critical habitat designation that conservation activities associated with pipelines include techniques to avoid or minimize impacts to water quality, including directional drilling.

Summary of Changes from the 2005 Rule

This final rule differs from the September 26, 2005, final critical habitat designation for bull trout (70 FR 56212) in the following ways:

(1) In the 2005 final rule, we designated approximately 6,161 km (3,828 mi) of streams and 57,9578 ha (143,218 ac) of lakes in Idaho, Montana, Oregon, and Washington; and 1,585 km (985 mi) of shoreline paralleling marine habitat in Washington as critical habitat (70 FR 56212). No critical habitat was designated in the Jarbidge River basin (70 FR 56249-56251). In this rule, we are designating 31,750.8 km (19,729.0 mi) of streams (which includes 1,213.2 km (754.0 mi) of marine shoreline in the Olympic Peninsula and Puget Sound, and which includes 245.2 km (152.4 mi) of streams in the Jarbidge River basin), and are designating a total of 197,589.2 ha (488,251.7 ac) of reservoirs and lakes.

(2) In the 2005 final rule, we did not designate any unoccupied critical habitat because the Secretary concluded that it was not possible to make a determination that such lands were essential to the conservation of the species (70 FR 56232, September 26, 2005). In this rule, we are designating 1,323.7 km (822.5 mi) of streams and 6,758.8 ha (16,701.3 ac) of reservoirs and lakes (4.2 percent of the total designation) that are outside the geographical area occupied by the species at the time it was listed that have been determined to be essential for the conservation of the species.

(3) A small proportion of critical habitat designated in the 2005 final rule is not designated as critical habitat in this revision. These areas include streams and lakes determined either not to include bull trout or any of their PCEs, or not to be essential to their conservation. For example, Sycan Marsh in the Klamath River basin no longer holds enough water to support bull trout, so we are designating the stream channels through the marsh as critical habitat, allowing connectivity among populations, instead of the entire marsh. Critical habitat included in this rule that was not designated in the 2005 final rule include streams and lakes since determined to be occupied by bull trout, and areas that provide one or more PCEs and are essential to bull trout conservation. For example, the mainstem Columbia River and the lower portions of connecting tributaries such as the John Day River have been found to be more important for FMO habitat for bull trout than was previously understood. All areas known to contain the most important bull trout habitat and PCEs, or that may be unoccupied but essential to their conservation, are designated in this rule.

(4) In the 2005 rule, a variety of areas were exempted from critical habitat designation under section 4(a)(3) of the Act or excluded from designation as critical habitat under section 4(b)(2) of the Act (70 FR 56232). These areas included lands subject to Federal management plans (such as PACFISH, INFISH, Northwest Forest Plan, and Federal Columbia River Power System). Federal agencies have an independent responsibility under section 7(a)(1) of the Act to use their programs in furtherance of the Act and to utilize their authorities to carry out programs for the conservation of endangered and threatened species. We consider the development and implementation of land management plans by Federal agencies to be consistent with this statutory obligation under section 7(a)(1) of the Act. Owners of non-Federal lands, by contrast, are not obliged to undertake such conservation programs, so to the

extent that excluding such lands under section 4(b)(2) provides an incentive to conserve listed species, exclusion may benefit the species to a degree that exclusion of Federal lands would not. Therefore, Federal land management plans, in and of themselves, are generally not an appropriate basis for excluding essential habitat. In areas where Federal land management agencies actively manage for bull trout and its habitat, conduct specific conservation actions for the species at a level comparable to critical habitat designation, provide assurances that a plan will remain in effect for a relevant period of time, and show that a disproportionate impact would result from the designation, exclusion under section 4(b)(2) of the Act may be appropriately considered by the Secretary. In the 2010 proposed rule (75 FR 2269, January 14, 2010), we requested comments and specific information regarding any conservation actions that Federal land management agencies have or are currently implementing on their lands, and we took this information into account when conducting our exclusion analysis. (Please see in particular *Federal Agency Comments*, Bureau of Land Management and U.S. Forest Service comment 1, above.)

The primary benefit of including an area within critical habitat designation is the protection provided by section 7(a)(2) of the Act that directs Federal agencies to ensure that their actions do not result in the destruction or adverse modification of critical habitat. The benefit of designating critical habitat is limited if the areas under consideration occur on private lands for which there may not be a Federal nexus to invoke the protections of section 7(a)(2) of the Act. However, Federal lands, by default, have a Federal nexus, and the intent of section 7 of the Act is to require Federal agencies to consult on any action authorized, funded, or carried out by such agency to ensure that the action will not jeopardize a listed species or destroy or adversely modify its critical habitat. In addition, section 7(a)(1) of the Act states, in part, "Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered and threatened species." Therefore, the benefits of inclusion of these areas are greater because they are Federal lands. We were unable to determine that the Federal management plans and guidance documents provide a conservation benefit for bull trout comparable to critical habitat designation, or that designation of critical habitat on Federal lands would present a disproportionate economic or other relevant impact. These plans typically guide agency activities, and provide some level of conservation benefit in occupied bull trout habitat areas, but are fluid documents that may or may not be revised, based on resource availability, management emphasis, and changes in management direction to respond to changing agency priorities. The Secretary has elected not to exercise his discretion under section 4(b)(2) of the Act to exclude Federal lands from this revised critical habitat designation. However, we are committed to working efficiently and proactively with our federal partners to address their program administration needs, in light of the conservation needs of bull trout.

(5) Two economic analyses related to previous bull trout critical habitat proposed rules were prepared in 2004 and 2005, which followed a co-extensive analytical approach, consistent with recent court rulings. Those analyses considered conservation and protection activities for bull trout, without distinguishing between impacts associated with listing the species and those associated with the designation of critical habitat. The economic analysis prepared for this rule does not follow the coextensive analytical approach, and differentiates between baseline and incremental economic impacts. Under this approach, because of the conservation measures already in place for salmon, steelhead, the Klamath suckers, and other protected fish species, our analysis indicates that the incremental economic impact in areas occupied by bull trout will be small, and the most significant incremental effect will be in those areas not currently occupied (less than four percent of the areas being proposed as critical habitat). The majority of forecast incremental costs are associated with unoccupied critical habitat in the Upper Willamette River Basin and are associated with conservation efforts undertaken at flood control facilities. The discussion under *Exclusions Based on Economic Impacts* (below) provides additional information in this regard.

Copies of the previous proposed and final bull trout critical habitat rules and a map showing the relationship of the 2005 final rule and this final rule are available on the Idaho Fish and Wildlife Office web site at *http://www.fws.gov/pacific/bulltrout*.

Summary of Changes from the Proposed Rule

We are designating a total of 31,750.8 km (19,729.0 mi) of streams (which includes 1,213.2 km (754.0 mi) of marine shoreline. We are also designating a total of 197,589.2 ha (488,251.7 ac) of reservoirs and lakes. We received many site-specific comments related to essential habitat areas, completed our analysis of habitats to be excluded under section 4(b)(2) of the Act, applied our criteria for identifying critical habitat across the range of the bull trout to refine the designation in this final rule, and completed the final economic analysis (FEA). These changes from the proposed rule are identified below:

(1) We refined our understanding of which areas contain the physical or biological features essential to the conservation of the species based on comments from peer reviewers, States, Tribes, Federal agencies, and the public. This improved information is reflected in this final designation, and is characterized as many small adjustments to waterbody segments based on site-specific information received during the public comment period. In some cases, proposed critical habitat areas were expanded and in other cases, proposed critical habitat areas were reduced, based on comments and information received in response to the proposed rule, and our evaluation of this new information, which led us to refine our designation. In some cases we extended the designation upstream into some tributary streams that we determined were essential for the conservation of the bull trout, because they contained the PCEs and meet our selection criteria for inclusion in critical habitat. Each of the areas affected by a critical habitat boundary expansion is essential to the conservation of the species and consistent with the criteria outlined in the **Critical Habitat** *Methods* section below. In other cases, we did not designate some streams that were proposed as critical habitat, based on site specific biological information that

these areas did not contain the PCEs and did not meet the selection criteria for inclusion in critical habitat. Our response to *Public Comment* (6) provides an example of one such area. Documentation reflecting the outcome of that analysis for each area is available at *http://www.fws.gov/pacific/bulltrout/*.

(2) We finalized our exclusion analysis under section 4(b)(2) of the Act. Approximately 3,094.9 km (1,923.1 mi) of streams, which includes 348 km (216.3 mi) of marine shoreline, and 7,849.3 ha (19,395.8 ac) of reservoirs and lakes were excluded from the final critical habitat designation based on this analysis. This represents approximately 13 percent of streams and 8.5 percent of reservoirs and lakes that are being excluded from what was proposed. See the **Exclusions** section, below, for more information.

(3) We revised certain language, including the PCEs, to respond to peer review comments and to clarify our intent.

(4) We updated the references cited in light of new information received in response to the proposed rule.

(5) We finalized our economic analysis based on comments received in response to the proposed rule. The Secretary did not exert his discretion under section 4(b)(2) of the Act to exclude any particular areas from the designation on the basis of economic impacts.

(6) During the mapping process, there was an inadvertent error made in Unit 20 (Powder River), in which one of the GIS layers was omitted from the map for that unit. As a result, Phillips Reservoir was not shown on the map published in the proposed revision to bull trout critical habitat (75 FR 2270, January 14, 2010). However, the impounded streams within the reservoir boundary were shown, and the proposed rule stated that "the lateral extent of critical habitat in lakes is defined by the perimeter of the waterbody as mapped on standard 1:24,000 scale topographic maps" (75 FR 2283). We also received several comment letters recommending that the reservoir be either excluded or designated as critical habitat, including comments from the Bureau of Reclamation that requested a better definition of the "bank of Phillips Reservoir". These comments drew our attention to the mapping error, but affirm the assumption that commenters understood the reservoir was intended to be proposed as critical habitat. We are correcting this mapping error and omission in this final rule, and designating Phillips Reservoir as critical habitat.

Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the prohibition against Federal agencies carrying out, funding, or authorizing the destruction or adverse modification of critical habitat. In this rule, critical habitat is defined as the bed and banks of waterbodies, but actions that may destroy critical habitat could occur on lands adjacent to waterbodies, and, therefore, would be subject to regulation under this rule. Section 7(a)(2) of the Act requires consultation on Federal actions that may affect critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner seeks or requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) of the Act would apply, but even in the event of a destruction or adverse modification finding, the Federal action agency's and the applicant's obligation is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

For inclusion in a critical habitat designation, the habitat within the geographical area occupied by the species at the time it was listed must contain the physical and biological features essential to the conservation of the species, and be included only if those features may require special management considerations or protection. Critical habitat designations identify, to the extent known using the best scientific and commercial data available, habitat areas that provide essential life-cycle needs of the species (areas on which are found the physical or biological features laid out in the appropriate quantity and spatial arrangement for the conservation of the species). Under the Act and regulations at 50 CFR 424.12, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed only when we determine those areas are essential for the conservation of the species and that designation limited to those areas occupied at the time of listing would be inadequate to ensure the conservation of the species. When the best available scientific data do not demonstrate that the conservation needs of the species require such additional areas, we will not designate critical habitat in areas outside the geographical area occupied by the species at the time of listing. An area currently occupied by the species but that was not occupied at the time of listing may, however, be essential to the conservation of the species and may be included in the critical habitat designation.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific and commercial data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original

sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, or other unpublished materials and expert opinion or personal knowledge. Substantive comments received in response to proposed critical habitat designations are also considered.

Habitat is often dynamic, and species may move from one area to another over time. Furthermore, we recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal habitat outside the designated area is unimportant or may not be required for recovery of the species.

Relationship of Critical Habitat to Recovery Planning

Areas that are important to the conservation of the species, but are outside the critical habitat designation, will continue to be subject to conservation actions we implement under section 7(a)(1) of the Act. Areas that support populations are also subject to the regulatory protections afforded by the section 7(a)(2) jeopardy standard, as determined on the basis of the best available scientific information at the time of the agency action. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, HCPs, or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

In developing this final rule, we considered the conservation relationship between critical habitat and recovery planning. Although recovery plans formulate the recovery strategy for a species, they are not regulatory documents, and there are no specific protections, prohibitions, or requirements afforded a species based solely on a recovery plan. Furthermore, although critical habitat designation can contribute to the overall recovery strategy for a species, it does not, by itself, achieve recovery plan goals.

In its 5–year review (Service 2008, p. 45), the Service recommended, in part, that recovery units from the 2002 draft recovery plan be updated for bull trout throughout their range (Service 2002), based on assemblages of bull trout core areas (metapopulations or interacting breeding populations) that retain genetic and ecological integrity and are significant to the distribution of bull trout throughout the coterminous United States. To complete the recovery unit update, we consulted with biologists from States, Federal agencies, and Native American Tribes, using the best scientific information available. Factors considered in determining the geographic arrangement of the updated recovery units included ensuring (1) resiliency of the species by protecting large areas of high quality habitat; (2) redundancy by protecting multiple populations; and (3) representation by protecting diverse genetic and life-history aspects of bull trout populations distributed throughout the range of the listed entity (Tear *et al.* 2005, p. 841).

