COVER SHEET
January 2007

Title of Environmental Review:	Environmental Assessment of NOAA's National Marine Fisheries Service's (NMFS) approval of Five Fisheries Management and Evaluation Plans For Tributaries of the middle Columbia River Submitted by the Oregon Department of Fish and Wildlife (ODFW) and Washington Department of Fish And Wildlife (WDFW), and of NMFS' Determination that the Plans Adequately Address Section 4(d) Limit 4 Criteria and Do Not Appreciably Reduce the Likelihood of Survival and Recovery of Salmon and Steelhead Listed Under the Endangered Species Act
Listed Species:	Middle Columbia River Steelhead DPS Lower Columbia River Chinook Salmon ESU Lower Columbia River Coho Salmon ESU
Responsible Agency and Official:	D. Robert Lohn NOAA – National Marine Fisheries Service 7600 Sand Point Way, N.E. Seattle, WA 98115
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Legal Mandate:	Endangered Species Act of 1973, as amended and implemented – 50 CFR Part 223
Location of Proposed Activities:	Oregon and Washington Middle Columbia River Basin
Activity Considered:	Approval of five FMEPs submitted by the ODFW and WDFW under limit 4 of the 4(d) rule. The five FMEPs describe state-managed programs for fisheries potentially affecting listed salmon and steelhead in tributaries to the Middle Columbia River.

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1.0 Purpose Of and Need For the Proposed Action

1.1 Background

NOAA's National Marine Fisheries Service (NMFS) is the lead agency responsible for administering the Endangered Species Act as it relates to listed salmon and steelhead. Actions that may affect listed species (Evolutionarily Significant Units, or ESUs, and Distinct Population Segments, or DPSs[1]) are reviewed by NMFS under section 7, section 10, or section 4(d) of the Endangered Species Act (ESA). Section 9(a)(1) of the ESA describes categories of actions and activities that are prohibited with respect to any species of fish or wildlife listed under the ESA; it is unlawful to perform these activities unless otherwise provided for under the ESA – for example, through a section 10(a)(1) permit or if the application of these prohibitions is limited via section 4(d). NMFS issued a final rule pursuant to section 4(d) of the ESA (4(d) Rule), adopting regulations necessary and advisable to conserve threatened species (65 FR 42422). This 4(d) Rule applies the take prohibitions in section 9(a)(1) of the ESA, and also sets forth specific circumstances when the prohibitions will not apply, known as 4(d) limits. Limit 4 under the 4(d) Rule (50 CFR 223.203(4)) limits the application of the take prohibitions if a fishery management agency develops and implements a Fisheries Management and Evaluation Plan (FMEP) that NMFS approves under Limit 4. A June 28, 2005, listing (70 FR 37160) of 16 Evolutionarily Significant Units (ESU) of salmon amended the 2000 4(d) protective regulations to, among other actions, apply the limits to additional ESUs. The January 5, 2006, listing for steelhead (71 FR 834) reconfirmed 4(d) protective regulations for listed steelhead DPSs.

In 2001, the Oregon Department of Fish and Wildlife (ODFW) submitted four FMEPs for approval under Limit 4 for recreational fisheries in tributaries of the Middle Columbia River (MCR) within the MCR Steelhead DPS. The ODFW submitted FMEPs for recreational fisheries in the Deschutes River basin (ODFW 2001a), the Umatilla River basin (ODFW 2001b), the John Day River basin (ODFW 2001c), and the Walla Walla River basin in Oregon (ODFW 2001d). The 2001 ODFW FMEPs were submitted for public comment (66 FR 22532); due to comments received regarding a proposed consumptive fishery on natural-origin steelhead in the John Day River basin and concerns with the critical and viable abundance thresholds proposed within the FMEPs, the FMEPs were not approved by NMFS. To address these concerns, the FMEPs were updated and resubmitted to NMFS for approval in 2005 (ODFW 2005a; 2005b; 2005c; 2005d).

In 2003, the Washington Department of Fish and Wildlife (WDFW) submitted an FMEP for recreational fisheries in all Washington Tributaries to the Middle Columbia River (White Salmon, Klickitat, Yakima, Walla Walla Rivers, and smaller tributaries; WDFW 2003). This FMEP was provided to the public for comment (68 FR 39066) and is awaiting concurrence by NMFS in conjunction with the 2005 ODFW FMEPs. Implementation of the four resubmitted FMEPs from ODFW combined with the one FMEP from WDFW is the proposed action considered in this Environmental Assessment (EA).

[1] An 'evolutionarily significant unit' (ESU) of Pacific salmon (Waples 1991) and a 'distinct population segment' (DPS) of steelhead (71 FR 834, January 5, 2006) are considered to be 'species,' as defined in Section 3 of the ESA.

All of the FMEPs submitted propose recreational fisheries for steelhead, salmon, trout, and warmwater species. All of the proposed steelhead fisheries are selective, that is, only hatchery steelhead that are adipose fin-clipped may be kept. No naturally produced adult steelhead caught within the boundaries of the MCR Steelhead DPS may be kept and must be released unharmed. Many Columbia Basin hatcheries are designed and funded to produce fish for harvest, and these fish are generally adipose fin-clipped to differentiate them from naturally produced fish. These recreational fisheries are expected to provide economic benefits to local communities through the sale of licenses and equipment, and other associated commercial activities.

Table 1 lists the three ESU/DPS that would be affected by the proposed fisheries, these include the MCR Steelhead DPS, the Lower Columbia River (LCR) Chinook Salmon ESU, and the Lower Columbia River (LCR) Coho Salmon ESU. The June 28, 2005, hatchery listing policy (70 FR 37204) expanded the listing of salmon and steelhead to include those artificial propagation programs that were considered to be part of the ESU. In the MCR steelhead DPS, the hatchery programs that are part of the DPS include the Round Butte Hatchery summer steelhead (ODFW stock #66), Umatilla River summer steelhead (ODFW stock #91), and Touchet River endemic summer steelhead. These hatchery steelhead are also adipose fin-clipped, and thus are exempted from take prohibitions under the new listings (70 FR 37160).

Table 1. Distinct Population Segments and Evolutionarily Significant Units that are Affected by the Proposed FMEPs.

Species	**ESU/DPS**	**Status**	**Federal Register Notice**	
Steelhead (*Oncorhynchus mykiss*)	Middle Columbia River	Threatened	71 FR 834	1/5/2006
Chinook Salmon (*O. tshawytscha*)	Lower Columbia River	Threatened	70 FR 37160	6/28/2005
Coho Salmon (*O. kisutch*)	Lower Columbia River	Threatened	70 FR 37160	6/28/2005
Critical Habitat Designation	LCR Chinook, MCR Steelhead		70 FR 52360	9/2/2005

NMFS seeks to consider, through this National Environmental Policy Act (NEPA) environmental assessment (EA), the effects of the pending action on the natural and physical environment and the relationship of people with that environment. NMFS is also required to review compliance of ESA actions with other applicable laws and regulations. The NEPA analysis provides an opportunity to consider, for example, how the action may affect conservation of non-listed species, socioeconomic objectives that seek to balance conservation with wise use of affected resources, and other legal and policy mandates.

