



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB1998-0891

March 19, 1998

Mr. Robert W. Williams, Regional Forester
Pacific Northwest Region, Region 6
USDA Forest Service
333 S.W. First Avenue
P.O. Box 3623
Portland, Oregon 97208

Ms. Elaine Y. Zielinski
State Director, OR/WA
USDI Bureau of Land Management
1515 S.E. Fifth Avenue
Portland, Oregon 97208

Re: Endangered Species Act Section 7 Conference Opinion on Continued Implementation of U.S. Forest Service Land and Resource Management Plans and Bureau of Land Management Resource Management Plan Affecting the Lower Columbia River Steelhead Evolutionarily Significant Unit

Dear Mr. Williams and Ms. Zielinski:

Enclosed is the biological opinion prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) on continued implementation of U.S. Forest Service (USFS) Land and Resource Management Plans (LRMPs) for the Gifford Pinchot, Mt. Hood, and Willamette National Forests; the Columbia River Gorge National Scenic Area Plan as it affects Federal lands within the scenic area managed by the USFS; and the Bureau of Land Management Resource Management Plan (RMP) for the Salem District. These plans pertain to Federal lands affecting the lower Columbia River steelhead evolutionarily significant unit (ESU), listed as threatened (63 FR 1337: March 19, 1998) pursuant to the Endangered Species Act. The LRMPs and RMP fully incorporate the management direction from the April 13, 1994, Record of Decision for Amendments to USFS and BLM Planning Documents Within the Range of the Northern Spotted Owl (Northwest Forest Plan).

The USFS and BLM originally requested consultation on a number of candidate species and the Northwest Forest Plan portion of the upper Columbia River steelhead ESU. Due to the paucity of information regarding some candidate species, NMFS elected to limit this consultation to the



lower Columbia River steelhead ESU. This ESU was listed as threatened during this consultation. The listed upper Columbia River steelhead ESU, which occurs on the Okanogan and Wenatchee NFs, will be addressed in a separate opinion.

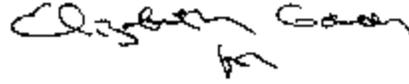
The NMFS has determined that continued implementation of these management plans for the five administrative units is not likely to jeopardize the continued existence of lower Columbia River steelhead. This determination was based on the following assumptions.

- ! Implementation of management direction provided in the management plans, which includes the components of the Northwest Forest Plan Aquatic Conservation Strategy, will result in improved habitat conditions for lower Columbia River steelhead over the next few decades and into the future. Implementation of actions consistent with the Aquatic Conservation Strategy objectives and components - including watershed analysis, watershed restoration, reserve and refugia land allocations (riparian reserves, key watersheds, late successional reserves, etc.) and associated standards and guidelines will provide high levels of aquatic ecosystem understanding, protection, and restoration for aquatic species.
- ! Improved habitat conditions for salmonids considered in this opinion will result in increased survival of freshwater life-stages.
- ! The Forest Ecosystem Management Assessment Team (FEMAT) determined that implementation of the Northwest Forest Plan amendments to management plans would result in an 80% or greater likelihood of providing sufficient aquatic habitat to support stable, well distributed populations of Pacific salmonids, as they occur on and are affected by the Federal lands within the subject administrative units.
- ! Current and future monitoring efforts, including regional implementation and effectiveness monitoring programs, will facilitate the adaptive management process in determining whether changes in land allocations or standards and guidelines are needed in order to achieve management plan goals and ACS objectives.

Finally, the NMFS provides conservation recommendations relative to ecosystem analysis, watershed restoration, adaptive management, road and timber sale planning, and monitoring that are designed to further conserve lower Columbia River steelhead and further streamline future section 7 consultations for proposed actions.

If you have any questions, please contact Michael Tehan at (503) 808-2176 or Steve Morris at (503) 231-2224.

Sincerely,

A handwritten signature in black ink, appearing to read "William Stelle, Jr.", with a small mark below the name.

William Stelle, Jr.
Regional Administrator

cc: Scott Woltering - USFS
Darrel Kenops - USFS
Roberta Moltzen - USFS
Arthur Carroll - USFS
Ted Stubblefield - USFS
Bob Ruediger - BLM
Van Manning - BLM

Endangered Species Act - Section 7

Consultation

BIOLOGICAL OPINION

Implementation of Land and Resource Management Plans (USFS) and Resource
Management Plan (BLM)

Agencies: USDA Forest Service:
 Gifford Pinchot National Forest
 Mt. Hood National Forest
 Willamette National Forest
 Columbia River Gorge National Scenic Area

 USDI Bureau of Land Management:
 Salem District

Consultation
Conducted By: National Marine Fisheries Service
 Northwest Region

Date Issued: March 19, 1998

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Executive Summary

This biological opinion was prepared by the National Marine Fisheries Service (NMFS) in response to the August 6, 1997, request from the Forest Service (USFS) and Bureau of Land Management (BLM) for consultation regarding the potential effects of seven USFS National Forest Land and Resource Management Plans (LRMPs), one BLM District Resource Management Plan (RMP), and the Columbia River Gorge National Scenic Area Plan on listed, proposed, and candidate Pacific salmonids. Due to the paucity of scientific information regarding some candidate species, NMFS prefers to limit the scope of this opinion to listed species. The listed upper Columbia River steelhead ESU, which occurs on the Okanogan and Wenatchee National Forests, will be addressed in a separate opinion. Therefore, this biological opinion (opinion) addresses the lower Columbia River steelhead ESU which is listed as threatened pursuant to the Endangered Species Act (63 FR 13347; March 19, 1998). The affected administrative units include the Gifford Pinchot, Mt. Hood, and Willamette National Forests, the Columbia River Gorge National Scenic Area (CRGNSA), and the Salem BLM District.

The LRMPs, RMP, and CRGNSA Plan establish broad management direction through goals, objectives, desired future conditions, and/or standards and guidelines. They also establish goals and objectives regarding where, when, and how goods and services will be produced. The LRMPs, RMP, CRGNSA Plan and have either been amended by or fully incorporate the management goals and objectives, land allocations, and standards and guidelines of the Northwest Forest Plan Record of Decision (NFP ROD). A primary component of the NFP, the Aquatic Conservation Strategy (ACS), was designed to protect salmon and steelhead habitat on Federal lands managed by the USFS and BLM by maintaining and restoring ecosystem health at watershed and landscape scales.

The NMFS determined, based on the information and analysis described in this opinion and attachments, that implementation of the LRMPs, RMP, and CRGNSA Plan for the five administrative units is not likely to jeopardize the continued existence of LCR steelhead. This determination was based on a number of conclusions and assumptions including the following:

1. Implementation of management direction provided in the management plans, which includes the components of the NFP ACS, will result in improved habitat conditions for LCR steelhead over the next few decades and into the future. Implementation of actions consistent with the ACS objectives and components - including watershed analysis, watershed restoration, reserve and refugia land allocations (riparian reserves, key watersheds, late successional reserves, etc.) and associated standards and guidelines - will provide high levels of aquatic ecosystem understanding, protection, and restoration for aquatic species.
2. Improved habitat conditions for the LCR steelhead will result in increased survival of freshwater life-stages.

3. The Forest Ecosystem Management Assessment Team (FEMAT) determined that implementation of the NFP amendments to management plans would result in an 80% or greater likelihood of providing sufficient aquatic habitat to support stable, well distributed populations of Pacific salmonids, as they occur on and are affected by the Federal lands within the subject administrative units.
4. Current and future monitoring efforts, including regional implementation and effectiveness monitoring programs, will facilitate the adaptive management process in determining whether changes in land allocations or standards and guidelines are needed in order to achieve management plan goals and ACS objectives.

Finally, the NMFS provides conservation recommendations relative to ecosystem analysis, watershed restoration, adaptive management, road and timber sale planning, and monitoring that are designed to further conserve listed LCR steelhead and further streamline future section 7 consultations for proposed actions.