Bull trout are listed under the Act as threatened throughout the coterminous United States, primarily due to habitat threats. The Service concluded in its 5–year review (Service 2008, p. 9) that the number of distinct population segments (DPSs) should be reevaluated, and that consideration should be given to reclassifying bull trout into separate DPSs. Six draft recovery units (RUs) were subsequently identified. Each of the six RUs was evaluated, and confirmed to be needed to ensure a resilient, redundant, and representative distribution of bull trout populations throughout the range of the listed entity. To accomplish these goals, protection of large areas of high-quality habitat, multiple populations, and diverse genetic and life-history aspects will be required.

The six draft RUs identified for bull trout in the coterminous United States include: Mid-Columbia recovery unit; Saint Mary recovery unit; Columbia Headwaters recovery unit; Coastal recovery unit; Klamath recovery unit; and Upper Snake recovery unit (Figure 1). Conserving each RU is essential to conserving the listed entity as a whole. These six new biologically based RUs will be proposed to replace the 27 recovery units previously identified in the bull trout draft recovery plan (Service 2002, Chapter 1, p. 3), and comments will be solicited once the draft recovery plan is ready for public participation and comment.

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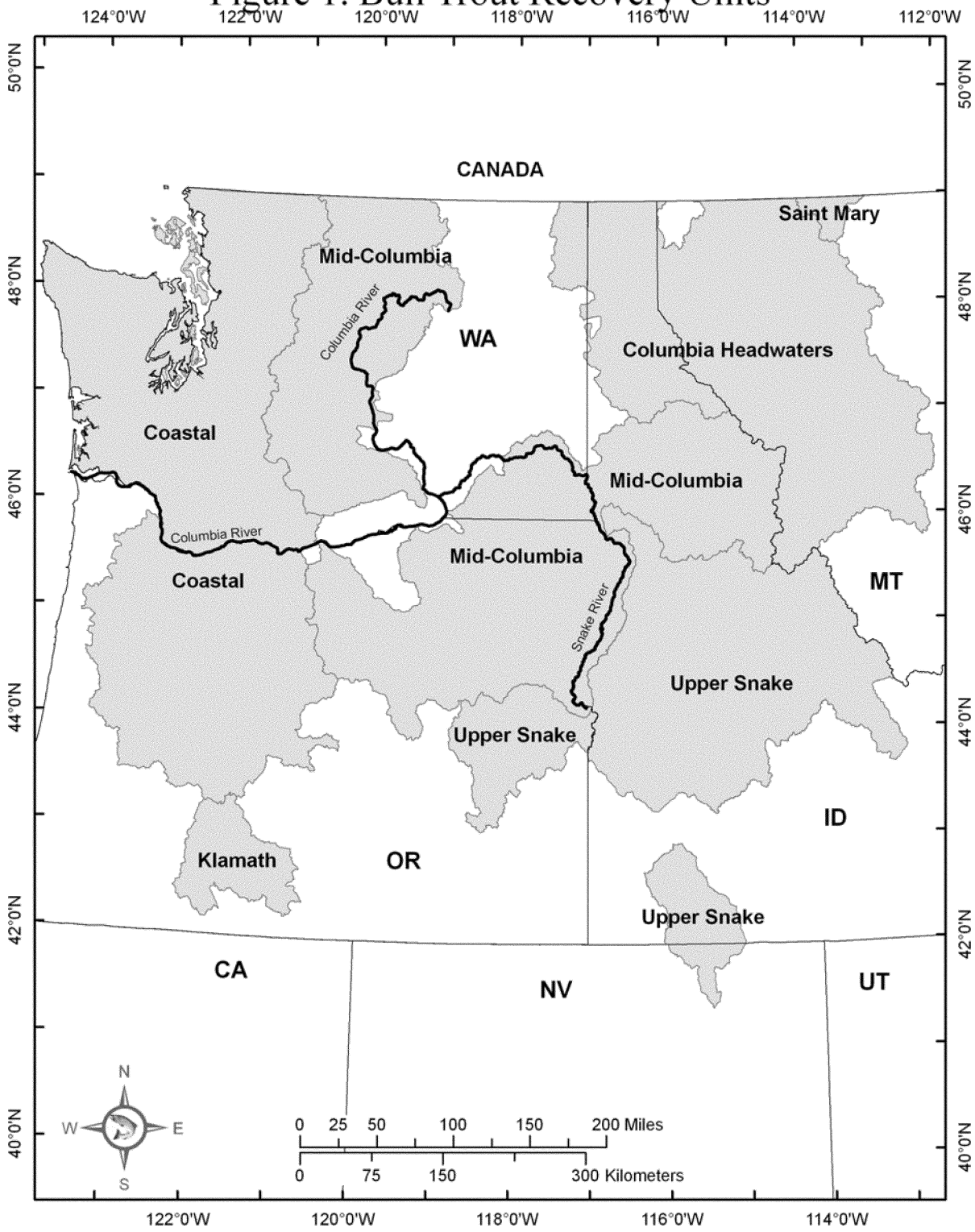
Figure 1. Bull Trout Recovery Units



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Methods

As required by section 4(b)(2) of the Act, we used the best scientific data available in determining areas that contain the features essential to the conservation of the bull trout. Data sources included research published in peer-reviewed articles and previous Service documents on the species. Additionally, we utilized regional Geographic Information System (GIS) shape files for area calculations and mapping.

Primary Constituent Elements

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas occupied at the time of listing to propose as critical habitat, we consider the physical or biological features

essential to the conservation of the species and that may require special management considerations or protection. These features are the PCEs laid out in the appropriate quantity and spatial arrangement for conservation of the species. These include, but are not limited to:

(1) Space for individual and population growth and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, or rearing (or development) of offspring; and

(5) Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

A detailed discussion of each of these five life-history needs of the bull trout follows.

Space for Individual and Population Growth and for Normal Behavior

Bull trout exhibit a number of life-history strategies. Stream-resident bull trout complete their entire life cycle in the tributary streams where they spawn and rear. Migratory bull trout spawn in tributary streams. Juvenile fish from migratory populations usually rear from 1 to 4 years in natal streams before migrating (typically downstream) to either a larger river (fluvial form) or lake (adfluvial form) where they spend their adult life, returning to the tributary stream to spawn (Fraley and Shepard 1989, p. 133). These migratory forms occur in areas where conditions allow for movement from upper watershed spawning streams to larger waters that contain greater foraging opportunities (Dunham and Rieman 1999, p. 646). Resident and migratory forms may be found together, and either form can produce resident or migratory offspring (Rieman and McIntyre 1993, p. 2). Where ocean environments are accessible, bull trout may also migrate to and from salt water (amphidromy).

The ability to migrate is important to the persistence of bull trout local populations (Rieman and McIntyre 1993, p. 2; Gilpin 1997, p. 4; Rieman and Clayton 1997, p. 6; Rieman *et al.* 1997, p. 1121). Bull trout of a variety of life stages rely on foraging, migration, and overwintering (FMO) habitat to complete extensive and important parts of their life cycle (Homel and Budy 2008, p. 875; Monnot *et al.* 2008, pp. 235-237). Juvenile and adult resident bull trout inhabit the spawning and rearing areas year round. Some adult migratory forms inhabit spawning and rearing habitat after spawning into the early winter and can arrive in early summer to hold prior to spawning (Mulhfeld *et al* 2005, p. 801; Kellyringel and DeLaVergne 2010, p. 16), and subadults or alternate year migratory spawning adults may inhabit mid to lower river migratory corridors year round. Habitat complexity including deep pools and cover appear to be important habitat components in areas of both spawning and rearing and migration (Monnet *et al.* 2008, pp. 235-237; Al-Chokhachy *et al.* 2010, pp. 469–472).

Migratory bull trout become much larger than resident fish, benefiting from the more productive waters of larger streams, lakes, and marine habitats, consequently leading to increased reproductive potential. Stream-resident populations are associated with headwater streams in mountainous regions where year-round cold water and velocity or other movement barriers are common. Typically, these streams are smaller and have higher gradients than those occupied by adfluvial and fluvial populations. In these headwater streams, resident bull trout are associated with deep pools and instream cover, and stream-resident individuals are typically small (McPhail and Baxter 1996, p. 12; Mullan *et al.* 1992, p. K-413). The use of migration habitat by bull trout can also increase potential for dispersion, facilitating gene flow among local populations (interbreeding groups) when individuals from different local populations interbreed, stray, or return to nonnatal streams. Importantly, local populations that have been extirpated by catastrophic events may become reestablished because of movements by bull trout through migration habitat (Rieman and McIntyre 1993, p. 7; MBTSG 1998, p. 45).

Lakes and reservoirs also figure prominently in meeting the life-cycle requirements of bull trout. For adfluvial (migrating between lakes and rivers or streams) bull trout populations, lakes and reservoirs provide an important component of the core FMO habitat and are integral to maintaining the adfluvial life-history strategy that is commonly exhibited by bull trout. When juvenile bull trout emigrate to a lake or reservoir from spawning and rearing streams, they enter a more productive lentic (still or slow-moving water) environment that allows them to achieve rapid growth and energy storage.

Some reservoirs may have adversely affected bull trout, while others have provided benefits, and some may cause both benefits and impacts. For example, the basin of Hungry Horse Reservoir has functioned adequately for 50 years as a surrogate home for stranded Flathead Lake bull trout trapped upstream of the dam when it was completed. While this is an artificial impoundment, the habitat the reservoir provides and the presence of an enhanced prey base of native minnows, suckers, and whitefish within the reservoir sustain a large adfluvial bull trout population. Additionally, while barriers to migration are often viewed as a negative consequence of dams, the connectivity barrier at Hungry Horse Dam has served an important, albeit unintended, function in restricting the proliferation of nonnative *Salvelinus* species (including brook trout (*Salvelinus fontinalis*) and lake trout (*Salvelinus namaycush*)) upstream above the dam. Reservoir fluctuations may or may not harm bull trout populations at Hungry Horse Reservoir; site-specific information would best inform a determination of such effects. Instream flow analyses downstream of Hungry Horse Reservoir, which have used site-specific habitat suitability criteria, have shown that amount and duration of important bull trout habitats were greatly reduced following the installation of Hungry Horse Dam in 1952 (Miller *et al.* 2003, p. 60; Muhlfeld *et al.* 2010, p. 40).

Marine nearshore habitats have similar importance for the amphidromous (migrating between marine waters and river or streams) bull trout populations. These marine habitats and the associated nonnatal river systems used by amphidromous bull trout are integral to maintaining this life-history strategy. Similar to lakes and reservoirs, these areas provide highly productive foraging habitat as well as stable overwintering habitat.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

Bull trout are opportunistic feeders that prey upon other organisms. Prey selection is primarily a function of size and life-history strategy. Resident and juvenile migratory bull trout prey on terrestrial and aquatic insects, macro-zooplankton, and small fish (Donald and Alger 1993, p. 244; McPhail and Baxter 1996, p. 15). Adult migratory bull trout feed almost exclusively on other fish (Rieman and McIntyre 1993, p. 3). Habitat must provide the necessary aquatic and adjacent terrestrial conditions to harbor and maintain prey species in sufficient quantity and diversity to meet the physiological requirements necessary to maintain bull trout populations. Therefore, an abundant food base, including a broad array of terrestrial organisms of riparian origin, aquatic macroinvertebrates, and/

or forage fish, supports individual and population growth and allows for normal bull trout behavior.

Cover or Shelter

At all life stages, bull trout require complex forms of cover, including large woody debris, undercut banks, boulders, and pools (Fraley and Shepard 1989, pp. 137–138; Watson and Hillman 1997, p. 249). Many of these habitat features are dependent on watershed conditions as a whole (Howell 2010, pers.com). Juveniles and adults frequently inhabit side channels, stream margins, and pools with suitable cover (Sexauer and James 1997, p. 368). McPhail and Baxter (1996, p. 11) reported newly emerged fry are secretive and hide in gravel along stream edges and side channels. They also reported juveniles are found mainly in pools but also in riffles and runs, maintain focal sites near the bottom, and are strongly associated with instream cover, particularly overhead cover such as woody debris or riparian vegetation. Undercut banks and coarse substrates provide cover and overwinter habitat for juvenile bull trout (peer review comments, R. Thurow 2010, p. 1). All life-history stages of bull trout have been observed overwintering in deep beaver ponds or pools containing large woody debris (Jakober 1995, p. 90). Adult bull trout migrating to spawning areas have been recorded as staying 2 to 4 weeks at the mouths of spawning tributaries in deeper holes or near logs or cover debris (Fraley and Shepard 1989, p. 137). Bull trout may also use lotic (swift-flowing water) and in some cases saltwater environments seasonally for reasons that include use as cover. In conclusion, riparian vegetation; large wood; variable stream channel morphology including deep pools, side-channels, undercut banks and substrates; and in some cases access to downstream environments provide cover and shelter, which support individual and population growth and allow for normal bull trout behavior.

Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring

Bull trout have more specific habitat requirements than most other salmonids (Rieman and McIntyre 1993, p. 4). Habitat components that particularly influence their distribution and abundance include water temperature, cover, channel form, spawning and rearing substrate conditions, and migration habitat (Fraley and Shepard 1989, p. 138; Goetz 1989, p. 19; Watson and Hillman 1997, p. 247).