The Federal government has signed treaties with the Confederated Tribes of the Warms Springs Reservation of Oregon, the Confederated Tribes and Bands of the Yakama Indian Nation, the Nez Perce Tribe, and the Confederated Tribes of the Umatilla Indian Reservation reserving rights for traditional tribal uses such as hunting, fishing, and gathering of plant materials on unoccupied public lands and in areas ceded by the tribes to the United States. All of the basins

within the action area for these FMEPs include the lands ceded by the tribes. Tribal ceremonial and subsistence fisheries within the ceded lands are not expected to be affected by the proposed fisheries. Management of the ceremonial and subsistence fisheries in these basins is by the individual tribal governments and is expected to occur under either alternative analyzed in this EA.

1.2 Description of the Action

NMFS proposes the approval of the five FMEPs for state management of recreational fisheries in tributaries of the Middle Columbia River under Limit 4 of the 4(d) Rule (70 FR 37160). Two alternatives are considered in this EA: (1) NMFS does not approve ODFW and WDFW FMEPs under Limit 4 of the 4(d) Rule, and (2) NMFS approves ODFW and WDFW FMEPs under Limit 4 of the 4(d) Rule, allowing ODFW and WDFW to conduct the recreational fisheries specified in the FMEPs consistent with the ESA. No other alternatives were found that were reasonable and/or appreciably different from these two; see the discussion in the scoping section, below.

In the review of the FMEPs, NMFS must consider whether the FMEPs adequately address the criteria contained in the ESA 4(d) Rule (70 FR 37160). If NMFS determines that implementation of the activities described in the FMEPs would not appreciably reduce the likelihood of survival and recovery of listed salmon and steelhead, and the FMEPs otherwise adequately address the criteria in the 4(d) Rule, then NMFS may approve the FMEPs, and take prohibitions would not apply to fisheries implemented pursuant to the FMEPs. NMFS' approval of the FMEPs constitutes the federal action that is subject to analysis as required by the NEPA.

1.3 Purpose of and Need for the Proposed Action

The purpose of the proposed action is to implement recreational fisheries plans in Oregon and Washington tributaries of the Middle Columbia River that comply with the requirements of the ESA, and specifically with Limit 4 of the 4(d) rule. The FMEPs submitted include fishery regulations designed to conserve the ESA-listed salmon and steelhead present in the fishing areas, enforcement measures adequate to ensure that the regulations are being followed, inseason monitoring with the ability to respond to inseason run size and fishery data, and the requirement to evaluate and report fishery impacts and compliance with conservation objectives.

The need for the proposed action is to provide for recreational fishing opportunities that are consistent with the protection and conservation of listed species. In addition to its conservation objectives, Limit 4 is designed to foster cooperative efforts between fishery managers, such as the states, and NMFS when implementing recreational fishing programs. Recreational fishing is important socially and economically to the states of Oregon and Washington; this has been recognized by NMFS in its policies (e.g., the Policy for Conserving Species Listed or Proposed for Listing Under the Endangered Species Act While Providing and Enhancing Recreational Fisheries Opportunities, jointly issued by the Fish and Wildlife Service and the National Marine Fisheries Service on June 3, 1996 (61 FR 27978)) and through the 4(d) Rule.

1.4 Action Area

The action area includes all of the tributaries within the Columbia River where steelhead deemed part of the MCR Steelhead DPS occur. The MCR Steelhead DPS includes all natural populations of steelhead in streams within the Columbia River basin from above the Wind River in Washington and the Hood River in Oregon (exclusive), upstream to, and including, the Yakima River in Washington, excluding steelhead from the Snake River basin (71 FR 834). MCR steelhead historically occupied nine major river systems within the states of Oregon and Washington on the east side of the Cascades Mountains (Figure 1) and numerous minor systems. These major tributaries to the Columbia River include the White Salmon, Fifteenmile Creek, Deschutes, John Day, Klickitat, Rock Creek, Umatilla, Walla Walla, and Yakima River systems.

1.5 Scope of the Action

NMFS identified two reasonable alternatives that could achieve the purpose and need as described above. These alternatives are described in section 2, below, and their anticipated impacts on the human environment are analyzed in section 4.

1.6 Relationship to Other Plans and Policies

The scope of the analysis is limited to the effects of the proposed fisheries on the listed species, through lethal and non-lethal take of these species and populations in the proposed fisheries. The proposed action analyzed in this EA relates to other plans and policies regarding the management and restoration of anadromous fish resources in the Pacific Northwest. The concept of utilizing scientifically based fisheries management as part of a strategy to recover depleted salmon populations is described in the Basinwide Salmon Recovery Strategy, which was developed by the Federal government to restore ESA-listed salmon and steelhead throughout the Columbia River basin (NMFS 2000a).

Specific strategies of the Basinwide Salmon Recovery Strategy that guide this proposal are:

- Manage fisheries in a manner that prevents overharvest and does not thwart recovery efforts.