I. Background

On August 6, 1997, the National Marine Fisheries Service (NMFS) received from the Regional Forester, Region 6, of the USDA Forest Service (USFS) and the State Director, Oregon and Washington, of the Bureau of Land Management (BLM) a biological assessment (BA) and letter requesting conference and consultation regarding the potential effects of USFS and BLM land management plans on listed, proposed, and candidate Pacific salmonid species. Management plans for which conferencing and consultation was requested include seven National Forest (NF) Land and Resource Management Plans (LRMPs), one BLM District Resource Management Plan (RMP), and the Columbia River Gorge National Scenic Area (CRGNSA) Plan. These plans pertain to administrative units within the Northwest Forest Plan area except for coastal Oregon and California. Consultation and conferencing for LRMPs and RMPs for coastal Oregon administrative units was completed in a letter dated March 18, 1997, addressed to Robert Williams, USFS, and Elaine Zielinski, BLM, from William Stelle, Jr., NMFS. Consultation and conferencing for LRMPs and RMPs for California administrative units was completed in a letter dated June 20, 1997, addressed to Barbara Holder, Daniel Chisholm, Sharon Heywood, and Martha Ketelle of the USFS, and Lynda Roush, Charles Schultz, and Renee Snyder of the BLM, from William Hogarth, NMFS.

The BA addressed several anadromous salmonid species that are either listed, proposed, or candidates for listing under the ESA. Due to the paucity of information regarding candidate species, NMFS elected to limit the scope of this consultation to listed species. The upper Columbia River steelhead Evolutionarily Significant Unit¹ (ESU), listed as endangered (62 FR 43937; August 18, 1997), will be addressed in a separate opinion. The single proposed species addressed in the BA was the lower Columbia River (LCR) steelhead ESU. NMFS listed this species as threatened (63 FR 13347; March 19, 1998) during this consultation.

This opinion has been completed pursuant to the Endangered Species Act (ESA) and its implementing regulations (50 CFR § 402) and constitutes formal consultation for LCR steelhead. Candidate species are not considered in this opinion. The objective of this opinion is to determine whether the proposed actions associated with the USFS and BLM administrative units described below are likely to jeopardize the continued existence of LCR steelhead. While this opinion evaluates effects of the proposed actions on LCR steelhead habitat, critical habitat has not been proposed or designated for this species. Therefore, conclusions regarding destruction or adverse modification of critical habitat are not included in this opinion.

¹For the purposes of conservation under the Endangered Species Act, an Evolutionarily Significant Unit (ESU) is a distinct population segment that is substantially reproductively isolated from other conspecific population units and represents an important component in the evolutionary legacy of the species (Waples 1991).

II. Proposed Action

The proposed action is the continued implementation of management plans for nine USFS and BLM administrative units. The BA describes the generalized effects on nine listed, proposed, and candidate Pacific salmonid species. As noted above, NMFS elects to limit the scope of this consultation to the listed LCR steelhead ESU which occurs on five administrative units. The five administrative units are:

<u>USFS National Forests</u>	<u>National Scenic Area</u>	<u>BLM District</u>
Gifford Pinchot	Columbia River Gorge	Salem
Mt. Hood		
Willamette		

For the purposes of this consultation, the action area includes those portions of the five administrative units within the LCR steelhead ESU described above. Additional Federal lands upstream of ESU boundaries in the Cowlitz and Lewis River basins, and river reaches downstream of the administrative unit boundaries, including the Columbia River, that may be affected by Federal land management activities are also included in the action area.

The LRMPs and RMP under this consultation are administered directly by the U.S. Department of Agriculture, U.S. Forest Service, and the U.S. Department of Interior, Bureau of Land Management, respectively. Lands covered by these plans are under Federal management. The CRGNSA is made up of a two-state, six-county area that includes about 50,000 acres of the Mt. Hood and Gifford Pinchot NFs. Congress established the CRGNSA in 1986 and stipulated that management responsibilities be divided between the USFS and the Columbia River Gorge Commission (Gorge Commission). The Gorge Commission is a regional group representing local, state, and national interests. Congress gave authority to the six Columbia River Gorge counties to administer the CRGNSA Plan through their land use ordinances. The USFS established the National Scenic Area Forest Service administrative unit to manage Federal lands within the CRGNSA boundaries and to provide technical assistance to the Gorge Commission and six counties.

Based on our review of the subject LRMPs, RMP, and the CRGNSA Plan (hereafter referred to collectively as management plans), NMFS observes that these plans establish broad management direction in two general areas. First, the management plans establish goals and objectives regarding where, when, and how goods and services will be produced. This direction includes land allocations and projections of the timing and level of goods and services and other forest outputs that may be produced. As described in the BA, each management plan addresses a wide array of management direction; e.g., roads management, timber management, minerals management, fish and wildlife management, grazing management, recreation management, monitoring etc. The second area of management direction is established through goals, objectives, desired future conditions, and/or standards and guidelines. Standards and guidelines are mandatory and must be applied at the project scale, unless explicitly exempted. Standards and guidelines provide the sideboards for reaching the broad goals, objectives, and desired future conditions established in the management plans.

The National Forest management plans and CRGNSA Plan have been amended by, and fully incorporate the management goals and objectives, land allocations, and standards and guidelines of the Northwest Forest Plan *Record of Decision* (NFP ROD) (USDA-FS and USDI-BLM 1994). The BLM Salem District management plan also incorporates and is intended to be fully consistent with the land-use allocations and standards and guides in the NFP ROD (USDI-BLM 1994).

A primary component of the NFP is the Aquatic Conservation Strategy (ACS). The ACS was designed to protect salmon and steelhead habitat on Federal lands managed by the USFS and BLM by maintaining and restoring ecosystem health at watershed and landscape scales. To accomplish the stated objectives (Table 1) the ACS contains four components: riparian reserves, key watersheds, watershed analysis, and watershed restoration, each with specific standards and guidelines. Each component is expected to play an important role in improving the health of the region's aquatic ecosystems. The specific benefits of these four components are described in section V. of this opinion and in Attachment 1.

Table 1. Northwest Forest Plan Aquatic Conservation Strategy Objectives (USDA, USDI 1994).

USFS and BLM-administered lands within the range of the northern spotted owl will be managed to:

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.
2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.
3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.
6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.
7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.
8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.
9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

III. Biological Information and Critical Habitat

The listing status and biological information for LCR steelhead are described in Attachment 1. Critical habitat has not yet been designated or proposed for this species.

IV. Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA and defined by its implementing regulations (50 CFR § 402). NMFS discusses the analysis necessary for application of these standards in the particular contexts of the Pacific salmonids in Attachment 2. This analysis involves the following steps: (A) define the biological requirements of the species; (B) evaluate the environmental baseline relative to the species' current status; (C) determine the effects of the proposed or continuing action on the species; (D) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the environmental baseline and any cumulative effects, and considering measures for survival and recovery specific to other life stages; and (E) identify reasonable and prudent alternatives to a proposed or continuing action that is likely to jeopardize the continued existence of the species.

A. Biological Requirements

The first step in the method the NMFS uses in applying the ESA standards of Section 7(a)(2) to Pacific salmonids is to define the species' biological requirements that are most relevant to each consultation. The NMFS finds that these biological requirements are best expressed in terms of environmental factors that define properly functioning freshwater aquatic habitat necessary for the survival and recovery of LCR steelhead. Individual environmental factors include water quality, habitat access, physical habitat elements, river channel condition, and hydrology. These are measurable variables, with properly functioning values determined by the best available information as those necessary for sufficient prespawning survival and distribution, spawning success, egg-to-smolt survival, smolt emigration survival and timing, and smolt condition to allow the long-term survival of the species. Properly functioning watersheds, where all of the individual factors operate together to provide healthy aquatic ecosystems, are necessary for the survival and recovery of these species. This information is discussed further in Attachment 1.

B. Environmental Baseline

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species or its habitat and ecosystem (NMFS and USFWS 1996). The environmental baseline for the action area covered by this opinion includes the Gifford Pinchot, Mt. Hood, and Willamette NFs, the CRGNSA, and the Salem BLM District within the LCR steelhead ESU; additional Federal lands upstream

of the ESU in the Cowlitz and Lewis River basins; and river reaches downstream of the administrative

unit boundaries that may be affected by Federal land management activities.

The general environmental baseline affecting Pacific salmonids has been described in various documents. The report of the Forest Ecosystem Management Assessment Team (FEMAT 1993) provides a regional assessment of aquatic ecosystems within the range of the northern spotted owl (including the range of LCR steelhead), particularly with regard to land management actions. Chapter V of FEMAT (1993) focuses on current aquatic habitat conditions and the effects of degraded habitat on fish populations. Page V-2 notes that "[a]quatic ecosystems in the range of the northern spotted owl exhibit signs of degradation and ecological stress." Many factors such as dams, overharvest, excessive predation, disease, artificial propagation, poor ocean conditions, and the destruction and alteration of habitat have been implicated in the decline of Pacific salmonids. Aquatic habitat degradation has resulted from a wide range of land- and water-use practices including timber harvest, road construction, mining, grazing, agriculture, construction and operation of dams, irrigation, and flood control (Busby *et al.* 1996; Spence *et al.* 1996). These activities (with the exception of agriculture) occur on NF and BLM lands within the LCR steelhead ESU.