Relatively cold water temperatures are characteristic of bull trout habitat. Water temperatures above 15 °Celsius (C) (59 °Fahrenheit (F)), while not lethal, are believed to limit bull trout juvenile distribution (Fraley and Shepard 1989, p. 138). Although adults have been observed in large rivers throughout the Columbia River basin in water temperatures up to 20 °C (68 °F), steady and substantial declines in abundance have been documented in stream reaches where water temperature ranged from 15 to 20 °C (59 to 68 °F) Gamett (2002, pp. 30–32) .

Watson and Hillman (1997, p. 248) concluded watersheds must have specific physical characteristics to provide the necessary habitat requirements for bull trout spawning and rearing, and that these characteristics are not ubiquitous throughout the watersheds in which bull trout occur. The preferred spawning habitat of bull trout consists of low-gradient stream reaches with loose, clean gravel (Fraley and Shepard 1989, p. 133). Bull trout typically spawn in a narrow time window of a couple weeks during periods of decreasing water temperatures, but spawning ranges from August to November depending on local conditions (Swanberg 1997, p. 735). However, migratory forms are known to begin spawning migrations as early as April and to move upstream as much as 250 km (155 mi) to spawning areas (Fraley and Shepard 1989 p. 138; Swanberg 1997, p. 735).

Fraley and Shepard (1989, p. 137) reported the initiation of spawning by bull trout in the Flathead River system appeared to be related to water temperature, with spawning generally initiated when water temperatures dropped below 10 °C (50 °F). Goetz (1989, pp. 22–32) reported a spawning temperature range from 4 to 10 °C (39 to 50 °F), but the range could be wider in some areas (Howell *et al.* 2010, p. 102). Selection of spawning habitat by bull trout is also influenced across multiple spatial scales by hyporheic flow (Baxter and Hauer 2000, p. 1476), defined as a mixing of shallow groundwater and surface water beneath and lateral to a stream bed. Hyporheic flow is influenced by geomorphic complexity of the streambed and recognized to be important for surface water/groundwater interaction. Spawning areas are often associated with cold-water springs, glacial and snow melt, or groundwater upwelling (Rieman *et al.* 1997, p. 1121; Baxter *et al.* 1999, p. 137). Fraley and Shepard (1989, p. 137) also found groundwater influence and proximity to cover are important factors influencing spawning site selection. They reported the combination of relatively specific requirements resulted in a restricted spawning distribution in relation to available stream habitat. While bull trout are critically dependent on large, cold-water habitats, individuals can range widely through stream networks and use habitat that may have limited amounts of cold-water refuge (Dunham 2010, pers.com).

Depending on water temperature, egg incubation is normally 100 to 145 days (Pratt 1992, p. 5). Water temperatures of 1.2 to 5.4 °C (34.2 to 41.7 °F) have been reported for incubation, with an optimum (best embryo survivorship) temperature reported to be from 2 to 4 °C (36 to 39 °F) (Fraley and Shepard 1989, p. 138; McPhail and Baxter 1996, p. 10). Juveniles remain in the substrate after hatching. The time from egg deposition to emergence of fry can exceed 200 days. During the relatively long incubation period in the gravel, bull trout eggs and embryos are especially vulnerable to fine sediments (i.e., fine silt to coarse sand) and water quality degradation (Fraley and Shepard 1989, p. 141). Increases in fine sediment appear to reduce egg survival and emergence (Pratt 1992, p. 6) by restricting intragravel circulation and/or causing entombment of newly hatched alevins (young salmon that have the yolk sac still attached). Juveniles are likely also affected by reduced interstitial habitat and cover. High juvenile densities have been reported in areas characterized by a diverse cobble substrate and a low percentage of fine sediments (Shepard *et al.* 1984, p. 6). Habitats with cold water temperature and appropriately-sized stream substrate with a low level of fine sediments are necessary factors for successful egg incubation and juvenile rearing that supports individual and population growth (Watson and Hillman 1997, pp. 238–246; WFPB 1997, pp. 98, F-25). Because the size and amounts of fines acceptable to bull trout will likely vary from system to system, providing specific examples of local criteria as we did in the proposed rule may be misleading; therefore, for this final rule we have removed the examples we provided in the proposed rule.

Habitats Protected from Disturbance or Representative of the Historical, Geographical, and Ecological Distributions of the Species

Other threats to water quality in bull trout critical habitat include suspended sediment and environmental contaminants. Suspended sediment, made up of the smallest fine materials, may vary in size depending on stream flow and channel type (MacDonald and

Wissmar 1991, pp. 98–99). Suspended sediments and the resulting turbidity of the water can impact salmonids (including bull trout) and their prey (e.g., macro invertebrates or other fish). High levels of suspended sediments can affect swimming, feeding, or gill function by reducing visibility and ability to pursue prey, and by interrupting proper physiological gill function.

Water diversion and reservoir development can reduce stream flow, reduce the amount of water available in a stream channel, change water quality, and alter groundwater regimes. These changes may collectively impact habitat and passage for bull trout, and can cause increases in water temperatures.

Alterations to natural habitat conditions may also increase nonnative species predation and competition, which can significantly affect bull trout populations. Nonnative species have been introduced in many watersheds currently occupied by bull trout. Depending on local conditions, bull trout recovery may be either reduced or precluded by the presence of nonnative (and competitive) species. Some nonnative fish species that prey on bull trout include lake trout, walleye (*Sander vitreum*), northern pike (*Esox lucius*), smallmouth bass (*Micropterus dolomieu*), and brown trout (*Salmo trutta*). Brown trout or other introduced salmonids, such as rainbow trout (*Onchorynchus mykiss*), as well as smallmouth bass, northern pike, walleye, and other species, also compete with bull trout for limited resources. Brook trout commonly hybridize with bull trout and are better adapted to compete with bull trout when they occur together, particularly in degraded habitat (Ratliff and Howell 1992, p. 16; Leary *et al.* 1993, p. 857). Brook trout and bull trout hybrids are not uncommon where they are sympatric, and it usually is a cross of a female bull trout and a male brook trout, which is more costly, genetically speaking, to the bull trout population (DeHaan *et al.* 2009, p. 6; Kanda *et al.* 2002, p. 776). Presence of brook trout and lake trout frequently lead to declines in abundance and distribution of bull trout (MBTSG 1998, pp.46–47; Donald and Alger 1993, p. 245; Fredenberg 2002, p. 150).

The stability of stream channels and stream flows may be important habitat characteristics for bull trout (Rieman and McIntyre 1993, p. 5). Bull trout may select spawning locations to reduce risk of scour especially in rain dominated areas with higher probability of peak flows during incubation. Complex channel types including presence of side channels, stream margins, and cover near spawning sites, including pools are important to maintain in these types of spawning reaches (Shellberg 2002, p. 80). Side channels, stream margins, and pools with suitable cover for bull trout are sensitive to activities that directly or indirectly affect stream channel stability and alter natural flow patterns. For example, altered stream flow in the fall may disrupt bull trout during the spawning period, and channel instability may decrease survival of eggs and young juveniles in the gravel during winter through spring (Fraley and Shepard 1989, p. 141; Pratt 1992, p. 6; Pratt and Huston 1993, p. 70). In areas west of the Cascade Range, it is common to have peak flows from rainstorms during the incubation period in the fall (Shellberg 2002, p. 36). East of the Cascade Range, it is not as common to have peak flows until spring snows melt. Also, bull trout use all parts of a waterbody at various times, including foraging in shallow water areas at night; unstable stream flows from impoundments, for example, may impact these behaviors (peer review comments, C. Muhlfeld 2010, attachment p. 22). Streams with a natural hydrograph (those with normal discharge variations over time as a response to seasonal precipitation), permanent water, and an absence of nonnative species are representative of the highest quality habitat of the species.

We are designating bull trout critical habitat of two primary use types: (1) Spawning and rearing, and (2) foraging, migration, and overwintering (FMO). Each area being designated as occupied critical habitat contains one or more of those physical or biological features essential to the conservation of the species, which may require special management considerations or protection, which are the PCEs for the bull trout. Each area being designated as unoccupied habitat has been determined to be essential for the conservation of the species. The justification document developed to support the proposed rule identifies all waterbody segments as either SR or FMO habitat. This document is available at our website at *http://www.fws.gov/pacific/bulltrout*, or upon request from the Idaho Fish and Wildlife Office (see **ADDRESSES** above). Due to a lack of sufficiently detailed data and uncertainty over precise dividing lines between these two habitat types, we do not identify the specific PCEs present for each waterbody segment. Factors such as time of year, seasonal precipitation, drought conditions, and other phenomena can influence the essential physical or biological features present at any particular location at any particular time given the variability of habitats used by bull trout. In addition, attributes such as stream flow and substrate size and composition are influenced by stream order and gradient. Accordingly, we are unable to define a conclusive upper and lower range of conditions for specific PCEs, given this complexity. However, future section 7(a)(2) consultations on specific Federal actions will help identify the PCEs relevant to a specific waterbody, and provide information to Federal agencies regarding special management considerations or protections that may be appropriate at that location.

Based on the above biological needs of the species, and keeping in mind the need to identify PCEs with sufficient generality to apply to the wide range of bull trout and diversity of its habitat, we derived nine specific PCEs required for bull trout from the biological needs of the species as described or referred to in the *Background* section of this final rule and the following information. The nine PCEs relate to: (1) Water quality; (2) migration habitat; (3) food availability; (4) instream habitat; (5) water temperature; (6) substrate characteristics; (7) stream flow; (8) water quantity; and (9) nonnative species.

Primary Constituent Elements for Bull Trout

Based on the needs described above and our current knowledge of the life history, biology, and ecology of the species and the characteristics of the habitat necessary to sustain the essential bull trout life-history functions, we have determined that the following PCEs are essential for the conservation of bull trout and may require special management considerations or protection.

(1) Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.

(2) Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers.

(3) An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.

(4) Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that

establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.

(5) Water temperatures ranging from 2 to 15 °C (36 to 59 °F), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.

(6) In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.

(7) A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.

(8) Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.

(9) Sufficiently low levels of occurrence of nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.

Criteria Used To Identify Critical Habitat

As required by section 4(b) of the Act, we used the best scientific and commercial data available in determining areas that contain the physical or biological features essential to the conservation of bull trout that may require special management considerations or protection, and areas outside of the geographical area occupied at the time of listing that are essential for bull trout conservation (see *Previous Federal Actions* section). The steps we followed in identifying critical habitat were:

(1) We determined in accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12, the physical or biological habitat features essential to the conservation of the species, as explained in the previous section. We reviewed the best available scientific information pertaining to the habitat requirements of this species, including consulting with biologists from partner agencies and entities including Federal, State, tribal, and private biologists, as well as experts from other scientific disciplines such as hydrology and forestry, resource users, and other stakeholders with an interest in bull trout and the habitats they depend on for survival. We also reviewed available information concerning bull trout habitat use and preferences; habitat conditions; threats; limiting factors; population demographics; and known locations, distribution, and abundance of bull trout.

(2) We then identified the geographical areas occupied by bull trout at the time of listing and areas not occupied that may be essential for the conservation of bull trout. We used information gathered during the bull trout recovery planning process and the bull trout draft recovery plan (Service 2002), and supplemented that information with recent information developed by State agencies, Tribes, the USFS, and other entities. This information was used to update bull trout status and distribution information for purposes of the proposed critical habitat designation. For areas where we had data gaps, we solicited expert opinions from knowledgeable fisheries biologists in the local area. Material reviewed included data in reports submitted during section 7 consultations, reports from biologists holding section 10(a)(1)(A) recovery permits, research published in peer-reviewed scientific journals, academic theses, State and Federal government agency reports, and regional GIS overlays.

(3) We identified specific areas within each of the six new draft recovery units described above that contain the physical or biological features essential to bull trout conservation, considering distribution, abundance, trend, and connectivity needs. The objective was to ensure the areas proposed for designation as critical habitat would effectively achieve the principles we believe are important for recovery: (a) Conserve the opportunity for diverse life-history expression; (b) conserve the opportunity for genetic diversity; (c) ensure bull trout are distributed across representative habitats; (d) ensure sufficient connectivity among populations; (e) ensure sufficient habitat to support population viability (e.g., abundance, trend indices); (f) address threats (see *Special Management Considerations or Protection* below), including climate change (described later in this section); and (g) ensure sufficient redundancy in conserving population units. These recovery principles take into account the threats and physical or biological needs of the species throughout its range, and focus on the rangewide recovery needs.

Some areas that contained the physical or biological features did not meet one or more of the seven recovery principles because they did not contain the physical or biological features in an appropriate quantity and spatial arrangement. Accordingly, the areas with such features were determined not to be essential to bull trout conservation. For example, some areas may have contained spawning habitat (PCEs 5 and 6), but were disconnected from known populations and were not known to support viable bull trout populations. A few areas (e.g., the entire Lucky Peak core area in the lower Boise River drainage in southwest Idaho) were not included because of limited habitat quantity, marginal habitat quality, low bull trout density, or only sporadic presence of bull trout recorded.