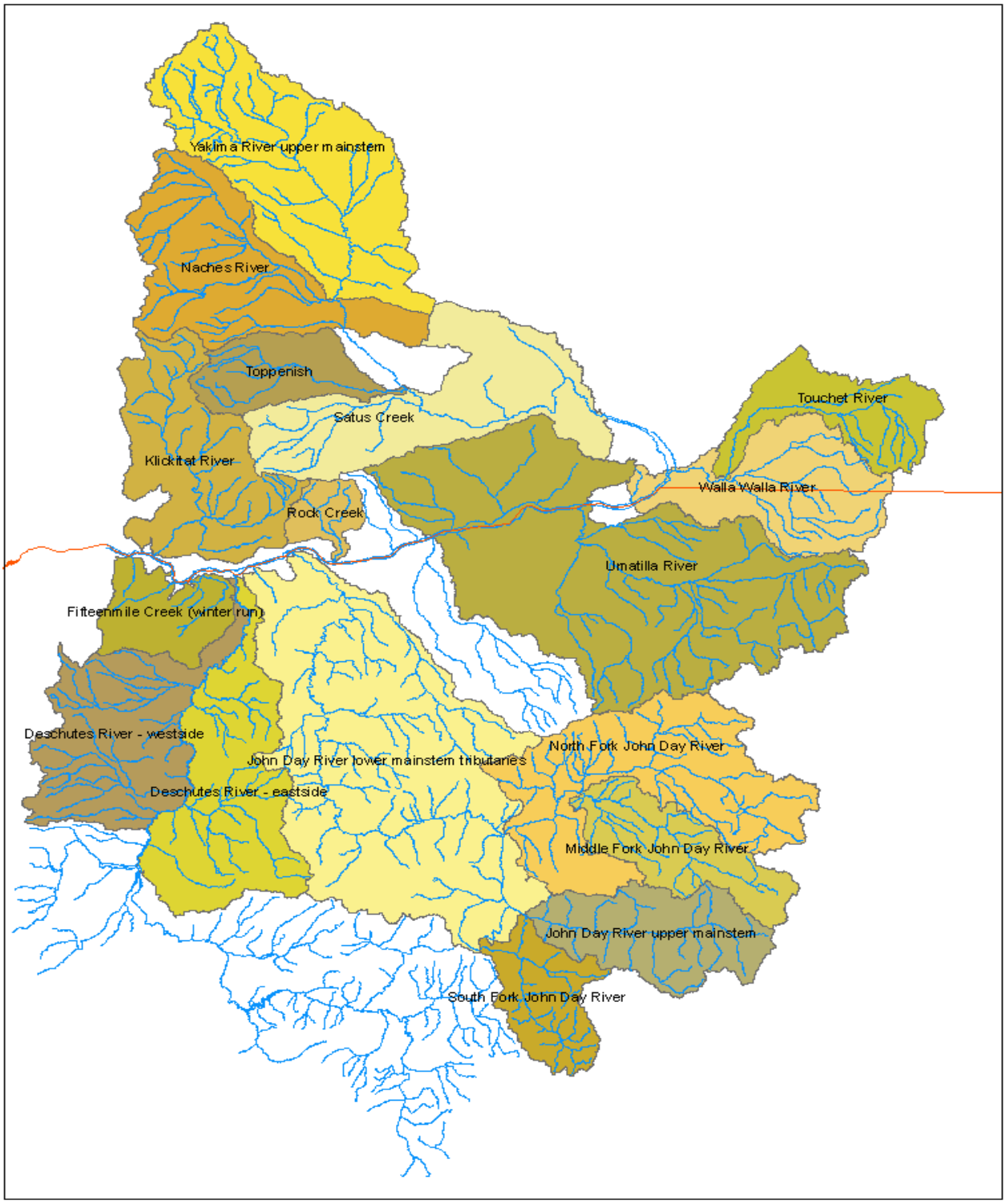

Figure 1. Middle Columbia River Steelhead DPS current populations identified by the Interior Columbia Technical Recovery Team (2005).

- Provide sustainable fisheries for the meaningful exercise of tribal fishing rights and non-tribal fishing opportunities consistent with the recovery effort.
- Use hatcheries to create fishing opportunities that are benign to listed populations, such as in terminal areas.

In addition, the proposed action is consistent with on-going ESA recovery planning. Recovery plans are being developed in the sub-basins of the Columbia River system. These recovery plans will contain: (1) measurable goals for delisting, (2) a comprehensive list of the actions necessary to achieve delisting goals, and (3) an estimate of the cost and time required to carry out those actions. All factors that have been identified as leading to the decline of ESA-listed species will be addressed in these recovery plans. For ESA-listed salmon and steelhead, these factors include hydroelectric operations, harvest, habitat use, and artificial propagation.

Other Federal, state, and Tribal plans and policies that would potentially address effects on fish populations in the Mid-Columbia steelhead DPS apply within or near the action area. Federal actions include U.S. Forest Service and U.S. Bureau of Land Management land and resource management plans that are designed to foster sustainable ecosystems and resilient watersheds. State initiatives include legislative measures to facilitate the recovery of listed species and their habitats, as well as the overall health of watersheds and ecosystems. State land management, environmental quality, water resources, and agriculture agencies all have policies and plans that address water quality and land use practices that are designed to achieve desirable water quality and resource conditions, some specific to protected species, some more generally addressing water and resource quality. Regional programs are being developed that designate priority watersheds and facilitate development of watershed management plans. Tribes have developed a joint restoration plan for anadromous fish in the Columbia River basin, known as the Wy-Kan-Ush-Mi Wa-Kish-Wit or Spirit of the Salmon plan (CRITFC 1996), which includes descriptions of potential fishery management schemes.

In summary, many actions in other sectors that affect the same species take place in the action area, and numerous steps are being taken to address these other actions. However, these other actions are outside the authority of the proposed FMEPs, and will not be included in this analysis, although the potential interaction of effects will be considered.

2.0 Alternatives Including the Proposed Action

Two alternatives were identified and considered in this EA: under Alternative 1 (No Action), the FMEPs would not be approved as qualifying for limitations on take prohibitions as provided in the ESA 4(d) Rule Limit 4; under Alternative 2 (Proposed Action), the FMEPs would be approved, and take prohibitions would not apply to actions implemented pursuant to the FMEPs as provided in the ESA 4(d) Rule Limit 4. This section describes the specific activities that would or would not take place related to the proposed action.

2.1 No Action Alternative – No approval of FMEPs

For the purposes of this analysis, NMFS defines this alternative to mean that none of the proposed recreational fisheries in tributaries to the middle Columbia River would occur. However, recreational fisheries would occur in non-anadromous waters that do not have an effect on listed salmon or steelhead. Under the No Action alternative, NMFS would not approve the FMEPs as qualifying for limitation of take prohibitions under the 4(d) Rule, with the result that fisheries described in the FMEPs would be subject to section 9 take prohibitions (subsection 1.1, Background).

Because the closure of fisheries in the absence of ESA authorization or approval is a possible outcome, this alternative provides a lower bound on the potential level of impact. This alternative, therefore, could result in the nearly complete loss of the remaining fishing opportunities in the management areas of the FMEPs because ODFW and WDFW would not be expected to implement fisheries without ESA coverage.

2.2 Alternative 2 (Proposed Action) – Approval of FMEPs

The proposed action is to approve the FMEPs pursuant to Limit 4 of the ESA 4(d) Rule. This would include a determination that the FMEPs adequately address the criteria described in section (b)(4)(i) of that Rule. Upon final determination, NMFS would provide letters of concurrence to ODFW and WDFW, specifying appropriate implementation and reporting requirements. NMFS' concurrence would require the States to comply with FMEP implementation and reporting requirements that NMFS may require as being necessary and/or appropriate. The ODFW and WDFW will evaluate whether the FMEPs' objectives are being accomplished and report regularly to NMFS. A comprehensive review of each FMEP is required every five years.

2.2.1 Proposed FMEPs

The FMEPs provide a mechanism for developing, implementing, and adjusting fisheries to achieve management and conservation objectives. The FMEPs would remain in effect until inseason monitoring of fisheries or fish runs indicate the need for temporary adjustment of the fisheries beyond measures provided by the FMEPs, until analysis of new monitoring information indicates the need for large-scale management changes, or until the appropriate state decides to develop and implement a different fishery management scheme. The FMEPs developed by ODFW and WDFW describe the management objectives for a variety of recreational fisheries and assess the potential impacts on listed MCR steelhead in the Middle Columbia River. The FMEPs include fisheries for salmon, steelhead, resident trout, and warmwater species. The proposed fisheries are fully described in the FMEPs, and summarized here.