In general, these activities have: (1) reduced connectivity between streams, riparian areas, floodplains, and uplands; (2) significantly increased sediment yields, leading to pool filling and reduction in spawning and rearing habitat; (3) reduced or eliminated instream replenishment of large woody debris which serves to trap sediment, stabilize stream banks, form pools, and provide cover; (4) reduced or eliminated vegetative canopy that minimizes stream temperature fluctuations; (5) reduce stream complexity by causing streams to become straighter, wider, and shallower which reduces spawning and rearing habitat and increases temperature fluctuations; (6) alter peak flow volume and timing; (7) alter water tables and base flow; and (8) contribute to degraded water quality by adding toxicants through mining and pest control (FEMAT 1993; Rhodes *et al.* 1994; Spence *et al.* 1996).

For example, watershed analyses for the East Fork Hood River and Middle Fork Hood River on the east side of the Mt. Hood NF in Oregon reveal that the average road density (miles of road per square mile of area) for both watersheds is 2.2 miles per square mile. Road densities in subwatersheds of these systems range from 0.01 to 4.9 miles per square mile. Roads and timber harvest in tributary drainages have led to localized sedimentation and habitat simplification. Stream crossings with culverts may be passage barriers at several locations. Timber harvest and associated road building up through to the early 1980's impacted riparian areas and in some cases included salvage of instream large woody debris. This has resulted in an increase of peak flows and a reduction in habitat complexity (USDA-FS 1996a). The East and Middle Forks of the Hood River are not designated key watersheds but do support LCR steelhead. The West Fork Hood River is a key tier 1 watershed and is considered a stronghold area for LCR steelhead (Joe Moreau, USFS, per. comm.).

The major river systems draining the west side of the Mt. Hood NF are the Sandy and Clackamas Rivers. Both of these watersheds support LCR steelhead. The mainstem Sandy River, which drains into the Columbia River at the west end of the Columbia Gorge at Troutdale, Oregon, contains one dam (Marmot Dam) that LCR steelhead must negotiate to access spawning and rearing habitat in the

upper reaches of the basin. The Salmon River, a key tier 1 watershed, and Still Creek are tributaries to the upper Sandy River and are considered to be a stronghold for LCR steelhead. The Bull Run and Little Sandy Rivers are key tier 2 watersheds that contribute high quality water to the lower Sandy River basin. Both of these watersheds contain dams that block access to roughly 32.5 miles of historical anadromous fish habitat (USDA-FS 1997a).

The Clackamas River drains into the Willamette River below Willamette Falls near Oregon City, Oregon. Three hydroelectric projects are operated on the lower portion of the mainstem downstream of the NF boundary. About 70 percent of the watershed is managed by the Mt. Hood NF and 2 percent by the Salem District BLM. Approximately 26 percent of the watershed is under private ownership. The remaining 2 percent is owned by the Confederated Tribes of the Warm Springs Indian Reservation with a very small portion (<0.1 percent) managed by the state of Oregon (ODFW 1992). The Clackamas River and major tributaries, beginning at the Forest boundary upstream to its headwaters, are designated key tier 1 watersheds. Tributary streams under key tier 1 designation are Fish Creek, Roaring River, the Oak Grove Fork Clackamas River, and the Collawash River. ODFW (1992) reports that clear cutting, removal of large woody debris from stream channels, removal of streamside vegetation, and road building have created the greatest impacts in the upper portion of the watershed. The average Forest road density for the Clackamas River watershed is 2.8 miles per square mile (USDA-FS 1995a; 1995b). Fish Creek and the Collawash River, tributaries to the upper Clackamas River, are considered stronghold areas for LCR steelhead. Fish Creek produces roughly 20 percent of LCR steelhead smolts in the Clackamas watershed (Joe Moreau, USFS, per. comm.).

Similar impacts from clear cutting, removal of large woody debris from stream channels, removal of streamside vegetation, and road building have occurred on the Gifford Pinchot NF as well. Over the past 40 years a large portion of logging in the Wind River drainage, a key tier 1 watershed that supports LCR steelhead, has occurred in riparian areas. The average road density is 2.6 miles per square mile with subwatershed densities ranging from 0.5 to 4.0 miles per square mile (USDA-FS 1996b). USDA-FS (1996b) found that 15 of 26 (58 percent) sixth field watersheds² had riparian zones in a greater than 20 percent early-successional stage. Under this condition, increased summer water temperatures are likely occurring due to insufficient stream cover. This same analysis also showed that 27 percent (7 of 26) of these watersheds lack a sufficient number of large trees to support large wood recruitment. Trout Creek, for example, while making up just six percent of the Wind River watershed area, historically supported 50 percent of the steelhead. Trout Creek currently lacks both sufficient stream cover and large wood recruitment potential and steelhead production, versus the mainstem Wind River, has significantly dropped.

Hydroelectric dams on the Cowlitz River and mainstem Lewis River currently block LCR steelhead that occur in these systems from accessing spawning and rearing habitat on the Gifford Pinchot NF. The

²A sixth field watershed may include portions of the same stream. The Wind River, for example, consists of four, sixth field codes, i.e., head waters, upper, middle, and lower Wind River.

state of Washington is in the process of reintroducing anadromy, including LCR steelhead, above hydroelectric facilities on the Cowlitz River.

In summary, the principle ways in which land management policies have contributed to the decline of salmon habitat include: (1) overemphasis on production of non-fishery commodities resulting in losses of riparian and fish habitat; (2) failure to take a biologically conservative or risk-averse approach to planning land management actions when inadequate information exists about the relationship between land management actions and fish habitat; (3) planning land management activities on a site-specific basis rather than on a broader, watershed scale; and (4) reductions in the number, size, and distribution of remaining high-quality habitat areas (such as roadless and minimally developed areas) that serve as biological refugia for anadromous fish subpopulations (FEMAT 1993; Rhodes *et al.* 1994).

V. Analysis of Effects

A. Determination Standard for Effects of Proposed Actions

The management plans present a special case for analyzing the effects of actions because in order to carry out activities on lands covered by the plans, the USFS and BLM have to conduct additional layers of environmental review to meet the National Forest Management Act (NFMA), National Environmental Policy Act (NEPA), and ESA requirements. Even though management plans set important parameters for the authorization of specific projects, with some exceptions, management plans typically do not provide the final authorization for project implementation. Although project-scale actions will still be subject to section 7 consultation, the NMFS finds that it is appropriate to consider the efficacy of management plan direction to minimize and avoid adverse effects at the earliest project planning level.

Consideration of the needs of Pacific salmonids is important at both levels of administrative unit decision making (i.e., management plan and project levels). While management plans set goals and objectives, land allocations, and standards and guidelines that regulate the production of goods and services, consultation at the individual program or project scale is enhanced when there has been an opportunity to consider the full range of effects at the species (ESU) scale under an ecosystem-based strategy applied at the management plan scale.

B. Effects From Continued Implementation of Management Plan Direction

As discussed in section IV. of this opinion, the application of pre-NFP management plan land allocations and standards and guidelines, in connection with site-specific actions, were inadequate to prevent the decline of LCR steelhead. Pre-NFP management of the subject administrative units contributed to further degradation of habitat and continued decline in egg-to-smolt survival. For example, past timber harvest, road construction, and mining practices in Oregon and Washington were responsible for considerable localized degradation of Pacific salmonid habitat. Generally, adverse effects to listed salmonids and their habitat result from the aggregation of impacts which occur at the

site-specific level. The accumulation of effects at the landscape level from numerous actions, if not fully arrested at the project scale, would reduce the likelihood of both survival and recovery of the species.