Global climate change threatens bull trout throughout its range in the coterminous United States. Downscaled regional climate models for the Columbia River basin predict a general air temperature warming of 1.0 to 2.5 °C (1.8 to 4.5 °F) or more by 2050 (Reiman *et al.* 2007, p. 1552). This predicted temperature trend may have important effects on the regional distribution and local extent of habitats available to salmonids (Rieman *et al.* 2007, p. 1552), although the relationship between changes in air temperature and water temperature are not well understood. The optimal temperatures for bull trout appear to be substantially lower than those for other salmonids (Selong and McMahon 2001), p. 1031; Rieman *et al.* 2007, p. 1553). Coldwater fish do not physically adapt well to thermal increases (McCullough *et al.* 2009, pp. 96–101). Instead, they are more likely to change their behavior, alter the timing of certain behaviors, experience increased physical and biochemical stress, and exhibit reduced growth and survival (McCullough *et al.* 2009, pp. 98–100). Bull trout spawning and initial rearing areas are currently largely constrained by low fall and winter water temperatures, and define the spatial structuring of local populations or habitat patches across larger river basins; habitat patches represent networks of thermally suitable habitat that may lie in adjacent watersheds and are disconnected (or fragmented) by intervening stream segments of

seasonally unsuitable habitat or by actual physical barriers (Rieman *et al.* 2007, p. 1553). With a warming climate, thermally suitable bull trout spawning and rearing areas are predicted to shrink during warm seasons, in some cases very dramatically, becoming even more isolated from one another under moderate climate change scenarios (Rieman *et al.* 2007, pp. 1558–1562; Porter and Nelitz 2009, pp. 5–7).

Climate change will likely interact with other stressors, such as habitat loss and fragmentation (Rieman *et al.* 2007, pp. 1558–1560; Porter and Nelitz 2009, p. 3); invasions of nonnative fish (Rahel *et al.* 2008, pp. 552–553); diseases and parasites (McCullough *et al.* 2009, p. 104); predators and competitors (McMahon *et al.* 2007, pp. 1313–1323; Rahel *et al.* 2008, pp. 552–553); and flow alteration (McCullough *et al.* 2009, pp. 106–108), rendering some current spawning, rearing, and migratory habitats marginal or wholly unsuitable. For example, introduced congeneric populations of brook trout are widely distributed throughout the range of bull trout. McMahon *et al.* (2007, p. 1320) demonstrated the presence of brook trout has a marked negative effect on bull trout, an effect that is magnified at higher water temperatures (16–20 °C (60–68 °F)). Changes and complex interactions are difficult to predict at a spatial scale relevant to bull trout conservation efforts, and key gaps exist in our understanding of whether bull trout (and other coldwater fishes) can behaviorally adapt to climate change.

We considered effects of climate change on bull trout by first applying best professional judgment to screen core areas to assess those that might be most vulnerable to climate change effects. These were highlighted in our 2008 update of status and threats information in the core area template documents (Service 2008, p. 15). For example, in many locations we prioritized cold water spring habitats for conservation because they may be among the most resistant habitats to climate change effects. In other locations we deemphasized protection of some already low-elevation, warmer, marginal bull trout habitats, anticipating that they would become even less valuable for the future conservation of bull trout. Over a period of decades, climate change may directly threaten the integrity of the essential physical or biological features described in PCEs 1, 2, 3, 5, 7, 8 and 9. Protecting bull trout strongholds and cold water refugia from disturbance and ensuring connectivity among populations were important considerations in addressing this potential impact.

Over 30 years of research into wildlife population sizes required for long-term viability (avoiding extinction) suggests that a minimum number of 5,000 individuals (rather than 50 or 500) may be needed in light of rapidly changing environmental conditions, such as accelerated climate change (Traill *et al.* 2009, p. 3). Although the minimum number of individuals may vary depending on the species involved, for bull trout, we have included additional unoccupied habitats in those areas where occupied habitats currently support far less than this number of individuals, so there are adequate PCEs for those small populations to recover.

Each of the areas being designated as occupied critical habitat (a) satisfies the above recovery principles; (b) is within the geographic range occupied by the species at the time of listing, or was unoccupied at the time of listing, but we have determined to be essential to the conservation of the species; and (c) contains the physical or biological features essential to the conservation of the species that may require special management considerations or protection.

(4) In selecting areas to designate as critical habitat, we considered factors specific to each river system, such as size (i.e., stream order), gradient, channel morphology, connectivity to other aquatic habitats, and habitat complexity and diversity, as well as rangewide recovery considerations. We took into account the fact that bull trout habitat preference ranges from small headwater streams used largely for spawning and rearing, to downstream mainstem portions of river networks used for rearing, foraging, migration, or overwintering.

To help determine which specific areas contained the physical or biological features essential to bull trout conservation, we considered the species' status in each recovery unit by evaluating whether: (a) Bull trout are rare and exposed to threats, such that recovery needs include removing threats from essentially all existing occurrences and restoring bull trout to portions of their historic range; or (b) bull trout are declining and exposed to threats, such that recovery needs include stopping the decline and eliminating threats across key portions of their range, such as currently occupied strongholds.

NatureServe is a nonprofit conservation organization whose mission is to provide science-based recommendations for conservation actions. NatureServe has identified a suite of factors related to rarity, trends, and threats to assess the extinction or extirpation risk of species and ecosystems, and has developed a computer spread-sheet tool that allows 10 conservation status factors to be entered and then ranked for different populations. The protocol for assigning a conservation status rank is based on scoring an element against these 10 conservation status factors, which are grouped into three categories based on the characteristic of the factor: rarity (six factors), trends (two factors), and threats (two factors) (Master *et al.* 2007, pp. 6–11). We have concluded that the NatureServe protocol provides a rational framework for assessing bull trout status and threats. By applying the NatureServe status assessment ranking tool, which considers factors such as population size, amount of habitat, and type and degree of threat using data through 2007, we were able to estimate the relative status and threats within each of the 118 bull trout core areas or watersheds and each of the 6 draft recovery units.

This critical habitat designation focuses on areas containing the physical or biological features essential to the conservation of local populations and spawning and rearing streams of highest conservation value. Factors taken into account at the smaller, local population scale included the largest areas or populations, most highly connected populations, and areas with the highest conservation potential (i.e., the quantity and quality of physical or biological features present). At the larger core area scale, the designation also focuses on areas having the highest conservation value by applying the factors that were applied at the local population scale. At both the local population and core area scales, the designation emphasizes essential FMO habitats of highest conservation value, such as habitats that connect local populations and core areas and provide required space for life-history functions. In some areas, we have determined that specific areas outside the geographical area occupied by bull trout at the time of listing are essential for the conservation of the species, and we are designating them as critical habitat. In those areas, bull trout habitat and population loss over time necessitates reestablishing bull trout in currently unoccupied habitat areas to achieve recovery.

Based on the considerations described above, we designate a greater proportion of occupied habitat, as well as additional unoccupied habitat, for protection in areas where bull trout demonstrate less resiliency, redundancy, and representation, and less critical habitat elsewhere. For example, in the Klamath Basin Recovery Unit where threats to bull trout are

greatest, we are designating all habitat known to be occupied at the time of listing that contains the physical or biological features essential to the conservation of the species and that may require special management considerations or protection, and we are also designating a substantial proportion of unoccupied habitat outside of the geographical area occupied by the species at the time of listing that has been determined to be essential for bull trout conservation. Our primary consideration for designating critical habitat for occupied areas was to protect species strongholds for spawning and rearing and FMO habitats. Our primary consideration for designating most of unoccupied areas we are including in this designation was to restore connectivity among populations by protecting FMO habitats.

We are designating habitat in 32 critical habitat units (CHUs) within the geographical area occupied by the species at the time of listing. These units have an appropriate quantity and spatial arrangement of physical or biological features present that supports bull trout metapopulations, life processes, and overall species conservation. Twenty-nine of the units contain all of the physical or biological features identified in this final rule and support multiple life-history requirements. Three of the mainstem river units in the Columbia and Snake River basins contain most of the physical or biological features necessary to support the bull trout's particular use of that habitat, other than those associated with PCEs 5 and 6, which relate to breeding habitat. Lakes and reservoirs within these units also contain most of the physical or biological features necessary to support bull trout, other than those associated with PCEs 1, 4, and 6. Marine nearshore habitats within the Olympic Peninsula and Puget Sound critical habitat units contain only a subset of the identified physical or biological features for bull trout (PCEs 2, 3, 5, and 8). However, these habitats are important to conserving a diverse life-history expression and representative habitats.

When determining critical habitat boundaries within this final rule, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack physical or biological features for bull trout. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this final rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these lands would not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical and biological features in the adjacent critical habitat.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographic area occupied by the species at the time of listing contain the features that are essential to the conservation of the species and may require special management needs or protection. Accordingly, in identifying critical habitat in occupied areas, we assess whether the PCEs within the areas determined to be occupied at the time of listing may require any special management considerations or protection. Although the determination that special management may be required is not a prerequisite to designating critical habitat in areas essential to the conservation of the species that were unoccupied at the time of listing, all areas we are designating as critical habitat require some level of management to address current and future threats to bull trout, to maintain or enhance the physical or biological features essential to its conservation, and to ensure the recovery of the species.

The primary land and water management activities impacting the physical or biological features essential to the conservation of bull trout that may require special management considerations within the critical habitat units include timber harvest and road building (forest management practices), agriculture and agricultural diversions, livestock grazing, dams, mining, and nonnative species (Beschta *et al.* 1987, p. 194; Chamberlin *et al.* 1991, p. 194; Furniss *et al.* 1991, p. 297; Meehan 1991, pp. 6–10; Nehlsen *et al.* 1991, p. 4; Sedell and Everest 1991, p. 6; Craig and Wissmar 1993, p. 18; Frissell 1993, p. 350; Henjum *et al.* 1994, p. 6; McIntosh *et al.* 1994, p. 37; Wissmar *et al.* 1994, p. 28; MBTSG 1995a, p. i; MBTSG 1994b, p. i; MBTSG 1995c, p. i; MBTSG 1995d, p. 1; MBTSG 1995e, p. 1; USDA and USDI 1995, p. 8; 1997, pp. 132–144; Light *et al.* 1996, p. 6; MBTSG 1996a, p. ii; MBTSG 1996b, p. 1; MBTSG 1996c, p. i; MBTSG 1996d, p. i; MBTSG 1996e, p. i; MBTSG 1996f, p. 1; MBTSG 1996g, p. 7; MBTSG 1996h, p. 7). Urbanization and residential development may also impact the physical or biological features and require special management considerations or protection.

Timber harvest and road building in or close to riparian areas can immediately reduce stream shading and cover, channel stability, and large woody debris recruitment and increase sedimentation and peak stream flows (Chamberlin *et al.* 1991, p. 180; Ripley *et al.* 2005, p. 2436). These activities can, in turn, lead to increased stream temperatures, bank erosion, and decreased long-term stream productivity. The effects of road construction and associated maintenance account for a majority of sediment loads to streams in forested areas; in addition, stream crossings also can impede fish passage (Shepard *et al.* 1984, p. 1; Cederholm and Reid 1987, p. 392; Furniss *et al.* 1991, p. 301). Sedimentation affects streams by reducing pool depth, altering substrate composition, reducing interstitial space, and causing braiding of channels (Rieman and McIntyre 1993, p. 6), which reduce carrying capacity. Sedimentation negatively affects bull trout embryo survival and juvenile bull trout rearing densities (Shepard *et al.* 1984, p. 6; Pratt 1992, p. 6). An assessment of the interior Columbia Basin ecosystem revealed that increasing road densities were associated with declines in four nonanadromous salmonid species (bull trout, Yellowstone cutthroat trout (*Oncorhyncus clarkii bouvieri*), westslope cutthroat trout (*O. c. lewisi*), and redband trout (*O. mykiss* spp.)) within the Columbia River basin, likely through a variety of factors associated with roads. Bull trout were less likely to use highly roaded basins for spawning and rearing and, if present in such areas, were likely to be at lower population levels (Quigley and Arbelbide 1997, p. 1183). These activities can directly and immediately threaten the integrity of the essential physical or biological features described in PCEs 1 through 6. Special management considerations or protection that may be needed include the implementation of best management practices specifically designed to reduce these impacts in streams with bull trout, particularly in spawning and rearing habitat. Such best management practices could require measures to ensure that road stream crossings do not impede fish migration or occur in or near spawning/rearing areas, or increase road surface drainage into streams.

Agricultural practices and associated activities adjacent to streams and in upland portions of watersheds also can

affect the physical or biological features essential to bull trout conservation. Irrigation withdrawals, including diversions, can dewater spawning and rearing streams, impede fish passage and migration, and cause entrainment. Discharging pollutants such as nutrients, agricultural chemicals, animal waste, and sediment into spawning and rearing waters is also detrimental (Spence *et al.* 1996, p. 128). Agricultural practices regularly include stream channelization and diking, large woody debris and riparian vegetation removal, and bank armoring (Spence *et al.* 1996, p. 127). Improper livestock grazing can promote streambank erosion and sedimentation and limit the growth of riparian vegetation important for temperature control, streambank stability, fish cover, and detrital input (Platts 1991, pp. 397–399). In addition, grazing often results in increased organic nutrient input in streams (Platts 1991, p. 423). These activities can directly and immediately threaten the integrity of the essential physical or biological features described in PCEs 1 through 8. Special management could include best management practices specifically designed to reduce these types of impacts in streams with bull trout, such as fencing livestock from stream sides, moving animal feeding operations away from surface waters, using riparian buffer strips near crop fields, minimizing water withdrawal from streams, avoiding stream channel and spring head alteration, and avoiding stream dewatering.