Recreational fisheries for particular fish species occur annually in nearly all of the tributaries in the Middle Columbia River. The most popular fisheries are for salmon and steelhead. There are

popular fisheries for steelhead in the White Salmon, Klickitat, and Walla Walla Rivers in Washington and the Deschutes, John Day, Umatilla, and upper Walla Walla Rivers in Oregon. Other proposed fisheries include those targeting Chinook salmon, coho salmon, resident trout, and a variety of warmwater fishes including largemouth bass, smallmouth bass, channel catfish, crappie, bluegill, and walleye. Fisheries targeting these species may encounter listed steelhead adults and juveniles.

All streams managed for wild steelhead in the Middle Columbia River would be subject to fishing regulations that limit the areas open to fishing, restrict fishing to certain seasons, and will stay within harvest rates determined by population viability or stock-recruitment analysis to be consistent with species survival and recovery. Only hatchery produced steelhead, as indicated by a missing adipose fin, can be retained. All fisheries described in the FMEPs are being managed to prohibit the retention of unmarked naturally produced steelhead.

Harvest impacts on listed species in tributary fisheries are managed by the States through a variety of fishery regulations. In general, these regulations fall into four categories:

Seasons

The timing of fisheries is regulated to protect adults that are holding prior to and when they are spawning, as well as to protect juvenile fish that are migrating from the basin. In general, tributary fisheries for steelhead are open when the steelhead are present in the basin; fisheries targeting other species are managed, to the extent possible, to avoid the time periods when natural-origin steelhead may be present, or to minimize the degree of overlap between the fishery and the natural steelhead return. For some basins, steelhead adults are present nearly year-round, for others it is the fall through spring. Season descriptions below are for 2006 fisheries and will vary from year to year depending on when weekend dates fall.

Area

Adult and juvenile fish are protected through regulations limiting where and when fisheries can occur. Area closures are used to protect adults in holding and spawning habitat and to protect rearing juvenile salmon and steelhead. In general, most of the smaller tributaries to the basins covered by the FMEPs are closed to all fishing, and in some basins entire sections of the mainstem are closed to fishing. Area closures also occur above and below barriers and at hatcheries, where adults tend be delayed during migration.

Gear

Impacts on adults, and especially juveniles, are reduced through restrictions on the type of fishing gear that can be used. In general, most steelhead and salmon fisheries allow the use of bait, some basins require barbless hooks, and others require use of only artificial flies and lures.

Selective gear rules require unscented artificial flies or lures with one single barbless hook, and bait is prohibited.

Size and Bag Limits

These limits are used to regulate the size and number of adult and juvenile salmon and steelhead harvested in tributary fisheries. Size limits are used to protect juvenile fish and tend to require fish under 8 inches to be released unharmed. In some basins the lower limit is set at 12 inches to protect larger juvenile steelhead. Adults are also protected by regulating the maximum size that can be retained in the fishery. "Rainbow trout" (*O. mykiss*) that are over 20 inches are considered to be steelhead. The number of fish that can be retained per day is used to manage effort and to encourage the removal of hatchery steelhead.

Below are specific fisheries regulations for the 2006 tributary fisheries within the action area. These regulations are typical of regulations that would be expected to be implemented under the FMEPs.

Washington Tributaries

Little White Salmon River (Drano Lake)

- Open year around for marked hatchery steelhead. Spring Chinook salmon fisheries are open March 16 to June 30. Salmon season opens again from August 1 to December 31.
- The river is open from the Highway 14 bridge up to the markers below the Little White Salmon National Fish Hatchery.
- Drano Lake is closed Wednesdays from second Wednesday in April through May 31 and during October. From March 16 to June 30 these is a night closure and non-buoyant lure restrictions. There is a night closure in place for the month of October, and from August 1 to December 31, the non-buoyant lure restriction is in place.
- Trout fisheries are catch-and-release except that two hatchery steelhead may be retained. The daily limit for salmon over 12 inches and hatchery steelhead over 20 inches is a total of two Chinook salmon or hatchery steelhead or one of each, and requires the release of all unmarked spring Chinook salmon. In the fall fisheries, the limit is no more than two adult salmon and requires the release of all unmarked coho salmon.

White Salmon River

- Salmon and steelhead fisheries are open year around, but Chinook must be released from October 1 to December 31. Trout seasons are open from July 1 to March 31 up to the Power House, and November 16 to March 31 for the area between the Power House and Condit Dam.
- The river is open from the mouth up to the Condit Dam except for an area 400 feet below the dam that is closed to all fishing.
- From August 1 through December 31, WDFW has a non-buoyant lure rule to prevent snagging.
- All unmarked coho salmon must be released.
- The trout fisheries have a minimum size limit of 14 inches, and daily limit of two trout. A total of two salmon or marked steelhead or one of each can be harvested when the season is open.

Klickitat River

- Salmon and steelhead fisheries are open in the lower two miles of the Klickitat River below Lyle Falls from April 1 to January 31. From April 1 to May 31, the salmon and steelhead fishery is only open Mondays, Wednesdays, and Saturdays. The mainstem Klickitat from above Lyle Falls to the Yakama Reservation Boundary is open for steelhead and salmon from June 1 to November 30. The retention of Chinook salmon is not permitted from November 1 to November 30. Trout fisheries in tributaries to the Little Klickitat River are open from June 1 to October 31.
- The river is closed in the area around the Lyle Falls fishways, above and below the Klickitat Hatchery, and upstream of Yakama Indian Reservation boundary. Tributaries to the Klickitat are closed to fishing except smaller tributaries to the Little Klickitat River.
- In the lower Klickitat River a night closure, and non-buoyant lure restrictions are in place from May 1 to May 31 and August 1 to January 31.
- All unmarked steelhead and Chinook salmon must be released.
- Size limits vary with species and season, the minimum size for trout is 12 inches with a daily limit of two. Salmon fishing in the mainstem above Lyle Falls is limited to jack salmon (12 to 24 inches) from June 1 to July 31. No more than two salmon or marked steelhead or one of each can be retained when the season is open.

Rock Creek

- There are no special rules for the Rock Creek basin. The basin is managed under the state-wide rules for game fish. Seasons for steelhead and trout are from June 1 to October 31, with a minimum size of 8 inches (trout over 20 inches are

considered steelhead) and a daily bag limit of two fish. Only marked steelhead can be retained and are considered part of the daily limit.

Yakima River

- The entire Yakima River basin is closed to fishing for steelhead. The river is open to salmon fisheries from September 1 to October 31 in the river below Granger, Washington.
- Trout fishing from Roza Dam downstream is open from June 1 to March 31 with a minimum size of 12 inches and a maximum size of 20 inches and a daily limit of two. Above Roza Dam the trout fishery is open year around but is catch-and-release only with selective gear rules. Tributaries to the Yakima River are opening to trout fishing from June 1 to October 31, with the same restrictions as listed for below Roza Dam.
- There are many areas of the mainstem around the mainstem diversion dams that are closed to fishing.