1. Aquatic Conservation Strategy Direction

As previously described, each of the five management plans under consultation have either been amended by or have been subsequently revised to incorporate NFP land allocations and standards and guidelines that collectively comprise a regional-scale ACS. While the ACS was developed prior to the final or proposed listing of Pacific salmonid species in Oregon and Washington, NMFS participated in the ACS development with the goal of protecting existing freshwater salmonid habitats and restoring currently degraded habitats on Federal lands. NMFS acknowledges that the NFP amendments to the management plans are “a Federal management policy with important benefits for steelhead” (62 FR 43937; August 18, 1997). However, the NMFS noted that the results of the NFP ACS and other conservation efforts “are in the early stages of implementation and have not yet demonstrated success.” The ACS is based on natural ecosystem recovery and disturbance processes and will take many years for results to be realized. Management of the administrative units under the NFP ACS for the benefit of listed salmonids, with landscape-scale strategies emphasizing the protection and restoration of aquatic and riparian habitats, is expected to allow for the survival and recovery of affected Pacific salmonid species.

In recognition of over 300 “at-risk” Pacific salmonid stocks within the NFP area, the ACS was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems on public lands. The ACS strives to maintain and restore ecosystem health at watershed and landscape scales to protect habitat for fish and other riparian-dependent species and resources and to restore currently degraded habitats. The approach seeks to prevent further degradation and to restore habitat over broad landscapes.

The ACS contains four cornerstone components - riparian reserves, key watersheds, watershed analysis, and watershed restoration - that encompass both special land allocations and associated standards and guidelines. Each component is expected to play an important role in improving the health of the region's aquatic ecosystems by ensuring that all management actions are consistent with nine specific ACS objectives (Table 1).

Riparian Reserves: Riparian reserves are an essential reserve land allocation that provide protection buffers adjacent to all rivers, streams, lakes, ponds, and wetlands. Riparian reserves ensure that the critical interface between upland management actions and instream salmonid habitat, the riparian area, is managed to both protect existing aquatic habitat values and to allow natural ecosystem disturbance processes to sustain natural habitat recovery over time.

The management plans establish interim widths for all riparian reserves, based on the type of waterbody to be protected. For example, fish bearing perennial streams receive the maximum reserve width, while widths associated with intermittent streams and small wetlands are narrower. The interim reserve widths for each type of waterbody were designed by aquatic scientists to optimize the cumulative

effectiveness of the relevant riparian functions (e.g., shading, root strength, large wood recruitment, organic matter input, water quality, microclimate, etc.). In addition to the aquatic protection afforded by the actual width of riparian reserves, further assurance of achieving ACS objectives is provided through the application of specific standards and guidelines that preclude or regulate management within riparian reserves; e.g. timber management, road construction and maintenance, grazing, recreation, minerals management, fire/fuels management, research, and restoration activities. Prescribed (initial) riparian reserve boundary widths remain in effect until they are modified following watershed analysis, site analysis, and NEPA documentation (USDA-FS and USDI-BLM 1994).

Key Watersheds: In addition to the network of refugia provided by riparian reserves, each management plan also includes a network of key watersheds. Key watersheds were intended to be managed to provide interconnected strongholds of high water quality and habitat for Pacific salmonids, well distributed across the landscape. For strategically located key watersheds where no high quality habitats presently exist, this designation was intended to focus habitat restoration efforts to augment natural recovery processes and hasten the development of high quality habitat.

The NFP designates three categories of watersheds within each of the LRMPs and RMPs:

- Tier 1 Key Watersheds: those to be managed for at-risk anadromous salmonids, bull trout, and resident fish.
- Tier 2 Key Watersheds: those where high-water quality is important.
- Non-Key Watersheds: all other watersheds.

The NFP ROD prescribes standards and guidelines for key watersheds that are intended to promote their fish refugia and water quality management objectives; e.g., avoid new roads within inventoried roadless areas and reduce road miles outside of roadless areas (USDA-FS and USDI-BLM 1994).

LCR steelhead occur in both key and non-key watersheds (see Table 2 below). Table 3 in the BA lists the number of acres under key watershed designation that occur within the ESU. About 45 percent of the watersheds are designated as key watersheds (tier 1 and 2). It should be noted that the majority of river miles within the LCR steelhead ESU occur below NF and BLM boundaries. Only the upper portions of LCR steelhead watersheds occur on NF and BLM managed lands.

Watershed Analysis: Watershed analysis is a new level of analysis now required by the management plans. It is a systematic procedure designed to bridge the gap between analysis at the management plan scale and the project scale by characterizing the aquatic, riparian, and terrestrial features and management issues within a watershed. The NFP ROD discusses watershed analysis and its utility for establishing existing and potential watershed conditions as they relate to aquatic habitat:

Watershed analysis has a critical role in providing for aquatic and riparian habitat protection. In planning for ecosystem management and establishing Riparian Reserves to protect and restore riparian and aquatic habitat, the overall watershed condition and the array of processes operating there need to be considered.... (NFP ROD, pages B-20, 21).

Managers are expected to use information gathered during watershed analyses to make more informed

decisions that better reflect the habitat needs of Pacific salmonids and other ecosystem components; e.g., refinement of riparian reserve boundaries, prescription of land management activities including watershed restoration, and development of monitoring programs. Standards and guidelines for watershed analysis are established in the NFP ROD. In addition, the NMFS participated in the development of the interagency document *Ecosystem Analysis at the Watershed Scale: Federal Guide for Watershed Analysis* (RIEC 1995) which establishes a standardized framework and approach for conducting watershed analyses within the subject administrative units.

Watershed analysis engages participation of various government agencies, private landowners, interest groups, and industry. Cooperation among these groups is encouraged and often key to the success of the effort. Regardless of what a watershed analysis may reveal, Federal land management agencies do not have authority to implement their management actions on private lands. Due to cumulative effects within a watershed, Federal land management activities may be constrained by both existing conditions and pending future activities on private lands.

The BA describes generally the effect of management plan direction to perform watershed analysis. The total acres of watershed analyses completed during fiscal years 1994-96 within the range of the LCR steelhead ESU is listed in Table 8 of the BA. Through fiscal year 1996, watershed analyses have been completed on approximately 970,828 acres (45 percent) of Federally managed lands within the LCR steelhead ESU.

Table 2. Key and non-key watersheds where LCR steelhead occur.

Administrative Unit	River Basin	Tier 1 Key Watersh.	Tier 2 Key Watersh.	Non-Key Watershed
CRGNSA	<i>Columbia River</i>			Lower Hood River
				Lower Wind River
Mt. Hood NF	<i>Hood River</i>	West Fork Hood R.		Middle Fork Hood R.
				East Fork Hood R.
Mt. Hood NF/ Salem BLM District	<i>Sandy River</i>	Salmon River	Bull Run River	Zigzag River
			South Fork Bull Run River	Still Creek
	<i>Clackamas R.</i>	Big Cliff to headwaters Oak Grove Fork (Clack. R. to Tim. Lk.) Fish Creek Roaring River Collawash River	Eagle Creek	
Gifford Pinchot NF	<i>Wind River</i>	Wind River		
		Panther Creek		
	<i>Cowlitz River</i>	East Fork Lewis R.		South Fork Toutle R. North Fork Toutle R. Green River

Watershed Restoration: Despite the establishment of refugia for Pacific salmonids in the form of riparian reserves and key watersheds, a strong program of watershed restoration is an essential part of each management plan to restore currently degraded habitat conditions. As described in section IV.B. of this opinion, existing ecological conditions in many reserve allocations are severely degraded as a result of past land management activities that predated the NFP. While the ACS relies on natural ecosystem disturbance processes to recover aquatic habitats over time, certain strategic habitats (e.g. key watersheds that currently lack high quality salmonid habitat) need active restoration efforts to hasten natural recovery and provide immediate benefits for listed, proposed, and candidate salmonid species.

The ROD (USDA-FS and USDI-BLM 1994) recognizes that habitat restoration efforts are not intended to replace natural recovery processes or to mitigate for additional adverse effects of new management actions. Instead, habitat restoration projects are intended to provide short-term ecological benefits until the results of natural recovery processes are realized. The management plans therefore include standards and guidelines for watershed restoration that embody this principle. For example, the most important restoration priorities are generally the control of road-related runoff and sediment production, restoration of watershed hydrologic functions, and restoration of riparian reserve functions. Restoration programs will initially focus on road improvements and vegetation treatments in riparian reserves to accomplish these priorities. Instream restoration is inherently short-term and must be accompanied by upslope and riparian restoration to achieve long-term watershed restoration.