Dams constructed without fish passage or with poorly designed fish passage features create barriers to migratory bull trout, precluding access to suitable spawning, rearing, and migration habitats. Dams disrupt the connectivity within and between watersheds essential for maintaining aquatic ecosystem function (Naiman *et al.* 1992, p. 127; Spence *et al.* 1996, p. 141) and bull trout subpopulation interaction (Rieman and McIntyre 1993, p. 15). Natural recolonization of historically occupied sites can be precluded by migration barriers (e.g., McCloud Dam in California, or impassable culverts under roads). Also, fluctuation of reservoir levels may affect bull trout populations, although these effects are best determined on a case-specific basis. These activities can directly and immediately threaten the integrity of the essential physical or biological features described in PCEs 2 through 7 and 9. Special management considerations that may be needed include the implementation of best management practices, such as providing fish passage, specifically designed to reduce these impacts in streams with bull trout.

Mining can degrade aquatic systems by generating sediment and heavy metals pollution, altering water pH levels, and changing stream channels and flow (Martin and Platts 1981, p. 2). These activities can directly and immediately threaten the integrity of the essential physical or biological features described in PCEs 1, 6, 7, and 8, even if they occur some distance upstream from critical habitat. Special management could require best management practices specifically designed to reduce these impacts in streams with bull trout, such as avoiding surface water impacts from mining activities and neutralizing toxic materials.

Introductions of nonnative invasive species by the Federal government, State fish and game departments, and unauthorized private parties across the range of bull trout have resulted in predation, declines in abundance, local extirpations, and hybridization of bull trout (Bond 1992, p. 3; Howell and Buchanan 1992, p. viii; Donald and Alger 1993, p. 245; Leary *et al.* 1993, p. 857; Pratt and Huston 1993, p. 75; MBTSG 1995b, p. 10; MBTSG 1995d, p. 21; Platts *et al.* 1995, p. 9; MBTSG 1996g, p. 7; Palmisano and Kaczynski, in litt.1997, p. 29). Nonnative species may exacerbate stresses on bull trout from habitat degradation, fragmentation, isolation, and species interactions (Rieman and McIntyre 1993, p. 3). These activities can over time directly threaten the integrity of the essential physical or biological features described in PCE 9. Special management needs and considerations could require the implementation of best management practices specifically designed to reduce these impacts in streams with bull trout, such as avoiding future introductions, eradicating or controlling introduced species, and managing habitat to favor bull trout over other species.

Urbanization and residential development in watersheds has led to decreased habitat complexity (uniform stream channels and simple nonfunctional riparian areas); impediments and blockages to fish passage; increased surface runoff (more frequent and severe flooding); and decreased water quality and quantity (Spence *et al.* 1996, pp. 130–134). In nearshore marine areas, urbanization and residential development has led to significant loss or physical alteration of intertidal and shoreline habitats, as well as to the contamination of many estuarine and nearshore areas (PSWQAT 2000, p. 47; BMSL *et al.* 2001, ch. 10, pp. 1–27 ; Fresh *et al.* 2004, p. 1). Activities associated with urbanization and residential development can incrementally threaten the integrity of the essential physical or biological features described in PCEs 1 through 5, 7, and 8. Special management could require best management practices specifically designed to reduce these impacts in streams with bull trout, such as setting back developments from riparian areas; minimizing water runoff from urban areas directly to streams; minimizing hard surfaces such as pavement; and minimizing impacts related to fertilizer application.

Final Critical Habitat Designation

We are designating 32 critical habitat units (CHUs) in 6 recovery units as critical habitat for bull trout. Each CHU is comprised of a number of specific streams or reservoir/lake areas, which are identified as subunits in this final rule.

In freshwater areas, critical habitat includes the stream channels within the designated stream reaches and a lateral extent as defined by the bankfull elevation on one bank to the bankfull elevation on the opposite bank. If bankfull elevation is not evident on either bank, the ordinary high-water line determines the lateral extent of critical habitat. The lateral extent of critical habitat in lakes may initially be defined by the perimeter of the waterbody as mapped on standard 1:24,000 scale topographic maps. In marine nearshore areas, the inshore extent of critical habitat is the mean higher high-water (MHHW) line, including the uppermost reach of the saltwater wedge within tidally influenced, freshwater heads of estuaries. Critical habitat extends offshore to the depth of 10 meters (m) (33 feet (ft)) relative to the mean low low-water (MLLW) line. The Service expects the effects of this rule designating bull trout critical habitat to also extend to any action that may adversely affect the habitat, potentially including activities on lands adjacent to or upstream of designated stream bed and banks, as discussed elsewhere in this rule.

The critical habitat areas we describe below constitute our best assessment at this time of areas that meet the definition of critical habitat for bull trout.

The 32 units we designate as critical habitat are:

A. Coastal Recovery Unit
(1) Olympic Peninsula
(2) Puget Sound
(3) Lower Columbia River Basins
(4) Upper Willamette River
(5) Hood River

(6) Lower Deschutes River
(7) Odell Lake
(8) Mainstem Lower Columbia River
B. Klamath Recovery Unit
(9) Klamath River Basin
C. Mid-Columbia Recovery Unit
(10) Upper Columbia River Basins
(11) Yakima River
(12) John Day River
(13) Umatilla River
(14) Walla Walla River Basin
(15) Lower Snake River Basins
(16) Grande Ronde River
(17) Imnaha River
(18) Sheep and Granite Creeks
(19) Hells Canyon Complex
(20) Powder River Basin
(21) Clearwater River
(22) Mainstem Upper Columbia River
(23) Mainstem Snake River
D. Upper Snake Recovery Unit
(24) Malheur River Basin
(25) Jarbidge River
(26) Southwest Idaho River Basins
(27) Salmon River Basin
(28) Little Lost River
E. Columbia Headwaters Recovery Unit
(29) Coeur d'Alene River Basin
(30) Kootenai River Basin
(31) Clark Fork River Basin
F. Saint Mary Recovery Unit
(32) Saint Mary River Basin

A total of 31,750.8 km (19,729.0 mi) of stream (including 1,213.2 km (754.0 mi) of marine shoreline) (Table 1), and 197,589.3 ha (488,251.7 ac) of reservoirs and lakes (Table 2) are designated as bull trout critical habitat. A total of 1,323.7 km (822.5 mi; 4.2 percent) of streams, reservoirs, and lakes were unoccupied at the time of listing, with the remainder occupied. A total of 15,281.1 4 km (9,495.2 mi; 48.1 percent) of stream and marine shoreline habitat is used for spawning and rearing (all in streams), with the remainder—plus all reservoirs and lakes—used for FMO. Tables 3 and 4 present total stream shoreline length and reservoirs and lakes designated in each State. Table 5 presents the ownership for all stream shoreline designated as critical habitat.

TABLE 1.—STREAM/SHORELINE DISTANCE DESIGNATED AS BULL TROUT CRITICAL HABITAT BY CRITICAL HABITAT UNIT

Critical habitat unit	Kilometers	Miles
1. Olympic Peninsula	748.7	465.2
1. Olympic Peninsula (Marine)	529.2	328.8
2. Puget Sound	1,840.2	1,143.5
2. Puget Sound (Marine)	684.0	425.0
3. Lower Columbia River Basins	119.3	74.2
4. Upper Willamette River	312.4	194.1
5. Hood River	128.1	79.6
6. Lower Deschutes River	232.8	144.7
7. Odell Lake	27.4	17.0
8. Mainstem Lower Columbia River	340.4	211.5
9. Klamath River Basin	445.2	276.6
10. Upper Columbia River Basins	931.8	579.0
11. Yakima River	896.9	557.3
12. John Day River	1,089.6	677.0
13. Umatilla River	163.0	101.3
14. Walla Walla River Basin	383.7	238.4
15. Lower Snake River Basins	270.8	168.3
16. Grande Ronde River	1,057.9	657.4
17. Imnaha River	285.7	177.5
18. Sheep and Granite Creeks	47.9	29.7
19. Hells Canyon Complex	377.5	234.6
20. Powder River Basin	296.5	184.2
21. Clearwater River	2,702.1	1,679.0
22. Mainstem Upper Columbia River	520.1	323.2
23. Mainstem Snake River	451.7	280.6
24. Malheur River Basin	272.3	169.2
25. Jarbidge River	245.2	152.4
26. Southwest Idaho River Basins	2,150.0	1,335.9
27. Salmon River Basin	7,376.5	4,583.5
28. Little Lost River	89.2	55.4
29. Coeur d'Alene River Basin	821.5	510.5
30. Kootenai River Basin	522.5	324.7
31. Clark Fork River Basin	5,356.0	3,328.1
32. Saint Mary River Basin	34.7	21.6
Total	31,750	19,729

TABLE 2.—AREA OF RESERVOIRS OR LAKES DESIGNATED AS BULL TROUT CRITICAL HABITAT BY CRITICAL HABITAT UNIT

Critical habitat unit	Hectares	Acres
1. Olympic Peninsula	3,064.2	7,571.8
2. Puget Sound	16,260.9	40,181.5
3. Lower Columbia River Basins	0.0	0.0
4. Upper Willamette River	3,601.5	8,899.5
5. Hood River	36.9	91.1
6. Lower Deschutes River	1,224.9	3,026.8
7. Odell Lake	1,387.1	3,427.6
9. Klamath River Basin	3,775.5	9,329.4
10. Upper Columbia River Basins	1,033.2	2,553.1
11. Yakima River	6,285.2	15,530.9
16. Grande Ronde River	605.2	1,495.5

TABLE 2.—AREA OF RESERVOIRS OR LAKES DESIGNATED AS BULL TROUT CRITICAL HABITAT BY CRITICAL HABITAT UNIT—Continued

Critical habitat unit	Hectares	Acres
20. Power River Basin	897.0	2,216.5
21. Clearwater River	6,721.9	16,610.1
24. Malheur River Basin	715.9	1,768.9
26. Southwest Idaho River Basins	4,310.5	10,651.5
27. Salmon River Basin	1,683.8	4,160.6
29. Coeur d'Alene River Basin	12,606.9	31,152.1
30. Kootenai River Basin	12,089.2	29,873.0
31. Clark Fork River Basin	119,620.1	295,586.6
32. Saint Mary River Basin	1,669.3	4,125.0
Total	197,589.2	488,251.7

TABLE 3.—STREAM/SHORELINE DISTANCE DESIGNATED AS BULL TROUT CRITICAL HABITAT BY STATE

State	Kilometers	Miles
Idaho	14,116.5	8,771.6
Montana	4,918.9	3,056.5
Nevada	115.6	71.8
Oregon	4,563.9	2,835.9
Oregon/Idaho	173.3	107.7
Washington	6,104.8	3,793.3
Washington Marine	1,213.2	753.8
Washington/Idaho	59.9	37.2
Washington/Oregon	484.8	301.3
Total	31,750.8	19,729.0

TABLE 4.—AREA OF RESERVOIRS OR LAKES DESIGNATED AS BULL TROUT CRITICAL HABITAT BY STATE

State	Hectares	Acres
Idaho	68,884.9	170,217.5
Montana	89,626.4	221,470.7
Oregon	12,244.0	30,255.5
Washington	26,834.0	66,308.1
Total	197,589.2	488,251.7

TABLE 5.—STREAM/SHORELINE DISTANCE DESIGNATED AS BULL TROUT CRITICAL HABITAT BY OWNERSHIP

Ownership	Kilometers	Miles
Federal	20,217.3	12,562.4
Federal/Private	176.0	109.4
Federal/State	4.4	2.8
State	556.5	345.8
State/Private	0.4	0.2
Tribal	226.0	140.4
Tribal/Private	28.1	17.4
Private	10,542.1	6,550.5
Total	31,750.8	19,729.0

We present a description of all critical habitat designated in each of 32 units below, organized by recovery unit. The areas being designated as critical habitat satisfy each of the above *Criteria Used to Identify Critical Habitat* considerations, and will conserve the opportunity for diverse life-history expression and genetic diversity; ensure that bull trout are distributed across representative habitats; ensure sufficient connectivity among populations; ensure sufficient habitat to support population viability; address threats; and ensure sufficient redundancy in conserving population units. The characteristics of each critical habitat unit, subunit, and, in some cases, waterbody segment that establish why a specific area is essential to the conservation of bull trout are identified in the justification document (Service 2010). Examples of attributes that were considered include habitat use (FMO, spawning and rearing), occupancy data, geographic limits, accessibility, PCE presence, presence or absence of barriers, genetic analysis (used in metapopulation context), population data, habitat condition, and presence of other anadromous salmonids. Maps depicting the units and subunits appear in the **Regulation Promulgation** section below. For a more detailed textual and graphic description of all units and subunits, please see our website at *http://www.fws.gov/pacific/bulltrout*, or contact the Idaho Fish and Wildlife Office (see **ADDRESSES** above).