Walla Walla River

- In the Walla Walla and Touchet Rivers, the steelhead fishery is open from November 1 to April 15, and the trout fishery is open from June 1 to October 31; in lower Mill Creek below the City of Walla Walla, the steelhead fishery does not open until September 1.
- Tributaries to Mill Creek and the Walla Walla and Touchet Rivers are closed to steelhead fisheries but open to trout fisheries.
- In the steelhead fisheries, barbless hooks are required, and in the tributaries selective gear rules apply.
- In the Walla Walla River basin (includes Touchet River and Mill Creek), the daily bag limit is three hatchery steelhead. The trout limit is 8 inch minimum and two fish daily.

<u>Oregon Tributaries</u>

Fifteenmile Creek

- Closed to fishing for adult steelhead.
- In 2006, the trout fishery is open from May 27 to October 31.
- The river is closed from the mouth to 400 feet above the fishway at Seufert falls.
- All trout fisheries are catch-and-release and gear is restricted to artificial flies and lures.

Deschutes River

- The river is open the entire year for trout and marked steelhead up to the northern boundary of the Warm Springs Reservation. The section from the northern boundary to the Pelton Regulating Dam is open from April 22 to October 31 for trout and April 22 to December 31 for marked steelhead. Trout Creek and its tributaries are open for catch-and-release trout fisheries only.
- The smaller tributaries to the Deschutes are closed to fishing, as is the area below the Pelton Regulating Dam and the one mile below Sherar Falls from April 1 to July 31.
- The fisheries are restricted to artificial flies and lures in the entire river except for a three mile section below Sherar Falls, where bait is permitted.
- The river is closed to all salmon fisheries unless open by special regulation, limited to three mile section below Sherar Falls.
- The trout fishery is limited to two fish per day between 10 and 13 inches.

John Day River

- The mainstem John Day River from Tumwater Falls (near the mouth) to Service Creek is open the entire year for marked steelhead. Upstream tributaries are open from January 1 to April 14, and from September 1 to December 31 annually. Trout seasons, where permitted, are open May 27 (last weekend in May) to October 31.
- Many of the smaller tributaries and the upper reaches of the Middle and North Forks are closed to fishing.
- Some of the upper basin tributaries are restricted to artificial flies and bait with a single hook no larger than a ¼ inch. The use of lures is prohibited.
- The river is closed to all salmon fisheries.
- The trout limit is five per day with an 8 inch minimum, and three marked steelhead may be retained daily, all unmarked steelhead must be released unharmed.

Umatilla River

- The mainstem Umatilla River from the mouth to the Umatilla Indian Reservation boundary, located upstream from Pendleton, is open from January 1 to April 15, and September 1 to December 31 for marked steelhead. Meechum Creek, Butter Creek, and the tributaries above the reservation are open from May 27 (last weekend in May) to October 31. The warmwater fisheries are closed from April 16 to May 26 above the city of Umatilla (River Mile 1).
- No areas are completely closed to fishing, except by season closures.

- The area above the Umatilla Reservation is limited to catch-and-release for trout and limited to artificial flies and lures. Meechum Creek is limited to artificial flies and lures.
- Fisheries must release unmarked spring Chinook salmon but may keep unmarked coho and fall Chinook jack salmon, adult fall Chinook salmon cannot be retained.
- The trout limit is five per day with an 8 inch minimum, and three marked steelhead may be retained daily, all unmarked steelhead must be released unharmed.

Walla Walla River (Oregon Portion)

- Open to adipose clipped steelhead from January 1 to April 15 and December 1 to 31. The trout season in the Walla Walla River and Mill Creek is open from May 27 (last weekend in May) to October 31.
- The steelhead fishery is limited to the mainstem Walla Walla River from the Oregon-Washington border to the confluence of the North and South Forks. The area above the confluence of the North and South Forks is closed to steelhead fisheries.
- All fisheries are limited to artificial flies and lures.
- The trout limit is five per day with an 8 inch minimum, and three marked steelhead may be retained daily; all unmarked steelhead must be released unharmed.

2.2.2 Implementation and Reporting Requirements

The proposed action is to approve the FMEPs, concurring with implementation of the activities described in the FMEPs subject to compliance with certain implementation terms. This requires a determination by NMFS that the FMEPs adequately address 4(d) Rule Limit 4 criteria. Implementation and reporting requirements relevant to the FMEPs would be included in NMFS' concurrence letters to ODFW and WDFW regarding the FMEPs. Implementation and reporting requirements would require ODFW and WDFW to:

(1) Comply with the guidelines, objectives, and performance standards of the FMEPs, including adoption of any necessary rules to implement their responsibilities under the plan. ODFW and WDFW would be required to conduct sampling, monitoring, assessment, evaluation, enforcement, and reporting tasks or assignments as described in the FMEPs.

(2) Report regularly, as specified in the FMEPs, on the implementation of the fisheries and estimated impact rates on listed salmon and steelhead.

(3) Compile the results of the "Monitoring and Evaluation" tasks, specified in section 3 of the FMEPs, every five years and provide that information to NMFS. These reports would include biological and fishery information from the previous five years and would

assess how the fisheries performed with respect to the objectives and guidelines established in the FMEPs. If field activities indicate management changes are needed, NMFS would be consulted to ensure that listed species are conserved and that the FMEPs continue to qualify for take limitation.

At a minimum, annual reports would include an assessment of the annual catch of natural fish, fishery mortality, the abundance of hatchery and natural fish for each tributary fishery area throughout the Action Area, and angler compliance.

2.3 Other Alternatives Considered

Two alternatives were considered, but not analyzed further:

- **The fishing restrictions could be more relaxed than those described in the FMEPs to increase fishing opportunities in the MCR Region**.

The FMEPs were carefully designed to provide fishing opportunities while remaining within the best estimation of the species' conservation needs. While it is not clear exactly how much more fishing pressure could be implemented before the harvest begins to appreciably reduce the likelihood of survival and recovery of the listed species, it is likely that adverse affects would begin to be felt by the populations before substantial benefits would be seen by the fishing public if fishing effort were to be increased beyond the levels described in the FMEPs. Fishing, in general, is considered a factor for decline that brought MCR steelhead to its current population abundance (March 25, 1999, 64 FR 14517). A fishery directed at listed species is not likely to comply with the ESA until natural steelhead populations have shown substantial increases in abundance and productivity towards DPS survival and recovery levels. As a result, a fishery directed at naturally produced steelhead, or fisheries directed at hatchery-origin fish but at levels higher than described in the FMEPs, would not be consistent with recovery efforts for most MCR steelhead populations. Therefore, NMFS does not believe it necessary or appropriate to consider fishery management schemes less restrictive than those developed and proposed by the States.