The BA generally describes the effect of restoration direction in the management plans. Watershed restoration projects completed during fiscal years 1994-96 within the range of the LCR steelhead ESU by each administrative unit is listed in Table 3 of the BA. For example, restoration activities to date on Federal lands have included culvert replacements, road bed stabilization, road surfacing, road decommissioning, installation of instream structures, and revegetation of riparian and upland areas. Within the LCR steelhead ESU, five culverts have been replaced or improved for fish passage, 169.6 miles of road decommissioned, and 211.9 acres of aquatic/riparian habitat enhanced by the addition of instream structures or exclosures.

More watershed restoration activities are being planned. The Gifford Pinchot NF, for instance, has committed funds to accomplish a variety of restoration projects over the next five years (through fiscal year 2002). Proposed projects include restoring habitat complexity, improving or restoring fish passage, riparian fencing, decommissioning roads, improving road drainages, replacing problem culverts with bridges, and restoring upland sites to improve watershed health (USDA-FS 1997b).

2. Land Allocations and Standards and Guidelines

There are many potential adverse effects to Pacific salmonid freshwater habitat elements that could result from site-specific implementation of individual programs and projects, including timber harvest, road construction and decommissioning, instream habitat enhancement structures, grazing, mining, recreation, etc. A comprehensive review of the expected adverse effects generally associated with these types of actions on aquatic ecosystems, including Pacific salmonid habitat, can be found in chapter V of FEMAT (1993).

It is generally not practical to provide a detailed review of all potential effects of all individual actions as such an analysis would entail considerable conjecture about the specifics of hypothetical project design, timing, and configuration. The effects of individual proposed actions on LCR steelhead are generally predictable because, by definition, they must be consistent with the ACS objectives. Compliance with these ACS objectives is not left to chance or to the discretion of individual land managers. As described above, a system of land allocations and standards and guidelines are included in each management plan to focus the location and design of actions towards meeting ecosystem management objectives.

Land Allocations Under the current management plans, as amended by the NFP, the Federal land area where certain land management practices can now occur has been substantially reduced by the establishment of various reserve land allocations. Key watersheds and other reserve allocations are very important for fish habitat protection and refugia (USDA-FS and USDI-BLM 1994). A system of refugia (designated areas providing high quality habitat) is essential for maintaining and recovering habitat for at-risk fish populations, particularly in the short term (FEMAT 1993). Areas currently in good condition serve as anchors for the potential recovery of depressed populations, while those of lower quality should have a high potential for restoration and will become future sources of good habitat.

In addition to the riparian reserve and key watershed allocations described above, additional reserve allocations have also been established where land management actions are heavily restricted, such as Congressionally-reserved areas (CRA), late-successional reserves (LSR), and managed late-successional areas (MLSA). The network of LSRs, for example, while established to provide habitat for terrestrial species associated with late-successional forests, also provide substantial benefits to Pacific salmonid in the form of protected habitat refugia.

Federal lands within the LCR steelhead ESU are composed primarily of reserve land allocations (See Table 3 of the BA). Approximately 51 percent of Federally managed lands within the ESU consist of CRAs, LSRs, and MLSAs. The total refugia area, consisting of key watersheds plus the CRAs, LSRs, and MLSAs of non-key watersheds, make up approximately 68 percent of Federally managed lands within the ESU. Streams in these land allocations should serve as anchors or core areas of good quality habitat and population centers for recolonization during the recovery of degraded areas.

As a result of the various reserve allocations included in the management plans, scheduled timber harvest is now limited to a smaller percentage of the overall landscape and occurs within lands designated as “matrix” and Adaptive Management Areas (AMA). While matrix and AMA lands make up approximately 42 percent of Federally managed lands within the LCR steelhead ESU, a little over one-third (36 percent) of these land allocations occur in key watersheds. Timber harvest would likely be reduced in key watersheds since these areas have an aquatic conservation emphasis and are to be managed as refugia for at-risk fish species.

Standards and Guidelines Standards and guidelines are another important part of the NFP ACS, as they were developed specifically to mitigate adverse effects of management actions by protecting existing aquatic habitats and restoring currently degraded habitats. These standards and guidelines are described in the NFP ROD (USDA-FS and USDI BLM, 1994). For example, there are many standards and guidelines for timber harvest and related silviculture actions that directly or indirectly benefit Pacific salmonids; e.g., ROD pages C-7, C-11 through 16, C-19 through 28, C-30 through 32, and C-39 through 48. Other standards and guidelines that benefit Pacific salmonids include those for road management, fire and fuels management, general riparian habitat management, watershed and habitat restoration, fish and wildlife habitat management, minerals management, recreation management, grazing management, and watershed analysis.

The efficacy of standards and guidelines for achieving the desired benefits of fish habitat protection and restoration are described in the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (FSEIS) (USDA-FS and USDI-BLM (lead agencies) 1994); e.g., chapters 3&4, pages 51 through 82. NMFS served as a cooperating agency in the preparation of this FSEIS and concurs with the referenced analysis of standards and guidelines effects.

Decision Maker Discretion The land allocations and standards and guidelines described above were designed to focus the review of proposed actions to determine compatibility with the ACS objectives. NMFS recognizes that agency decision makers retain enough discretion when implementing direction in the management plans that application of the standards and guidelines alone may not always guarantee that all management decisions will be fully consistent with ACS objectives. However, the review of proposed actions by Level 1 teams pursuant to the interagency ESA consultation streamlining agreement provides an added measure of assurance that projects will be properly designed to fully meet ACS objectives. Application of the evaluation procedures in NMFS (1996) by the Level 1 teams to determine effects of proposed actions further assures that the biological requirements of Pacific salmonid species will be met during the project design process.

3. Monitoring Direction

All five administrative units are participating in a regional implementation and effectiveness monitoring effort. Implementation monitoring should indicate whether individual and groups of actions are implemented in a manner consistent with management plan direction. Effectiveness monitoring will address assumptions made by the FEMAT; e.g., whether the changes to management plans affected by the NFP are effective in achieving the ACS objectives, including improved aquatic habitat conditions.

Each individual management plan contains a section on monitoring. In general, monitoring and evaluation programs are designed to help determine whether (1) planned goals and objectives are achieved, (2) programs and activities address existing and emerging public issues and management concerns, (3) standards and guidelines are being followed, (4) standards and guidelines maintain environmental quality, (5) resource and cost information used in projecting output and impacts are correct, and (6) management plans need amending or revision.

The Gifford Pinchot, Mt. Hood, and Willamette NFs and Salem District BLM monitoring plans are similar in that they emphasize evaluation of various effects under NF or BLM resource programs, e.g. timber, recreation, fisheries, wildlife, transportation, etc (USDA-FS 1990a; 1990b; 1990c; and USDI-BLM 1994). The BLM Salem District management plan also calls for implementation, effectiveness, and validation monitoring of land use allocations (USDI-BLM 1994). The Gifford Pinchot and Mt. Hood NFs are responsible for conducting monitoring activities in accordance with their management plans and the NFP on their respective lands within the CRGNSA.

Fiscal year 1996 was the pilot year for implementation monitoring. The pilot project focused on 42 USFS and BLM timber sales that were reviewed by interagency, interdisciplinary, and intergovernmental teams. The diversity of ideas, backgrounds, disciplines, and public involvement in the process resulted in a vigorous review of each sale. It was concluded that approximately 95 percent of the NFP standards and guides that were applicable to the 42 timber sales were complied with. Instances of noncompliance were anticipated to have minor biological effects at both the regional and project level scale with the exception of a few instances where the potential effects were thought to be of medium to high concern (Alverts *et al.* 1997). For fiscal year 1997, timber sales, roads, and restoration projects will be the priority topics for implementation monitoring.

A regional plan for effectiveness monitoring of aquatic and riparian resources is currently under development by the regional Research and Monitoring Committee, a technical subcommittee of the Intergovernmental Advisory Committee. NMFS is participating in development of this monitoring plan to assure it addresses the effectiveness of the ACS to maintain and restore freshwater habitat for Pacific salmonids. Current plans call for a pilot test of the effectiveness monitoring plan in fiscal year 1998. Effectiveness monitoring results for the entire action area, however, are not expected to be available for two or more years.

4. Expected Long-Term Conservation Benefits from Management Plan Direction

Implementation of the management plans, consistent with the land allocations, standards and guidelines and ACS objectives of the NFP, is expected to result in improved habitat conditions for LCR steelhead within the ownership of the five administrative units. This, in turn, is expected to provide for increased survival of various life stages and an increased probability of restoring and maintaining viable populations (Attachment 1).