Coastal Recovery Unit

Unit 1: Olympic Peninsula Unit

The Olympic Peninsula CHU is located in northwestern Washington. Bull trout populations inhabiting the Olympic Peninsula comprise the coastal component of the Coastal–Puget Sound population. The unit includes approximately 748.7 km (465.2 mi) of stream, 3,064.2 ha (7,571.8 ac) of lake surface area, and 529.2 km (328.8 mi) of marine shoreline designated as critical habitat. This CHU is bordered by Hood Canal to the east, Strait of Juan de Fuca to the north, the Pacific Ocean to the west, and the Lower Columbia River Basins and Puget Sound CHUs to the south. It extends across portions of Grays Harbor, Clallam, Mason, Pacific, and Jefferson Counties. All of the major river basins initiate from the Olympic Mountains. The Olympic Peninsula CHU is divided into 10 critical habitat subunits. Although delta areas and small islands are difficult to map and may not be specifically identified by name, included within the critical habitat proposal are delta areas where streams form sloughs and braids and the nearshore of small islands found within the designated marine areas. The State of Washington has assigned most streams a stream catalog number. Typically, if an unnamed stream or stream with no official U.S. Geological Survey name is designated as critical habitat, the stream catalog number is provided for reference. In those cases where tributary streams do not have a catalog number, they are referred to as "unnamed" or a locally accepted name is used. The subunits within this unit provide spawning, rearing, foraging, migratory, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 2: Puget Sound Unit

The Puget Sound CHU includes approximately 1,840.2 km (1,143.5 mi) of streams; 16,260.9 ha (40,181.5 ac) of lake surface area; and 684.0 km (442.5 mi) of marine shoreline designated as critical habitat. The CHU is bordered by the Cascade Range to the east, Puget Sound to the west, Lower Columbia River Basins and Olympic Peninsula CHUs to the south, and the U.S.–Canada border to the north. The CHU extends across Whatcom, Skagit, Snohomish, King, Pierce, Thurston, and Island Counties in Washington. The major river basins initiate from the Cascade Range and flow west, discharging into Puget Sound, with the exception of the Chilliwack River system, which flows northwest into British Columbia, discharging into the Fraser River. The Puget Sound CHU is divided into 13 CHSUs. The subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 3: Lower Columbia River Basins Unit

The Lower Columbia River Basins CHU consists of portions of the Lewis, White Salmon, and Klickitat Rivers and associated tributaries in southwestern and south-central Washington. The CHU extends across Clark, Cowlitz, Klickitat, Skamania, and Yakima Counties. Approximately 119.3 km (74.2 mi) of stream are designated as critical habitat. The subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 4: Upper Willamette River Unit

The Upper Willamette River CHU includes 312.4 km (194.1 mi) of streams and 3,601.5 ha (8,899.5 ac) of lake surface area in designated critical habitat in the McKenzie River and Middle Fork Willamette River subbasins of western Oregon. This unit is located primarily within Lane County, but also extends into Linn County.

There are three known bull trout local populations in the McKenzie River subbasin and one bull trout local population in the Middle Fork Willamette River subbasin. With the exception of a short reach of the mainstem Willamette River and the mainstem Middle Fork Willamette River (including reservoirs) below Hills Creek Dam, segments designated as critical habitat are occupied by bull trout. This unit provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 5: Hood River Unit

The Hood River CHU includes the mainstem Hood River and three major tributaries: Clear Branch Hood River, West Fork Hood River, and East Fork Hood River. A total of 128.1 km (79.6 mi) of stream and 36.9 ha (91.1 ac) of lake surface is designated as critical habitat. Portions of the mainstem Columbia River utilized as FMO by Hood River bull trout are discussed in the Lower Mainstem Columbia River section of this document.

The Hood River CHU, located on the western slopes of the Cascades Mountains in northwest Oregon, lies entirely within Hood River County, Oregon. There are two local populations: (1) Clear Branch Hood River above Clear Branch Dam, and (2) Hood River and tributaries below Clear Branch Dam. This unit provides spawning and rearing habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 6: Lower Deschutes River Unit

The Lower Deschutes River CHU is located in Wasco, Sherman, Jefferson, Deschutes, and Crook Counties in central Oregon. There are five known local population in the lower Deschutes River basin: (1) Warm Springs River; (2) Shitike Creek; (3) Whitewater River; (4) Jefferson Creek–Candle Creek Complex; and (5) Jack Creek–Canyon Creek–Heising Spring Complex.

Approximately 232.8 km (144.7 mi) of streams and 1,224.9 ha (3,026.8 ac) of lake and reservoir surface area in the lower Deschutes River basin are designated as critical habitat. A portion of the reaches occur on the Confederated Tribes of Warm Springs lands. This unit provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 7: Odell Lake Unit

The Odell Lake CHU lies entirely within the Deschutes National Forest in Deschutes and Klamath Counties, Oregon. Total critical habitat in this unit includes 27.4 km (17.0 mi) of streams and 1,387.1 ha (3,427.6 ac) of lake surface area. The single Odell Lake bull trout population has been isolated from the Deschutes River population by a lava flow that impounded Odell Creek and formed Davis Lake approximately 5,500 years ago. Odell Lake is the only remaining natural adfluvial population of bull trout in Oregon. This unit provides spawning and rearing habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 8: Mainstem Lower Columbia River Unit

The Mainstem Lower Columbia River CHU extends from the mouth of the Columbia River to John Day Dam and is located in the States of Oregon and Washington. It includes Clatsop, Columbia, Multnomah, Hood River, Wasco, and Sherman Counties in Oregon, and Pacific, Wahkiakum, Cowlitz, Clark, Skamania, and Klickitat Counties in Washington. A total of 340.4 km (211.5 mi) of stream are being designated as critical habitat. This unit provides connecting habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Klamath Recovery Unit

Unit 9: Klamath River Basin Unit

The Klamath River Basin CHU is located in south-central Oregon and includes three CHSUs: (1) Upper Klamath Lake CHSU; (2) Sycan River CHSU; and (3) Upper Sprague River CHSU. It includes portions of Klamath and Lake Counties in Oregon. Total designated critical habitat in this unit includes 445.2 km (276.6 mi) of streams and 3,775.5 ha (9,329.4 ac) of lake surface area. The subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Mid-Columbia Recovery Unit

Unit 10: Upper Columbia River Basins Unit

The Upper Columbia River Basins CHU includes portions of the three CHSUs in central and north-central Washington on the east slopes of the Cascade Range and east of the Columbia River between Wenatchee, Washington, and the Okanogan River drainage. The CHU includes portions of Chelan and Okanogan Counties in Washington. A total of 931.8 km (579.0 mi) of streams and 1,033.2 ha (2,553.1 ac) of lake surface area in this CHU are designated as critical habitat. The subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 11: Yakima River Unit

The Yakima River CHU supports adfluvial, fluvial, and resident life-history forms of bull trout. This CHU includes the mainstem Yakima River and tributaries from its confluence with the Columbia River upstream to the uppermost point of bull trout distribution. The Yakima River CHU is located on the eastern slopes of the Cascade Range in south-central Washington and encompasses the entire Yakima River basin located between the Klickitat and Wenatchee basins. The Yakima River basin is one of the largest basins in the State of Washington; it drains southeast into the Columbia River near the town of Richland, Washington. The basin occupies most of Yakima and Kittitas Counties, about half of Benton County, and a small portion of Klickitat County. This CHU does not contain any subunits because it supports one core area. A total of 896.9 km (557.3 mi) of stream habitat and 6,285.2 ha (15,530.9 ac) of lake and reservoir surface area in this CHU are designated as critical habitat. One of the largest populations of bull trout (South Fork Tieton River population) in central Washington is located above the Tieton Dam and supports the core area. This unit provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU is designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 12: John Day River Unit

The John Day River CHU in the John Day River basin in eastern Oregon includes portions of the mainstem John Day River, North Fork John Day River, Middle Fork John Day River, and their tributary streams within Wheeler, Grant, and Umatilla Counties in Oregon. A total of 1,089.6 km (677.0 mi) of streams are designated as critical habitat.

The subunits within this unit provide spawning, rearing, foraging, migratory, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 13: Umatilla River Unit

The Umatilla River CHU is located in northeastern Oregon in Umatilla and Union Counties. There are two local populations in this unit: one in the North Fork Umatilla River and one in North Fork Meacham Creek. Bull trout in this basin are primarily fluvial migrants that overwinter in middle and lower sections of the mainstem Umatilla River.

Approximately 163.0 km (101.3 mi) of stream are designated as critical habitat for bull trout in the Umatilla River basin. This unit provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 14: Walla Walla River Basin Unit

The Walla Walla River Basin CHU straddles the Oregon–Washington State line in the eastern part of both States and includes two CHSUs. The unit includes 383.7 km (238.4 mi) of stream, extending across portions of Umatilla and Wallowa Counties in Oregon and Walla Walla and Columbia Counties in Washington. There are five known bull trout local populations in this unit: two in the Walla Walla River basin and three in the Touchet River basin. The

subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 15: Lower Snake River Basins Unit

The Lower Snake River Basins CHU is located in southeast Washington and contains two CHSUs: (1) Tucannon River basin CHSU located in Columbia and Garfield Counties and (2) Asotin Creek basin CHSU within Garfield and Asotin Counties. Approximately 270.8 km (168.3 mi) of stream are designated as critical habitat for bull trout within this unit. The subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 16: Grande Ronde River Unit

The Grande Ronde River CHU is located in northeast Oregon and southeast Washington and includes the Grande Ronde core area and the Little Minam core area. The Grande Ronde River CHU is located in Union, Wallowa, and Umatilla Counties in Oregon, and about one-third of Asotin County and small portions of Columbia and Garfield Counties in Washington.

This CHU includes 1,057.9 km (657.4 mi) of streams and 605.2 ha (1,495.5 ac) of lakes and reservoirs designated as critical habitat. This unit provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 17: Imnaha River Unit

The Imnaha River CHU extends across Wallowa, Baker, and Union Counties in northeastern Oregon. The CHU contains approximately 285.7 km (177.5 mi) of river designated as critical habitat and four local populations: (1) Mainstem Imnaha River; (2) Big Sheep Creek and tributary streams (Big Sheep Creek is considered to be one local population above and below the Wallowa Valley Irrigation Canal); (3) Little Sheep Creek and tributary streams; and (4) McCully Creek, which could be considered one or two local populations depending on whether Big Sheep Creek above and below the diversion are separated. This unit provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 18: Sheep and Granite Creeks Unit

This CHU is located within Adams and Idaho Counties in Idaho, approximately 21.0 km (13.0 mi) east of Riggins, Idaho. In the Sheep and Granite Creeks CHU, 47.9 km (29.7 mi) of streams are designated as critical habitat. This unit provides spawning, rearing, foraging, migratory, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 19: Hells Canyon Complex Unit

The Hells Canyon Complex is located in Adams County, Idaho, and Baker County, Oregon. This CHU contains 377.5 km (234.6 mi) of streams designated as critical habitat. The subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 20: Powder River Basin Unit

The Powder River Basin CHU includes approximately 296.5 km (184.2 mi) of stream designated as critical habitat and 897.0 ha (2,216.5 ac) of reservoir, and is located within Baker, Union, and Wallowa Counties in northeastern Oregon. This unit is thought to contain 10 local populations of bull trout and 1 potential local population. Several unoccupied sections of the Powder River mainstem have been included to provide connectivity and recovery opportunities for local populations. This unit provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 21: Clearwater River Unit

The Clearwater River CHU is located east of Lewiston, Idaho, and extends from the Snake River confluence at Lewiston on the west to headwaters in the Bitterroot Mountains along the Idaho–Montana border on the east in Nez Perce, Latah, Lewis, Clearwater, Idaho, and Shoshone Counties. In the Clearwater River CHU, 2,702.1 km (1,679.0 mi) of streams and 6,721.9 ha (16,610.1 ac) of lake and reservoir surface area are designated as critical habitat. The subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 22: Mainstem Upper Columbia River Unit

The Mainstem Upper Columbia River CHU includes the Columbia River from John Day Dam upstream 520.1 km (323.2 mi) to Chief Joseph Dam. The Mainstem Upper Columbia River CHU supports FMO habitat for fluvial bull trout; several accounts exist of bull trout in the Columbia River between the Yakima and John Day rivers. The Mainstem Upper Columbia River CHU provides connectivity to the Mainstem Lower Columbia River CHU and 13 additional CHUs (Clearwater River, Powder River Basin, Imnaha River, Grande Ronde River, Walla Walla River Basin, Umatilla River, John Day River, Yakima River, Mainstem Snake River, Lower Snake River Basins, Hells Canyon Complex, Sheep and Granite Creeks, and Upper Columbia River Basins). The Mainstem Upper Columbia River CHU is located in north-central, central, and south-central Washington and north-central and northeast Oregon. This CHU is within Klickitat, Franklin, Benton, Grant, Yakima, Kittitas, Chelan, Douglas, and Okanogan Counties in Washington and Sherman, Gilliam,

Morrow, and Umatilla Counties in Oregon. For a detailed description of this unit and subunits, justification of why this CHU, included CHSUs or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 23: Mainstem Snake River Unit

The Mainstem Snake River CHU is located from the confluence with the Columbia River upstream to the head of Brownlee Reservoir. The Snake River is the largest tributary to the Columbia River and forms the border between Washington and Idaho from Clarkston/Lewiston upstream to Oregon. The Snake River also forms the boundary between Idaho and Oregon, and at that point upstream to the upper limit of Brownlee Reservoir forms this CHU. The Snake River is within Franklin, Walla Walla, Columbia, Whitman, and Asotin Counties in Washington; Wallowa, Whitman, Baker, and Malheur Counties in Oregon; and Nez Perce, Idaho, Adams, and Washington Counties in Idaho.