- **The fishing restrictions could be more protective than those described in the FMEPs to increase protection of listed fish**.

NMFS did not include this as an alternative because the FMEPs as submitted have provisions that would allow the States to impose stronger fishing restrictions if populations decline towards critical population thresholds, or if other information indicates further restrictions are necessary. These actions include time and area closures, bag and length limits, or the complete closure of tributary fisheries (subsection 2.2.1, Proposed FMEPs). The FMEPs also include rigorous mechanisms by which the fisheries and their effects on listed species would be monitored and the results of that monitoring provided regularly to NMFS. Because this alternative is effectively included in the activities being considered under the Proposed Action alternative, NMFS did not consider it further.

• **The States could apply for ESA covereage under other regulatory mechanisms.**

Other regulatory mechanisms for achieving compliance with the ESA exist. For example, the States could apply for a Section 10(a)(1)(B) incidental take permit. However, the analysis for most other regulatory mechanisms would require consideration of the same issues as are analyzed in this EA under the Proposed Action alternative. It is assumed that the same impacts would occur under other regulatory mechanisms as under the Proposed Action in this EA. Additionally, it is speculative to consider which regulatory mechanisms ODFW and WDFW would apply for, therefore, an analysis of impacts under other regulatory mechanisms is not included in the scope of this review.

3.0 Affected Environment

The alternatives identified above can potentially affect the physical, biological, social, and economic resources within the proposed action areas. Below is a summary of the major components of the environment and its current baseline condition.

There are many species of interest (such as chub, chum salmon, sockeye salmon, smelt, shad, and sturgeon) that are not found in the areas where the proposed recreational fisheries would occur. Therefore, these species will not be considered further. Other terrestrial and aquatic organisms are found in this general area, such as dace (*Rhinichthys* spp.), sculpin (*Cottus* spp.), largescale suckers (*Catostomus macrocheilus*), Northern pikeminnows (*Ptychocheilus oregonensis*), redside shiners (*Richardsonius balteatus*), Oregon spotted frogs (*Rana pretiosa*), American Peregrine falcons (*Falco peregrinus anatum*), bald eagles (*Haliaeetus leucocephalus*), Northern spotted owls (*Strix occidentalis caurina*), belted kingfishers (*Ceryle alcyon*), great blue herons (*Ardea herodias*), green herons (*Butorides striatus*), common mergansers (*Mergus merganser*), river otters (*Lutra canadensis*), raccoons (*Procyon lotor*), California wolverines (*Gulo gulo luteus*), and mink *(Mustela vison*). Because these species would not likely be encountered where the proposed fisheries occur or by activities associated with the proposed fisheries, impacts on these resources, if any, would be negligible. Therefore, impacts on these species will not be considered further.

3.1 Water Quality/Riparian Vegetation

In the Middle Columbia River, the Klickitat, White Salmon, Little White Salmon, Yakima, and Walla Walla are the major river systems in Washington State, while the Deschutes, John Day, Umatilla, and upper Walla Walla Rivers are foremost in Oregon (Figure 1). This intermountain region includes some of the driest areas of the Pacific Northwest, generally receiving less than 40 cm (15.75 inches) of rainfall annually (Jackson 1993). Vegetation is of the shrub-steppe province, reflecting the dry climate and harsh temperature extremes.

Bottom *et al.* (1985) noted that high summer and low winter temperatures are limiting factors for salmonids in many streams in this region. They noted that flows below recommended levels occur in the Umatilla and John Day Rivers, extreme temperature conditions exist in the Lower John Day River, and that water withdrawals and overgrazing have seriously reduced summer flows in the principal summer steelhead spawning and rearing tributaries of the Deschutes River. There is little or no late summer flow in sections of the lower Umatilla and Walla Walla Rivers. All of these streams in Oregon have been identified as being water quality limited under the Clean Water Act 303 listings. Only small sections of streams in Washington (e.g., Walla Walla and Yakima Rivers) were identified as water quality limited.

Riparian vegetation is heavily impacted by overgrazing and other agricultural practices, timber harvest, road building, and channelization. Of stream segments inventoried within the MCR Steelhead DPS, riparian restoration is needed for between 37 percent and 84 percent of the river bank in various basins. Instream habitat is also affected by these same factors, as well as by past gold dredging and severe sedimentation due to poor land management practices. Salmon and steelhead that return and spawn in the MCR Steelhead DPS provide an essential source of nutrients to the riparian and riverine environment. Anadromous salmon are a major vector for transporting marine nutrients from marine to freshwater and terrestrial ecosystems. Nutrients and biomass extracted from the milt, eggs, and decomposing carcasses, of spawning salmon stimulate growth and restore the nutrients of aquatic ecosystems. Nutrients originating from salmon carcasses are also important to riparian plant growth. Direct consumption of carcasses and secondary consumption of plants and small animals that are supported by carcasses is an important source of nutrition for terrestrial wildlife (Cederholm *et al.* 1999).

3.2 Anadromous Fish Listed Under the ESA

3.2.1 Middle Columbia River Steelhead

Steelhead in North America are distributed from Northwestern Mexico to the Kuskokwim River in Alaska (Lichatowich 1999). Steelhead exhibit more complex life history traits than other Pacific salmonid species. Some forms of *O. mykiss* are anadromous while others, called rainbow or redband trout, are resident forms that remain permanently in freshwater. Anadromous steelhead usually reside in freshwater for 2 years but have been reported to stay as long as 7 years before moving to the ocean. Steelhead typically reside in marine waters for 1 or 3 years before returning to their natal stream to spawn at 4 or 5 years of age. Some Oregon and California populations include “half-pounders” that migrate from the ocean to freshwater and return to the ocean without spawning (Busby *et al.* 1996).

Steelhead can be divided into two basic run types based on the level of sexual maturity at the time of river entry and the duration of the spawning migration (Burgner *et al*. 1992). The stream- maturing type (inland), or summer steelhead, enters freshwater in a sexually immature condition and require several months in freshwater to mature and spawn. The ocean-maturing type (coastal), or winter steelhead, enters freshwater with well-developed gonads and spawns shortly after river entry (Barnhart 1986). Variations in migration timing exist between

populations. Both summer and winter steelhead occur in British Columbia, Washington, and Oregon; Idaho has only summer steelhead; California is thought to have only winter steelhead (Busby *et al.* 1996). In the Pacific Northwest, summer steelhead enter freshwater between May and October, and winter steelhead enter freshwater between November and April.