During development of the NFP, the FEMAT and Species Analysis Team assessed management alternatives and mitigation measures to determine the probability of ensuring the viability of various plant and animal species on Federal lands within the range of the Northern spotted owl. To accomplish this, assessment panels comprised of experts were convened to elicit high quality judgements about expected effects of the alternatives and mitigation measures on these species. The panelists assessed the likelihood that each alternative would provide sufficient habitat on Federal lands to provide for various distributions of species populations over the 100 year assessment period (USDA-FS and USDI-BLM (lead agencies) 1994).

The assessment for the preferred management alternative in the FSEIS, as adjusted by the NFP ROD, concluded that there would be an 80% or greater likelihood of providing sufficient aquatic habitat to support stable, well-distributed populations of the races/species/groups evaluated on Federal lands (USDA-FS and USDI-BLM (lead agencies) 1994)³. The salmonids evaluated included coastal

³The referenced viability assessments do not apply to the entire ESUs of salmonid species considered in this Conference; they apply only to Federal lands within the ESUs. The expert viability panelists were unable to draw conclusions regarding the viability of these species on non-federal lands. This is because little information was available regarding the current

cutthroat trout (resident and anadromous), coho salmon, fall chinook salmon, spring chinook salmon, summer steelhead, winter steelhead, and resident rainbow trout.

Although the analysis of management plan effects on aquatic habitat prepared for the FSEIS was not quantitative, NMFS believes that this assessment represents the best available (and currently possible) analysis of the expected effects of implementation of the management plans (consistent with the NFP) on LCR steelhead habitat on Federal lands in the action area.

C. Effects of Individual and Groups of Actions

Individual and groups of actions (programs or projects) implemented in accordance with direction in the management plans are expected to affect LCR steelhead in a variety of ways. Some may result in adverse effects to salmonid habitat, while others are expected to maintain or restore habitat conditions. Because all actions will be designed and mitigated in accordance with the ACS objectives, land allocations, and standards and guidelines, any associated adverse effects (e.g., increased habitat sedimentation) are expected to be generally minor in magnitude and short-lived in duration. Chapter V of FEMAT (1993) discusses generally the potential adverse effects of these actions on fish habitat and populations.

The NMFS will evaluate the effects of groups, similar likely to adversely affect (LAA) actions (ie. timber sales, livestock grazing allotments, etc.), in future program-level biological opinions in response to project-specific actions by the five administrative units.

1. Implications of Management Plan Direction for Assessing Effects of Individual and Groups of Actions

The site- and watershed-scale environmental baseline and expected effects associated with individual or groups of projects will be evaluated via use of the procedures outlined in the document "Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale" (NMFS 1996; Attachment 3). These evaluation methods were designed to ensure that Level 1 teams can efficiently provide adequate information in a tabular form in BAs to evaluate effects of actions subject to ESA section 7 conferences and consultations. Effects of actions are expressed in terms of the expected effect (i.e., restore, maintain, or degrade proper functioning) on each of 17 aquatic habitat factors in the project area (site and watershed scales), as described in the "Checklist for documenting environmental baseline and effects of the action" (Checklist) completed for each action.

The evaluation procedures in NMFS (1996) are based on a "Matrix of Pathways and Indicators" (Matrix), a holistic method for characterizing environmental baseline conditions and predicting the effects of human activities on those baseline conditions. The Matrix provides generalized ranges of

quality of fish habitats on non-federal lands and because the panelists were unable to predict with certainty how non-Federal lands would be managed throughout the assessment period.

functional values (i.e., properly functioning, at risk, and not properly functioning) for aquatic, riparian, and watershed parameters. The NMFS acknowledges that generalized values provided in the Matrix may not be appropriate for all watersheds within the range of Pacific salmonids or even within the range of a single ESU. Therefore, we encourage development of more biologically-appropriate matrices (referred to as “modified” matrices) in specific physiographic areas. The NMFS, in conjunction with the USFS and the BLM, is in the process of appropriately modifying the Matrix for watersheds that support LCR steelhead. Meanwhile, the generalized values are being utilized for ESA purposes.

A primary source of environmental baseline information is watershed analysis reports. Each of the five management plans require watershed analysis to be completed in key watersheds, roadless areas, and riparian reserves prior to determining how proposed land management activities meet ACS objectives. The NMFS expects that where listed and proposed salmonid species are present, each watershed analysis will include salmonid habitat conservation as a “key issue.” This will ensure that watershed analysis reports provide adequate information for establishing the watershed-scale environmental baseline through use of the Matrix and Checklist. Consideration of salmonid habitat as a key issue in watershed analysis will also ensure that the analysis report identifies recommendations and priorities for salmonid habitat restoration needs in the watershed. Further guidance on how to address salmonid conservation as a key watershed analysis issue can be found in *Ecosystem Analysis at the Watershed Scale: Federal Guide for Watershed Analysis* (RIEC 1995), and associated analytical modules, especially *Physical Stream Habitat* and *Aquatic Species Viability* (REO 1996). Already completed watershed analysis reports will need to be reviewed and supplemented, if necessary, to include this information.

Currently, NMFS applies the three criteria described in Attachment 2 for determining whether proposed actions would jeopardize the continued existence of LCR steelhead. These criteria are: (1) ensure that essential components of management plans (including ACS objectives, watershed analysis, restoration, land allocations, and standards and guidelines) have been fully applied at the relevant spatial scale of implementation (region, province, watershed, and/or site); (2) ensure that management actions will comply with all applicable land allocations and standards and guidelines; and (3) ensure that management actions will promote attainment of the ACS objectives.

A pivotal issue in applying these criteria is determining whether proposed actions are properly designed and mitigated to ensure full attainment of ACS objectives. The NFP ROD establishes clear direction to the land management agencies regarding the design and review of actions to meet ACS objectives:

The important phrases in these standards and guidelines are "meet Aquatic Conservation Strategy objectives," "does not retard or prevent attainment of Aquatic Conservation Strategy objectives," and "attain Aquatic Conservation Strategy objectives." These phrases, coupled with the phrase "maintain and restore" within each of the Aquatic Conservation Strategy objectives, define the context for agency review and implementation of management activities. Complying with the Aquatic Conservation Strategy objectives means that an agency must manage the riparian-dependent

resources to maintain the existing condition or implement actions to restore conditions. The baseline from which to assess maintaining or restoring the condition is developed through a watershed analysis. Improvement relates to restoring biological and physical processes within their ranges of natural variability.

The standards and guidelines are designed to focus the review of proposed and certain existing projects to determine compatibility with the Aquatic Conservation Strategy objectives. The standards and guidelines focus on "meeting" and "not preventing attainment" of Aquatic Conservation Strategy objectives. The intent is to ensure that a decision maker must find that the proposed management activity is consistent with the Aquatic Conservation Strategy objectives. The decision maker will use the results of watershed analysis to support the finding. In order to make the finding that a project or management action "meets" or "does not prevent attainment" of the Aquatic Conservation Strategy objectives, the analysis must include a description of the existing condition, a description of the range of natural variability of the important physical and biological components of a given watershed, and how the proposed project or management action maintains the existing condition or moves it within the range of natural variability. Management actions that do not maintain the existing condition or lead to improved conditions in the long term would not "meet" the intent of the Aquatic Conservation Strategy and thus, should not be implemented. (NFP ROD, pages B-9 and B-10).

The Matrix is a tool designed to reflect the information needed to implement the ACS and to evaluate effects from proposed actions relative to the ACS objectives, e.g., when applied at the landscape or watershed scale (fifth code for example), the Matrix will assist evaluators with determining effects relative to attaining or retarding ACS objectives. Actions that produce short-term adverse effects, such as localized sediment pulses, are not viewed by NMFS as necessarily retarding ACS objectives. Short-term (less than one year) localized effects, however, may adversely effect survival of certain fish life stages, depending on the proximity of a project site to fish habitat. These types of effects may or may not result in watershed-wide degradation unless they are cumulative in nature and persist through time. For this reason, projects must be meticulously designed, timed, and implemented to minimize effects on listed species and the habitat that supports them.

Actions that are fully consistent with the ACS objectives, land allocations, and standards and guidelines are expected to maintain or restore essential aquatic habitat functions, and should not impede recovery of Pacific salmonid habitat, a long-term goal of the management plans. The specific benefits of ACS components for providing short-term protection and long-term recovery of aquatic habitats are described in Attachment 1.