The Mainstem Snake River CHU includes 451.7 km (280.6 mi) of streams designated as critical habitat. This unit provides foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Upper Snake Recovery Unit

Unit 24: Malheur River Basin Unit

The Malheur River Basin CHU is in eastern Oregon within Grant, Baker, Harney, and Malheur Counties. A total of 272.3 km (169.2 mi) of streams and 715.9 ha (1,768.9 ac) of reservoir surface area are designated as critical habitat. This unit provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 25: Jarbidge River Unit

The Jarbidge River CHU encompasses the Jarbidge and Bruneau River basins, which drain into the Snake River within C.J. Strike Reservoir upstream of Grand View, Idaho. The Jarbidge River CHU is located approximately 70 miles north of Elko within Owyhee County in southwestern Idaho and Elko County in northeastern Nevada.

The Jarbidge River CHU includes 245.2 km (152.4 mi) of streams designated as critical habitat. The Jarbidge River CHU contains six local populations of resident and migratory bull trout and provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 26: Southwest Idaho River Basins Unit

The Southwest Idaho River Basins CHU is located in southwest Idaho in the following counties: Adams, Boise, Camas, Canyon, Elmore, Gem, Valley, and Washington. This unit includes eight CHSUs: Anderson Ranch, Arrowrock Reservoir, South Fork Payette River, Deadwood River, Middle Fork Payette River, North Fork Payette River, Squaw Creek, and Weiser River. The Southwest Idaho River Basins CHU includes approximately 2,150.0 km (1,335.9 mi) of streams and 4,310.5 ha (10,651.5 ac) of lake and reservoir surface area designated as critical habitat. The subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 27: Salmon River Basin Unit

The Salmon River basin extends across central Idaho from the Snake River to the Montana–Idaho border. The Salmon River Basin CHU extends across portions of Adams, Blaine, Custer, Idaho, Lemhi, Nez Perce, and Valley Counties in Idaho. There are 10 CHSUs: Little-Lower Salmon River, Opal Lake, Lake Creek, South Fork Salmon River, Middle Salmon–Panther River, Middle Fork Salmon River, Middle Salmon Chamberlain River, Upper Salmon River, Lemhi River, and Pahsimeroi River. The Salmon River Basin CHU includes 7,376.5 km (4,583.5 mi) of streams and 1,683.8 ha (4,160.6 ac) of lakes and reservoirs designated as critical habitat. The subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 28: Little Lost River Unit

Located within Butte, Custer, and Lemhi Counties in east-central Idaho, near the town of Arco, Idaho, designated critical habitat in the Little Lost River CHU includes 89.2 km (55.4 mi) of streams. This unit provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Columbia Headwaters Recovery Unit

Unit 29: Coeur d'Alene River Basin Unit

Located in Kootenai, Shoshone, Benewah, Bonner, and Latah Counties in Idaho, the Coeur d'Alene River Basin CHU includes the entire Coeur d'Alene Lake basin in northern Idaho. A total of 821.5 km (510.5 mi) of streams and 12,606.9 ha (31,152.1 ac) of lake surface area are designated as critical habitat. There are no subunits within the Coeur d'Alene River Basin CHU. This unit provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU is designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 30: Kootenai River Basin Unit

The Kootenai River Basin CHU is located in the northwestern corner of Montana and the northeastern tip of the Idaho panhandle and includes the Kootenai River watershed upstream and downstream of Libby Dam. The Kootenai River flows in a horseshoe configuration, entering the United States from British Columbia, Canada, and then traversing across northwest Montana and the northern Idaho panhandle before returning to British Columbia from Idaho where it eventually joins the upper Columbia River drainage. The Kootenai River

Basin CHU includes two CHSUs: the downstream Kootenai River CHSU in Boundary County, Idaho, and Lincoln County, Montana, and the upstream Lake Koocanusa CHSU in Lincoln County, Montana. The entire Kootenai River Basin CHU includes 522.5 km (324.7 mi) of streams and 12,089.2 ha (29,873.0 ac) of lake and reservoir surface area designated as critical habitat. The subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Unit 31: Clark Fork River Basin Unit

The Clark Fork River Basin CHU includes the northeastern corner of Washington (Pend Oreille County), the panhandle portion of northern Idaho (Boundary, Bonner, and Kootenai Counties), and most of western Montana (Lincoln, Flathead, Sanders, Lake, Mineral, Missoula, Powell, Lewis and Clark, Ravalli, Granite, and Deer Lodge Counties). This unit includes 12 CHSUs, organized primarily on the basis of major watersheds: Lake Pend Oreille, Pend Oreille River, and lower Priest River (Lake Pend Oreille); Priest Lakes and Upper Priest River (Priest Lakes); Lower Clark Fork River; Middle Clark Fork River; Upper Clark Fork River; Flathead Lake, Flathead River, and Headwater Lakes (Flathead); Swan River and Lakes (Swan); Hungry Horse Reservoir, South Fork Flathead River, and Headwater Lakes (South Fork Flathead); Bitterroot River; Blackfoot River; Clearwater River and Lakes; and Rock Creek. The Clark Fork River Basin CHU includes 5,356.0 km (3,328.1 mi) of streams and 119,620.1 ha (295,586.6 ac) of lakes and reservoirs designated as critical habitat. The subunits within this unit provide spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit and subunits, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Saint Mary Recovery Unit

Unit 32: Saint Mary River Basin Unit

The entire U.S. portion of the Saint Mary River drainage, which forms the Saint Mary River Basin CHU, is located in Glacier County, Montana. The total stream distance designated as critical habitat is 34.7 km (21.6 mi), and the lakes have a surface area of 1,669.3 ha (4,125 ac).

This unit provides spawning, rearing, foraging, migratory, connecting, and overwintering habitat. For a detailed description of this unit, for justification of why this CHU, included CHSUs, or in some cases individual waterbodies are designated as critical habitat, and for documentation of occupancy by bull trout, see Service (2010), or *http://www.fws.gov/pacific/bulltrout.*

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that actions they fund, authorize, or carry out are not likely to destroy or adversely modify critical habitat. Decisions by the court of appeals for the Fifth and Ninth Circuits have invalidated our definition of destruction or adverse modification (50 CFR 402.02) (see *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service,* 378 F.3d 1059 (9th Cir. 2004) and *Sierra Club v. U.S. Fish and Wildlife Service et al.,* 245 F.3d 434, 442 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain those physical or biological features that relate to the ability of the area to periodically support the species) to serve its intended conservation role for the species.

If a species is listed or critical habitat is designated, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. As a result of this consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat. As described below in the *Application of the Jeopardy and Adverse Modification Standards* section, "likely to adversely effect" does not have the same meaning as "adverse modification."

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat, we also provide reasonable and prudent alternatives to the project, if any are identifiable. We define reasonable and prudent alternatives at 50 CFR 402.02 as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action;

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction;

(3) Are economically and technologically feasible; and

(4) Would, in the Director's opinion, avoid jeopardizing the continued existence of the listed species or destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies may sometimes need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Federal activities that may affect the bull trout or its designated critical habitat require section 7 consultation under the Act. Activities on State, tribal, local, or private lands requiring a Federal permit (such as a permit from

the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from us under section 10 of the Act) or involving some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency) are subject to the section 7 consultation process. Federal actions not affecting listed species or critical habitat, and actions on State, tribal, local, or private lands that are not federally funded, authorized, or permitted, do not require section 7 consultations.

Application of the Jeopardy and Adverse Modification Standards

Jeopardy Standard

Currently, the Service applies an analytical framework for bull trout jeopardy analyses that relies heavily on the importance of known core area populations to the species' survival and recovery. The analysis required by section 7(a)(2) of the Act is focused not only on these populations, but also on the habitat conditions necessary to support them.

The jeopardy analysis usually expresses the survival and recovery needs of the bull trout in a qualitative fashion without making distinctions between what is necessary for survival and what is necessary for recovery. Generally, the jeopardy analysis focuses on the rangewide status of the bull trout, the factors responsible for that condition, and what is necessary for this species to survive and recover. An emphasis is also placed on characterizing the condition of the bull trout in the area affected by the proposed Federal action and the role of affected populations in the survival and recovery of the bull trout. That context is then used to determine the significance of adverse and beneficial effects of the proposed Federal action and any cumulative effects for purposes of making the jeopardy determination. Core areas form the building blocks that provide for conservation of the bull trout's evolutionary legacy as represented by major genetic groups. The jeopardy analysis also considers any conservation measures that may be proposed by a Federal action agency to minimize or compensate for adverse project effects to the bull trout or to promote its recovery. If a proposed Federal action is incompatible with the viability of the affected core area population(s), inclusive of associated habitat conditions, a jeopardy finding may be warranted, because of the relationship of each core area population to the survival and recovery of the species as a whole.

Adverse Modification Standard

The analytical framework described in the Director's December 9, 2004, memorandum is used to complete section 7(a)(2) analysis for Federal actions affecting bull trout critical habitat. The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species, or retain those PCEs that relate to the ability of the area to periodically support the species. Activities that may destroy or adversely modify critical habitat are those that alter the PCEs to an extent that appreciably reduces the conservation value of critical habitat for bull trout. As discussed above, the role of critical habitat is to support the life-history needs of the species and provide for its conservation. Generally, the conservation role of bull trout critical habitat units is to support viable core area populations.

Since the primary threat to bull trout is habitat loss or degradation, the jeopardy analysis under section 7 of the Act for a project with a Federal nexus will most likely evaluate the effects of the action on the conservation or functionality of the habitat for the bull trout. Because of this, we believe that in many cases the analysis of the project to address designated critical habitat will be comparable. As such, we do not anticipate, for many circumstances, that the outcome of the consultation to address critical habitat will result in any significant additional project modifications or measures.

When consulting under section 7(a)(2) in designated critical habitat, independent analyses are conducted for jeopardy to the species and adverse modification of critical habitat. In occupied bull trout habitat, any adverse modification determination would likely also result in a jeopardy determination for the same action. As such, project modifications that may be needed to minimize impacts to the species would coincidentally minimize impacts to critical habitat. Accordingly, in occupied critical habitat it is unlikely that an analysis would identify a difference between measures needed to avoid the destruction or adverse modification of critical habitat from measures needed to avoid jeopardizing the species. Alternatively, in unoccupied critical habitat, we would not conduct a jeopardy analysis; however, measures to avoid the destruction or adverse modification may be necessary to ensure that the affected critical habitat area can continue to serve its intended conservation role for the species, or retain the physical and biological features related to the ability of the area to support the species.

The adverse modification analysis focuses on the rangewide status of critical habitat, the factors responsible for that condition, and what is necessary for critical habitat to provide the necessary conservation value to the bull trout. An emphasis is placed on characterizing the functional condition of critical habitat PCEs in the area affected by the proposed Federal action. This analysis then addresses how the critical habitat PCEs will be affected, and in turn, how this will influence the conservation role of critical habitat units in support of viable core area populations. That context is then used to determine the significance of adverse and beneficial effects of the proposed Federal action and any cumulative effects for purposes of making the adverse modification determination at the rangewide scale. If a proposed Federal action would alter the physical or biological features of critical habitat to an extent that appreciably reduces the conservation function of one or more critical habitat units for the bull trout, a finding of adverse modification of the entire designated critical habitat for the proposed action may be warranted. The intended purpose of critical habitat to support viable core areas establishes a sensitive scale for relating effects of an action on CHUs or subunits to the conservation function of the entire designated critical habitat.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may destroy or adversely modify such habitat, or that may be affected by such designation. Activities that, when carried out, funded, or authorized by a Federal agency, may affect critical habitat PCEs and therefore result in consultation for the bull trout include, but are not limited to:

(1) Detrimental alteration of the minimum flow or the natural flow regime of any of the designated stream segments and water bodies. Possible actions would include construction, operations, and maintenance of groundwater pumping, water impoundment, water diversion, hydropower generation facilities and structures, and operational changes in flow and reservoir pool elevation that increase water temperature, reduce flow, increase predation, or alter migration habitat. We note that such

flow alterations resulting from actions affecting tributaries of the designated stream reaches or water bodies may also destroy or adversely modify critical habitat.

(2) Alterations to the designated stream segments and water bodies, as well as alterations to non-designated areas that could directly or indirectly cause significant and detrimental effects to bull trout critical habitat. Possible actions include vegetation manipulation, timber harvest, road construction and maintenance, construction and operations of impoundments, prescribed fire, livestock grazing, off-road vehicle use, power line or pipeline construction and repair, mining, and development. Riparian vegetation profoundly influences instream habitat conditions by providing shade, organic matter, root strength, bank stability, and large woody debris inputs to streams. These characteristics influence water temperature, structure and physical attributes (useable habitat space, depth, width, channel roughness, cover complexity), migration habitat, and food supply.