Steelhead are iteroparous, or capable of spawning more than once before death. Repeat spawning by steelhead probably ranges from 10 to 20 percent of the spawning population annually. Steelhead spawn in cool, clear streams with suitable gravel size, depth, and current velocity. Intermittent streams may also be used for spawning (Barnhart 1986; Everest 1973). Steelhead enter streams and arrive at spawning grounds weeks or even months before they spawn and are vulnerable to disturbance and predation. Cover, in the form of overhanging vegetation, undercut banks, submerged vegetation, submerged objects such as logs and rocks, floating debris, deep water, turbulence, and turbidity is required to reduce disturbance and predation of spawning steelhead. Summer steelhead usually spawn further upstream than winter steelhead (Behnke 1992). Summer steelhead juveniles typically rear in freshwater from 1 to 4 years before migrating to the ocean. Winter steelhead generally smolt after 2 years in freshwater (Busby *et al.* 1996).

Based on catch data, juvenile steelhead tend to migrate directly offshore during their first summer, rather than migrating nearer the coast as do salmon. During fall and winter, juveniles move southward and eastward (Hartt and Dell 1986). Available fin-mark and coded-wire tag data suggest that winter steelhead tend to migrate farther offshore but not as far north into the Gulf of Alaska as summer steelhead (Burgner *et al.* 1992) and that southern Oregon and California populations are south-migrating rather than north-migrating (Nicholas and Hankin 1988; Pearcy *et al.* 1990; Pearcy 1992). Ocean distribution data for specific DPSs is limited. Maturing Columbia River steelhead are found off the coast of Northern British Columbia and west into the North Pacific Ocean (Myers *et al.* 1998). At the time adults are entering freshwater, tagging data indicate that immature Columbia River steelhead are out in the mid-North Pacific Ocean.

The MCR Steelhead DPS includes all naturally spawned populations of steelhead in tributaries of the Columbia River from the Wind River, Washington and Hood River, Oregon (exclusive), upstream to, and including, the Yakima River, Washington (Figure 1). Excluded are steelhead from the Snake River Basin. NMFS determined that both the Deschutes River (ODFW Stock # 66), the Umatilla River (ODFW Stock # 91), and the Touchet River endemic summer steelhead hatchery stocks should be considered part of the DPS. Those naturally spawning summer steelhead that are reconditioned through the Yakima River Kelt reconditioning program are also part of the MCR Steelhead DPS. Major river basins containing spawning and rearing habitat for this DPS comprise approximately 26,739 square miles in Oregon and Washington. The following counties lie partially or wholly within these basins (or contain migration habitat for the species): Oregon - Clatsop, Columbia, Crook, Gilliam, Grant, Harney, Hood River, Jefferson, Morrow, Multnomah, Sherman, Umatilla, Union, Wallowa, Wasco, and Wheeler; Washington - Benton, Clark, Columbia, Cowlitz, Franklin, Kittitas, Klickitat, Pacific, Skamania, Wahkiakum,

Walla Walla, and Yakima. This ESU was listed as a threatened species on March 25, 1999 (64 FR 14517), the listing status was reaffirmed as a DPS on January 5, 2006 (71 FR 834).

All steelhead in the Columbia River basin upstream from The Dalles Dam are summer-run, inland steelhead (Schreck *et al.* 1986; Reisenbichler *et al.* 1992; and Chapman *et al.* 1994). Steelhead in Fifteenmile Creek, Oregon, are genetically allied with inland *O. mykiss* but are winter-run. Winter steelhead are also found in Washington, in the Klickitat River and Rock Creek, and were historically present in the White Salmon River. Within this ESU, the Klickitat River is unusual in that it produces both summer and winter steelhead, and the summer steelhead are dominated by 2-ocean steelhead, whereas most other rivers in this region produce an equal number of 1- and 2-ocean summer steelhead.

The Interior Columbia Technical Recovery Team (ICTRT) has identified 20 historical populations within the ESU (Figure 1). The extinct populations include the White Salmon, Crooked River, and Willow Creek. The steelhead that originated above the dams on the Deschutes River, other than those in the Crooked River, were considered to be part of the westside Deschutes River population. The ICTRT is currently developing viability criteria for each of these populations and for the DPS as a whole (ICTRT 2005).

Estimates of historical (pre-1960s) abundance specific to this DPS are available for the Yakima River, with an estimated run size of 100,000 (WDF *et al.* 1993). Assuming that other basins had comparable run sizes for their drainage areas, the total historical run size for this DPS may have been in excess of 300,000. Light (1987) estimated that the steelhead run returning to this DPS in the early 1980s was below 200,000, of which approximately 80 percent was of hatchery origin. By 1996, the 5-year average run size was 142,000, with a naturally produced component of 39,000 (NMFS 1996). Harvest was not considered a limiting factor for this DPS, with harvest rates estimated to be less than 10 percent of the natural-origin steelhead adult return annually (71 FR 834). However, one of the key limiting factors for this DPS was the genetic and ecological effects of naturally spawning stray hatchery steelhead on the natural-origin populations.

3.2.2 Lower Columbia River Coho Salmon

Coho salmon is a widespread species of Pacific salmon, with production in most major river basins around the Pacific Rim from central California to Korea and northern Hokkaido, Japan (Laufle *et al*. 1986). The following ESU description was taken from the Lower Columbia Fish Recovery Board's technical framework (LCFRB 2004). Coho salmon runs to the Columbia River show considerable temporal variability in river entry and spawn timing. Coho salmon begin to return to the Columbia River in August, continuing through December/January and peaking in September/October. This variability resembles the pattern of river entry in other river systems, such as the Chehalis in southwest Washington, the Skagit in northern Washington, and the Klamath in southern Oregon (Leidy and Leidy 1984; WDF *et al*. 1993).

In some regions, individual coho salmon stocks show exceptionally early or late run timings; these stocks are often referred to as summer or winter runs, respectively (Godfrey 1965), and are

thought to have evolved in response to particular flow conditions (Sandercock 1991). The relationship between populations with "very late or very early" timed runs and normally timed runs within the same basin is not well understood. For example, in some cases, such as the Soleduck (Washington coast) and Clackamas (Willamette River) Rivers, differently-timed, sympatric runs are thought to be largely reproductively isolated from each other (Houston 1983; Cramer and Cramer 1994), while in the Grays Harbor basin, there is believed to be reproductive overlap (WDF *et al*. 1993). These "very late or very early" timed runs are found in many geographic areas. However, because there is no evidence to suggest that all runs of a certain type are closely related, differently timed runs are considered to be a component of overall life history diversity within each area (NMFS 1995b).

The timing of coho salmon spawning can also reflect water temperature changes in a particular river system. Lister *et al*. (1981) found that spawn timing of coho salmon in tributaries of the Cowichan River (British Columbia) was strongly correlated to tributary water temperature: coho salmon spawning in warmer tributaries spawned later than those spawning in colder tributaries. Such factors make determining and comparing when coho salmon will enter a river or spawn difficult because of the temperature variability within basins (NMFS 1995). Other environmental factors influence coho salmon spawning as well. Adult coho salmon returning to spawn need adequate flows and water quality, and unimpeded passage to their natal grounds. They also need deep pools with vegetative cover and instream structures such as root wads for resting and shelter from predators.