D. Cumulative Effects

Cumulative effects are defined as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation" (50 CFR § 402.02). For the purposes of this consultation, the action area includes those portions of the five administrative units within the LCR steelhead ESU, additional Federal lands upstream of the ESUs in the Lewis and Cowlitz River basins, and river reaches downstream of the administrative unit boundaries that may be affected by Federal land management activities.

Within the LCR steelhead ESU, Federal lands comprise approximately 47 percent of the area. A substantial portion of spawning and rearing habitat for LCR steelhead occurs on USFS and BLM lands. Gradual improvements in habitat conditions for salmonids are expected on these lands as a result of management plan implementation.

The dominant land-use activities on non-Federal lands within the watersheds considered in this opinion are forestry and agriculture. A small, but increasing, proportion of this non-Federal land is being used for urban growth. Historically, agriculture, livestock grazing, forestry and other activities on non-Federal land have contributed substantially to temperature and sediment problems in the ESU. Conditions on and activities within non-Federal riparian areas along stream reaches downstream of the USFS and BLM land presently exert a greater influence on river temperatures and probably contribute more sediment to the habitat of LCR steelhead than the USFS and BLM land.

Significant improvements in LCR steelhead production outside of USFS and BLM land is unlikely without changes in forestry, agricultural, and other practices occurring within non-Federal riparian areas. NMFS is aware that significant efforts, such as Oregon Plan for Salmon and Watersheds and Washington's Wild Salmonid Policy, have been developed to improve conservation of at-risk salmonid populations (including LCR steelhead) on non-Federal land. NMFS is not aware of any general changes to existing State and private activities within the action area that would cause greater impacts than presently occur to any of the salmonid species considered in this opinion.

Until improvements in non-Federal land management practices are actually implemented, the NMFS assumes that future private and State actions will continue at similar intensities as in recent years. Should the LCR steelhead ESU be listed under the ESA, the NMFS assumes that non-Federal land owners in those areas will also take steps to curtail or avoid land management practices that would result in the take of those species. Such actions may be prohibited by section 9 of the ESA, and subject to the incidental take permitting process under section 10 of the ESA. Future Federal actions, including the ongoing operation of hydropower projects, hatcheries, fisheries, and land management activities will be reviewed through separate section 7 processes. In addition, non-Federal actions that require authorization under section 10 of the ESA would be considered in the environmental baseline for future section 7 consultations.

VI. Conclusion

Continued Implementation of Management Plans

NMFS has determined, based on the information and analysis described in this opinion and attachments, that implementation of the management plans for the five administrative units are not likely to jeopardize the continued existence of LCR steelhead.

Basis for Determinations

These determinations are based on the following conclusions and assumptions:

1. Implementation of management direction provided in the management plans, which includes the components of the ACS, will result in improved habitat conditions for LCR steelhead over the next few decades and into the future. Implementation of actions consistent with the ACS objectives and components - including watershed analysis, watershed restoration, reserve and refugia land allocations (riparian reserves, key watersheds, late successional reserves, etc.) and associated standards and guidelines - will provide high levels of aquatic ecosystem understanding, protection, and restoration for aquatic habitat-dependent species. The NMFS criteria for determining whether actions would be likely to jeopardize listed and proposed salmonid species, based on compliance with the ACS objectives and components, is described in Attachment 2.
2. Improved habitat conditions for LCR steelhead will result in increased survival of the freshwater life-stages of these fish. The relationship between habitat conditions and survival of freshwater lifestages of LCR steelhead are described in Attachment 1.
3. The FEMAT determined that implementation of the NFP amendments to management plans would result in an 80 percent or greater likelihood of providing sufficient aquatic habitat to support stable, well distributed populations of Pacific salmonids as they occur on and are affected by the Federal lands within the subject administrative units.
4. Level 1 and 2 teams, as established in the May 31, 1995, interagency consultation streamlining agreement, will follow the August 29, 1995, and February 26, 1997, interagency consultation processes to ensure that future individual and grouped USFS and BLM actions are consistent with ACS objectives and include appropriate measures to avoid or minimize adverse effects to listed, proposed or candidate salmonid species.
5. Use of a consistent, agreed-upon effects determination methodology (NMFS 1996) will support efficient, accurate assessments of the environmental baseline and will further ensure that future individual and grouped USFS and BLM actions are consistent with ACS objectives important to listed, proposed or candidate salmonid species.

6. Future non-Federal actions within the range of the LCR steelhead ESU that may result in take of LCR steelhead will be addressed during future section 10 permitting and considered in the environmental baseline of section 7 consultations.
7. Current and future monitoring efforts, including regional implementation and effectiveness monitoring programs, will facilitate the adaptive management process in determining whether changes in land allocations or standards and guidelines are needed in order to achieve management plan goals and ACS objectives.

Finally, implementation of management direction provided in the management plans is not likely to jeopardize other listed salmonids that use the lower Columbia River as a migratory corridor (i.e. Snake River sockeye salmon, Snake River spring/summer chinook salmon, Snake River fall chinook salmon, Snake River basin steelhead, and upper Columbia River steelhead). The affect of management plan direction on the Columbia River is expected to be insignificant.

VII. Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information.

The NMFS believes the following conservation recommendations are consistent with these obligations, and therefore should be implemented by each of the five administrative units. The NMFS also recommends these measures because they are expected to further streamline future section 7 consultations for proposed actions:

Ecosystem Analysis

1. To provide a more comprehensive description of salmonid habitat conditions and conservation needs at the watershed-scale, the administrative units should develop options for more extensive consideration of non-Federal lands and for coordinating with local watershed councils during watershed analysis, including incentives and opportunities for non-Federal landowner participation.
2. Section 303(d) of the Clean Water Act requires each state to identify “water quality limited waters” requiring the application of Total Maximum Daily Loads (TMDL). Water Quality Management Plans may function as TMDLs to address non-point sources. Watershed-scale plans to manage natural resources may provide information useful for developing Water Quality Management Plans. During watershed analysis the administrative units should identify whether subject streams are, or

have and affect on, 303(d) reaches, and when anadromous fish area a non-supported beneficial use, provide appropriate information and management recommendations for improving water quality which could be used to develop Water Quality Management Plans.

Watershed Restoration

3. To maximize the utility of watershed analyses and to expedite salmonid habitat recovery, watershed analysis reports should include recommendations for identifying and prioritizing actions needed to maintain and restore properly functioning native aquatic communities in the watershed.
4. To promote long-term ecosystem recovery, actions that restore landscapes and aquatic ecosystem processes (e.g., reestablishment of floodplain functions through road decommissioning) should be prioritized over instream habitat enhancement projects that provide short-term benefits.
5. To ensure that Federal restoration projects/activities are well coordinated and complement similar efforts by States, tribes, other landowners, governments, and local watershed councils, the administrative units should work with their Provincial Interagency Executive Committees (PIECs) and Province Advisory Committees (PACs) to establish priority river basins and watersheds for restoration and to identify opportunities for cooperative analysis and funding to support restoration projects.
6. To complement restoration efforts on Federal lands, explore opportunities to fund restoration projects on adjacent non-Federal lands identified as high priority within the action area.

Adaptive Management

7. To apply the adaptive management process when implementing the management plans. Each administrative unit should review information developed through watershed and river basin analyses to determine whether the key watershed and reserve network within the range of LCR steelhead on each administrative unit needs to be expanded or otherwise modified to incorporate additional strongholds, refugia, or core habitat areas used by these fish.
8. Planning and analysis teams associated with each of the Adaptive Management Areas (AMAs) should work closely with local watershed councils to identify innovative salmonid habitat restoration approaches for each AMA.

Road and Timber Sale Planning

9. Adverse effects of existing road systems should be mitigated through the expeditious development and implementation of cooperative interagency road restoration programs. Reductions in existing road miles and hazards should be achieved in watersheds that support Pacific salmonid production areas (especially in key watersheds), and expected benefits to native aquatic communities should be a primary factor considered during prioritization of watersheds for road mileage reductions.