(3) Detrimental altering of the channel morphology of any of the designated stream segments. Possible actions would include channelization, impoundment, road and bridge construction and maintenance, deprivation of substrate source, destruction and alteration of aquatic or riparian vegetation, reduction of available floodplain, removal of gravel or floodplain terrace materials, excessive sedimentation from mining, livestock grazing, road construction, timber harvest, off-road vehicle use, and other watershed and floodplain disturbances. We note that such actions in the upper watershed (beyond the riparian area) may also destroy or adversely modify critical habitat. For example, timber harvest activities and associated road construction in upland areas can lead to changes in channel morphology by altering sediment production, debris loading, and peak flows.

(4) Detrimental alterations to the water chemistry in any of the designated stream segments. Possible actions would include release of chemical or biological pollutants into the surface water or connected groundwater at a point source or by dispersed release (nonpoint).

(5) Proposed activities that are likely to result in the introduction, spread, or augmentation of nonnative species in any of the designated stream segments. Possible actions would include fish stocking, use of live bait fish, aquaculture, improper construction and operation of canals, inter-basin water transfers, and dam and reservoir management that favors nonnative fish.

(6) Proposed activities that are likely to create significant instream barriers to bull trout movement. Possible actions would include water diversions, water impoundments, and hydropower generation where effective fish passage facilities, mechanisms, or procedures are not provided.

We consider all 32 CHUs to contain features or areas essential to the conservation of the bull trout. All units are within the geographic range of the species, and portions of all units were occupied by the species at the time of listing (based on observations made within the last 20 years), and are likely to be used by the bull trout for foraging, migrating, overwintering, spawning, or rearing. Federal agencies (such as USFS, BLM, and BOR) already consult with us on activities in areas currently occupied by the bull trout, if the species may be affected by the action, to ensure their actions do not jeopardize the continued existence of the bull trout. These agencies may need to request reinitiation on some of their ongoing or previously planned activities if the agency has continued discretionary involvement or control over any part of the activity, and if the activity may affect designated critical habitat. The need to reinitiate consultation will be determined by the action agency, informed by the criteria outlined in 50 CFR 402.16. This determination will be made by the action agency, in cooperation with the Service, on a unit-by-unit basis. The process to reinitiate consultation is described in "Consultation Handbook: Procedures for Conducting Consultation and Conference Activities under Section 7 of the Endangered Species Act." (Service, 1998). However, we anticipate the burden of reinitiation, if needed, will be minor because of the aforementioned similarity between measures needed to avoid the destruction or adverse modification of critical habitat and measures needed to avoid jeopardizing the species. Further, we do not anticipate the action agencies will often need to amend their ongoing or previously planned projects or plans for projects because of the similarity between the measures taken to avoid adverse modification of critical habitat and the measures taken to avoid jeopardizing the species. If substantive changes are determined to be needed, the action agencies will amend their projects or existing plans for projects. However, after consultation is reinitiated, per section 7(d) of the Act, the action agencies will not make any irreversible or irretrievable commitment of resources that would have the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures that would not violate section 7(a)(2). New plans and major revisions to existing plans will reflect the new critical habitat designations contained within this rule. In addition, consultation streamlining tools such as programmatic consultations are commonly implemented to minimize the administrative costs associated with consultation within the range of the bull trout. We expect these tools will continue be used for any reinitiations of consultation for bull trout critical habitat, thereby minimizing any additional administrative costs associated with designating the critical habitat.

Exemptions

Application of Section 4(a)(3) of the Act

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an integrated natural resources management plan (INRMP) by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

- An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;
- A statement of goals and priorities;
- A detailed description of management actions to be implemented to provide for these ecological needs; and
- A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108-136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: "The Secretary shall not designate as critical habitat any lands or other geographical areas owned or

controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation."

We consult with the military on the development and implementation of INRMPs for installations with federally listed species. INRMPs developed by military installations located within the proposed critical habitat areas were analyzed for exemption under the authority of section 4(a)(3)(B) of the Act. Each of the Department of Defense (DOD) installations identified below has been conducting surveys and habitat management to benefit the bull trout, and reporting the results of their efforts to the Service. Cooperation between the DOD installations and the Service on specific conservation measures is ongoing.

Approved Integrated Natural Resources Management Plans

We have examined the INRMPs for each of these military installations to determine whether they provide benefits to bull trout.

Bayview Acoustic Research Detachment Naval Surface Warfare Center

The Bayview Acoustic Research Detachment (ARD) Naval Surface Warfare Center, Bayview, Idaho, has an approved INRMP. This property includes approximately 9.0 ha (22.0 ac) of developed land on the shore of Lake Pend Oreille and 7.0 ha (17.3 ac) of lake area. There are no tributary streams within this area utilized by bull trout for spawning or early life rearing, but the lake area does contain important FMO habitat for bull trout.

Bayview ARD's INRMP outlines protection and management strategies for natural resources on the center, including fish species and their habitats. The plan benefits bull trout through the protection of spawning habitat for kokanee salmon, a primary food source for bull trout. The Bayview ARD property in Scenic Bay hosts from 40 to 70 percent of the kokanee spawning activity in Lake Pend Oreille, depending on the year. The INRMP includes measures to minimize impacts to kokanee habitat by limiting facility boat traffic during spawning periods (November and December) and implementing sediment control measures. Furthermore, interpretive signs have been placed throughout the property to educate employees and the public regarding various aspects of the regions natural resources, endangered or threatened species (including bull trout), and geological history. The INRMP requires the natural resources manager to provide ARD INRMP awareness training to facilitate INRMP implementation.

Based on the above considerations and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the approved Bayview ARD INRMP and that conservation efforts identified in the INRMP will provide a benefit to bull trout occurring in habitats within or adjacent to Bayview ARD. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not including approximately 7.0 ha (17.3 ac) of habitat in this final critical habitat designation because of this exemption.

Naval Radio Station Jim Creek

Naval Radio Station Jim Creek in western Washington has an approved INRMP. The Naval Radio Station Jim Creek occurs in the Jim Creek watershed. This installation includes approximately 1 km (0.7 mi) of stream habitat. The lower reaches of Jim Creek provide foraging habitat for subadult and adult bull trout. The Naval Radio Station Jim Creek INRMP provides benefits to bull trout through the (1) restoration of riparian buffers along Jim Creek, (2) protection of Jim Creek from erosion and sedimentation, and (3) protection of Jim Creek from entry of contaminants and herbicides during antenna field vegetation management. We will continue to work cooperatively with the Department of the Navy to assist Naval Radio Station Jim Creek in implementing and refining the programmatic recommendations contained in this plan that provide benefits to bull trout.

Based on the above considerations and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the Naval Radio Station Jim Creek INRMP and that conservation efforts identified in the INRMP will provide a benefit to bull trout occurring in habitats within or adjacent to Naval Radio Station Jim Creek. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not including approximately 1 km (0.7 mi) of habitat in this final critical habitat designation because of this exemption.

Naval Station Everett

Naval Station Everett in western Washington has an approved INRMP. The Naval Station Everett property includes land on or near the shores of Puget Sound that contain important foraging and migration habitat for amphidromous bull trout. This installation includes approximately 8 km (5 mi) of marine nearshore habitat. The Naval Station Everett's INRMP benefits bull trout by providing (1) protection of nearshore marine waters adjacent to the station from oil spills around the berthing naval vessels; (2) bioswales to prevent the release of toxins, contaminants, and oils generated on station from reaching the water column through storm drains; and (3) timing restrictions on all proposed routine construction or repair activities that will take place below the mean higher high water line; and (4) the restoration of riparian habitat on Navy lands located along the Middle Fork Quilceda Creek.

Based on the above considerations and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the Naval Station Everett INRMP and that conservation efforts identified in the INRMP will provide a benefit to bull trout occurring in habitats within or adjacent to Naval Station Everett. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not including approximately 8 km (5 mi) of habitat in this final critical habitat designation because of this exemption.

Naval Air Station Whidbey Island

Naval Air Station Whidbey Island in western Washington has an approved INRMP. The Naval Station Whidbey Island property includes land on or near the shores of Puget Sound that contain important foraging and migration habitat for amphidromous bull trout. This installation includes approximately 16 km (10 mi) of marine nearshore habitat. Naval Aviation Station Whidbey Island's INRMP benefits bull trout through (1) monitoring and managing livestock grazing to avoid or minimize impacts to nearshore habitat used by bull trout, (2) managing road building and maintenance to prevent erosion and sedimentation of nearshore habitat used by bull trout , (3) assuring proper disposal of hazardous materials, and (4) implementation of its Integrated Pest Management Plan's best management practices to protect aquatic habitats used by bull trout.

Based on the above considerations and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are

subject to the Naval Air Station Whidbey Island INRMP and that conservation efforts identified in the INRMP will provide a benefit to bull trout occurring in habitats within or adjacent to Naval Air Station Whidbey Island. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not including approximately 16 km (10 mi) of habitat in this final critical habitat designation because of this exemption.

U.S. Army Fort Lewis Installation

The U.S. Army Fort Lewis Installation (Fort Lewis) located in western Washington has an approved INRMP. Fort Lewis borders the Nisqually River and Puget Sound, where the mainstem Nisqually River and Puget Sound nearshore bordering this property contain important foraging and migration habitat for amphidromous bull trout. This installation includes approximately 24 km (15 mi) of stream and 3.5 km (2 mi) of marine nearshore habitat. The INRMP for Fort Lewis identifies two key objectives for bull trout and salmon: (1) Protect key habitat characteristics, and (2) Enhance riparian and in-stream habitat. Strategies to achieve these benefits to bull trout include (1) protecting and enhancing wetlands and other aquatic habitats–all wetlands are protected with 90 meter (300 foot) wide riparian buffers to maintain cold water temperatures, to prevent sediment from entering the streams, and to provide for woody debris which creates habitat complexity; (2) controlling invasive plant species that often diminish water quality and impact native plants and animals; (3) restoring riparian habitat in-stream habitats and controlling non-native and invasive vegetation to improve bull trout foraging habitat; (4) reconnecting side channels and floodplains to maintain areas for refugia and juvenile rearing and to supplement adult holding capacity; and (5) decommissioning roads to minimize erosion and sediment delivery and replacing undersized culverts to eliminate fish passage barriers.

Based on the above considerations and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the Fort Lewis INRMP and that conservation efforts identified in the INRMP will provide a benefit to bull trout occurring in habitats within or adjacent to Fort Lewis. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not including approximately 27.5 km (17 mi) of habitat in this final critical habitat designation because of this exemption.

Summary

Habitat features essential to bull trout conservation are present within or immediately adjacent to each of these DOD installations, and each installation has an approved INRMP. Activities occurring on these installations are being conducted in a manner that provides a benefit to bull trout.

Based on the above considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the Bayview Acoustic Research Detachment Naval Surface Warfare Center, Naval Radio Station Jim Creek, Naval Air Station Whidbey Island, Naval Station Everett, and Fort Lewis INRMPs, and that conservation efforts identified in the INRMPs will provide a benefit to bull trout occurring in habitats within or adjacent to these facilities. Therefore, lands within these installations are exempt from critical habitat designation under section 4(a)(3) of the Act. As a result, we are not including a total of approximately 7.0 ha (17.3 ac) and 52.5 km (32.7 mi) of habitat in these DOD installations in this final critical habitat designation because of these exemptions.

Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary must designate and revise critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the legislative history is clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

Under section 4(b)(2) of the Act, we may exclude an area from designated critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. In considering whether to exclude a particular area from the designation, we must identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and determine whether the benefits of exclusion outweigh the benefits of inclusion. If based on this analysis, the Secretary makes this determination, then he can exercise his discretion to exclude the area only if such exclusion would not result in the extinction of the species.

When considering the benefits of inclusion for an area, we consider the additional regulatory benefits under section 7 of the Act that area would receive from the protection from adverse modification or destruction as a result of actions with a Federal nexus, the educational benefits of mapping essential habitat for recovery of the listed species, and any benefits that may result from a designation due to State or Federal laws that may apply to critical habitat.

When considering the benefits of exclusion, we consider, among other things, whether exclusion of a specific area is likely to result in conservation; the continuation, strengthening, or encouragement of partnerships; or implementation of a management plan that provides equal to or more conservation that a critical habitat designation would provide.

In the case of bull trout, the benefits of critical habitat include public awareness of bull trout presence and the importance of habitat protection, and in cases where a Federal nexus exists, increased habitat protection for bull trout due to the protection from adverse modification or destruction of critical habitat.

In evaluating the existence of a conservation plan when considering the benefits of exclusion, we consider a variety of factors, including but not limited to, whether the plan is finalized; how it provides for the conservation of the essential physical and biological features; whether there is a reasonable expectation that the conservation management strategies and actions contained in a management plan will be implemented into the future; whether the conservation strategies in the plan are likely to be effective; and whether the plan contains a monitoring program or adaptive management to ensure that the conservation measures are effective and can be adapted in the future in response to new information.

After evaluating the benefits of inclusion and the benefits of exclusion, the two sides are carefully weighed to determine whether the benefits of exclusion outweigh those of inclusion. If they do, we then determine whether exclusion of the particular area would result in extinction of the species. If