10. Semi-permanent roads should be decommissioned within one year after completion of timber sale activities associated with the harvest units they were built to access. The definition of “decommissioning” for this purpose includes those measures necessary to restore pre-road hydrologic functions and to minimize the risk of road related sediment delivery to streams (e.g., culvert removal, decompaction of the road surfaces (ripping), out-sloping, waterbarring, fill removal, revegetating with native species, and roadway barricading to exclude vehicular traffic).
11. To facilitate ESA consultation and to minimize site and combined watershed-scale effects of future timber harvest, the administrative units should coordinate long-term timber harvest planning on river basin and watershed scales. The results of watershed analyses, river basin or provincial assessments (such as the Umpqua River Basin Assessment being conducted by the Southwest Oregon PIEC), and other relevant information should be utilized when planning timber harvest to assure that ACS objectives are fully attained.
12. To minimize local effects of timber harvest on salmonid habitat from sedimentation, the administrative units should design appropriate yarding systems for timber sales to ensure attainment of ACS objectives (e.g., avoid operating ground skidders within riparian reserves or unstable soils, suspend logs when yarding across perennial streams, etc.).
13. To minimize future adverse effects to salmonid habitat from future mining, each administrative unit should use the full extent of their authorities to withdraw key refugia, strongholds and core salmonid habitat areas from future mining development. These key habitat areas should be identified by reviewing the results of state, provincial, river basin and watershed analyses.

Monitoring

14. To maintain current knowledge of important fish production areas and the overall success of habitat protection and restoration efforts, each of the five administrative units should continue to conduct stream surveys and monitor fish populations on lands they administer.

VIII. Reinitiation of Consultation

Reinitiation of this consultation is required if: (1) new information reveals that effects of the proposed action may affect listed species in a way not previously considered; (2) the action is modified in a way that causes an effect on listed species that was not previously considered; or (3) a new species is listed or critical habitat is designated that may be affected by the action

(50 CFR § 402.16). For example, consultation must be reinitiated if any of the following occurs:

1. The NMFS, USFS, or BLM determine that implementation monitoring efforts are insufficient to ensure project compliance with management plans;

2. the NMFS, USFS, or BLM determine that effectiveness monitoring results indicate that management plan implementation is not resulting in attainment of ACS objectives as expected; and
3. the NMFS, USFS, or BLM determine that the streamlined interagency consultation processes, as described in this opinion, in the May 31, 1995, interagency consultation streamlining agreement, and the August 29, 1995, and February 26, 1997, interagency consultation process, are not functioning as intended.

IX. References

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the sources of data, information and references used in developing this Conference in addition to the BA and additional information requested by the NMFS and provided by the five administrative units.

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X. Incidental Take Statement

Sections 4(d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

The measures described below are non-discretionary. They must be implemented by the action agency so that they become binding conditions necessary in order for the exemption in section 7(o)(2) to apply. The five administrative units have a continuing duty to regulate the activity covered in this incidental take statement. If the five administrative units (1) fail to adhere to the terms and conditions of the incidental take statement, and/or (2) fail to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

A. Amount or Extent of the Take

Notwithstanding the NMFS' conclusion that continued implementation of management direction in the subject management plans is not expected to jeopardize the continued existence of LCR steelhead, agency decision makers retain enough discretion when implementing management direction in the management plans that the NMFS anticipates more than a negligible likelihood of incidental take of these species from such actions. The NMFS is unable to anticipate all possible circumstances related to continued management plan implementation, including programmatic actions or individual projects that might be developed in the future. As a result, the NMFS is unable to issue a "blanket" incidental take statement or a comprehensive list of reasonable and prudent measures to cover all programs and actions subsequently implemented pursuant to management plan direction.

The NMFS is able to prescribe reasonable and prudent measures that will reduce the overall expected level of incidental take associated with continued implementation of management plan direction by ensuring that planned actions are fully consistent with the ACS objectives. These reasonable and prudent measures are based on a process for evaluating and screening proposed actions that is described in the BA. The evaluation and screening of proposed actions is accomplished through the

ESA consultation process developed to implement the May 31, 1995, interagency streamlining agreement and the Matrix of Pathways and Indicators from NMFS (1996). Interagency Level 1 teams evaluate the effects of proposed actions against the environmental baseline at project and watershed scales. They determine whether effects to listed and proposed species have been minimized by fully applying the relevant management plan direction and relevant terms and conditions from this Opinion in the design of proposed actions.

The first step in this process, in fact the ultimate goal of Level 1 review, is to design actions that are not likely to adversely affect listed and proposed salmonid species, and thus avoid the likelihood of incidental take and the need for formal consultation. The second step in the process, for those cases where adverse effects are likely to occur, is for the Level 1 team to incorporate adequate measures into the proposed actions to minimize the likelihood of incidental take, with the goal of avoiding the need for additional reasonable and prudent measures beyond those described in this incidental take statement. Finally, in those cases where the Level 1 team is unsuccessful in meeting either of these two steps; i.e., in cases where proposed actions are likely to adversely effect listed or proposed species and additional measures are needed to minimize incidental take, the NMFS will need to prepare a biological opinion to conclude formal consultation.

It is also appropriate to prescribe reasonable and prudent measures to minimize the likelihood of incidental take associated with implementation actions for which decisions are made at the management plan scale. For example, the decision to withdraw portions of the planning areas from mining development lies at the management plan scale.

B. Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimize the likelihood of take of LCR steelhead resulting from continued implementation of the subject management plans.

Each administrative unit shall:

1. Apply the review criteria described on pages B-9 and B-10 of the NFP *ROD* (USDA-FS and USDI-BLM 1994) to ensure that proposed actions are fully consistent with applicable standards and guidelines and ACS objectives.
2. Utilize the Level 1 team consultation process and apply the NMFS' Checklist and Matrix of Pathways and Indicators (NMFS 1996) to:
 - a. evaluate all proposed actions that may affect the listed LCR steelhead;
 - b. determine whether proposed actions are either not likely to adversely effect or likely to adversely effect LCR steelhead;

- c. carry out the required interagency coordination to complete the consultation process informally or formally; and
- d. update the environmental baseline to include proposed actions once consultation is concluded.

D. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the five administrative units must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary. The five administrative units shall do the following:

1. To ensure that proposed actions designed in accordance with relevant standards and guidelines are in fact consistent with the NFP ACS objectives, USFS and BLM decision makers will apply the results of watershed analysis and other relevant information to reach findings that actions either "meet" or "do not prevent attainment" of the ACS objectives. Watershed analysis is required in key watersheds, roadless areas, and riparian reserves before determining how proposed land management activities meet ACS objectives (NFP ROD, page B-20).
 - a. The finding must be supported by an analysis that includes a description of the existing condition, a description of the range of natural variability of the important physical and biological components of a given watershed, and how the proposed project or management action maintains the existing condition or moves it within the range of natural variability.
 - b. Management actions that do not maintain the existing condition or lead to improved conditions in the long term would not "meet" the intent of the Aquatic Conservation Strategy and thus should not be implemented.
2. To ensure that an interagency, interdisciplinary process is used to implement management direction in the management plans, review all Federal actions using NMFS' Checklist and Matrix of Pathways and Indicators (NMFS 1996) and utilize the Level 1 team consultation process to evaluate all proposed actions that may affect LCR steelhead.
 - a. To facilitate the ESA consultation process and ensure agreement on effect determinations, utilize the Level 1 team process and apply the NMFS' Checklist and Matrix of Pathways and Indicators (NMFS 1996) to determine whether proposed actions are either not likely to adversely effect or likely to adversely effect LCR steelhead.
 - b. To further streamline the consultation process and optimize the benefits of interagency coordination, utilize the Level 1 team process to complete informal and formal consultation on proposed actions that may affect LCR steelhead.

- i. For actions that are not likely to adversely effect listed species, complete informal consultation through use of the Checklist and associated interagency discussions during Level 1 team meetings. NMFS will prepare appropriate concurrence documentation for actions determined to be not likely to adversely effect actions by Level 1 teams.
 - ii. For actions that are likely to adversely effect listed species, complete formal consultation through use of the Checklist and associated interagency discussions during Level 1 team meetings. During the formal consultation, Level 1 teams will develop appropriate measures to avoid or minimize adverse effects to LCR steelhead and recommend such measures to the decision maker for incorporation into the proposed action.
- c. To ensure that the environmental baseline is continually updated to include proposed actions once consultation is concluded, the USFS and BLM shall:
 - i. maintain a file of completed project and watershed Checklists and other related environmental documentation for each subject watershed; and
 - ii. update watershed analysis reports, as necessary, to reflect appreciable changes to the environmental baseline based on the effects of completed actions on salmonid habitat conditions.