After emergence, coho salmon fry move to shallow, low velocity rearing areas, primarily along the stream edges and in side channels. They congregate in quiet backwaters, side channels, and small creeks, especially in shady areas with overhanging branches (Gribanov 1948). All coho salmon juveniles remain in the river for a full year after leaving the gravel.

Most juvenile coho salmon migrate seaward as smolts in late spring, typically during their second year. Factors that tend to affect the time of migration include: the size of the fish, flow conditions, water temperature, dissolved oxygen levels, day length, and the availability of food (Shapovalov and Taft 1954). The size of coho salmon smolts is fairly consistent over the species' geographic range; a fork length of 3.9 inches (100 mm) seems to be the threshold for smoltification (Gribanov 1948). Generally, the timing of outmigration is earlier in the southern coho salmon populations compared to northern populations.

Coho salmon use estuaries primarily to adjust physiologically to salt water. Most research indicates that, upon entering the ocean, coho salmon remain in nearshore environments over the continental shelf for a couple of months before they disperse on more seaward migrations; this holds true from California to Alaska (Shapovalov and Taft 1954; Milne 1964; Godfrey 1965). This pattern may help coho salmon avoid pelagic predators and reduce feeding competition with immature salmon that are older by a year or more.

Coho salmon typically spend 18 months in the ocean before returning to fresh water. Thus, many returning coho salmon are 3 years old and have spent 18 months in fresh water and 18 months in salt water. Jacks, however, return earlier at age 2. These sexually mature males return to fresh water to spawn after only 5 to 7 months in the ocean.

The LCR Coho Salmon ESU was listed in June 28, 2005 (70 FR 37160) and includes naturally produced coho salmon originating from the White Salmon River, and naturally spawning coho in the tributaries to Bonneville Pool downstream of the White Salmon River. These populations are functionally extinct and are being supported by stray hatchery coho salmon. Access to the primary spawning habitat in the White Salmon River is currently blocked by Condit Dam and other spawning habitat has been inundated by the pool behind Bonneville Dam. LCR coho salmon are primarily limited by habitat degradation, which is not affected by harvest actions, however, past over-harvest and the naturally spawning of stray hatchery coho were identified as contributing to the decline of the ESU (70 FR 37160). No other listed coho salmon populations of native origin are found within the boundaries of the MCR Steelhead DPS.

3.2.3 Salmon and Steelhead from the Upper Columbia and Snake Rivers

Some of the listed salmon and steelhead destined for the Upper Columbia and Snake Rivers stray into MCR tributaries but at unknown levels. For example, the full extent to which listed Snake River summer steelhead stray into the Deschutes River is unknown, but stray hatchery summer steelhead have become more numerous in the recreational catch and tribal fisheries since 1982. It is unknown if natural summer steelhead from outside the Deschutes River have the same tendency to enter the Deschutes River as stray hatchery summer steelhead. Steelhead and salmon tend to use the Deschutes River as a thermal refuge when Columbia River mainstem water temperatures are high and flow is low. Steelhead will migrate up the Deschutes River pass Sherars Falls only to return to the Columbia River and continue their migration upstream once water temperatures decline. There is concern that stray hatchery steelhead will remain in the Deschutes River and contribute to the natural spawning population. ODFW and NMFS identified this threat to genetic integrity as a factor contributing to the decline of the Deschutes River population of summer steelhead (Busby *et. al.* 1996; WCSBRT 2003). Stray summer steelhead are also observed in the John Day and Yakima Rivers that do not contain local hatchery summer steelhead programs. These fish have to potential to be encountered during MCR fisheries.

3.2.4 Lower Columbia River Chinook Salmon

Chinook salmon, also known by the common names king, spring, quinnalt, and tyee salmon, historically ranged from the Ventura River in California to Point Hope, Alaska in North America (Healey 1991). Additionally, Chinook salmon have been reported in the Mackenzie River area of northern Canada (McPhail and Lindsey 1970). Many of the Chinook salmon stocks in this ESU have been in decline for decades (Myers *et al.* 1998). Factors implicated in the decline of the species include dams, logging, agriculture, water withdrawal, mining, and urbanization, all of which contribute to habitat loss and degradation. Overfishing and the wide use of hatcheries and

other forms of artificial propagation are also factors (Myers *et al.* 1998; WCSBRT 2003). In addition, sources suggest that the "inadequacy of existing regulatory mechanisms" is a general reason for overall decline in abundance of Chinook salmon (Oregon Natural Resources Council and Nawa 1995).

Chinook salmon are the largest of the salmon species in body size and exhibit one of the most diverse and complex life history strategies. Healey (1986) described 16 age categories for Chinook salmon, 7 total ages with 3 possible freshwater ages. Two generalized freshwater life-history types were initially described by Gilbert (1912): "stream-type" Chinook salmon reside in freshwater for a year or more following emergence, whereas "ocean-type" Chinook salmon migrate to the ocean within their first year. Healey (1983; 1991) has promoted the use of broader definitions for "ocean-type" and "stream-type" to describe two distinct races of Chinook salmon. This racial approach incorporates life history traits, geographic distribution, and genetic differentiation and provides a valuable frame of reference for comparisons of Chinook salmon populations.

Chinook salmon populations can be characterized by their time of freshwater entry as spring, summer, or fall runs. Spring Chinook salmon tend to enter freshwater, migrate far upriver, where they hold and become sexually mature before spawning in the late summer and early autumn. Fall Chinook salmon enter freshwater in a more advanced stage of sexual maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of their natal rivers and spawn within a few days or weeks of freshwater entry (Fulton 1970; Healey 1991). Summer Chinook salmon are intermediate between spring and fall runs, spawning in large and medium-sized tributaries, and not showing the extensive delay in maturation exhibited by spring Chinook salmon (Fulton 1970).

The only listed Chinook salmon within the boundaries of the MCR steelhead DPS are found in the Little White Salmon River, and the White Salmon River. Spring Chinook salmon in the White Salmon River are considered to be extinct (WLCTRT 2004). "Tule" fall Chinook salmon that return to these basins are included in the Lower Columbia River Chinook Salmon ESU, which was listed as threatened on March 24, 1999 (64 FR 14308); the listing was recently updated and reconfirmed as threatened on June 28, 2005 (70 FR 37160). As part of the updated listing, tule fall Chinook salmon from the Spring Creek National Fish Hatchery, located within the MCR steelhead DPS, are also listed as part of the ESU.

Tule fall Chinook salmon that are naturally produced in the White Salmon River and small tributaries of the river are considered to be the offspring of naturally spawning hatchery fall Chinook from Spring Creek National Fish Hatchery. Habitat for natural spawning fall Chinook salmon has been eliminated due to inundation by the pool behind Bonneville Dam or blocked in the White Salmon River by Condit Dam, to the point that natural spawning populations are not self-sustaining.

There is a tributary fishery targeting fall Chinook salmon in the White Salmon River that occurs from July to September, and is closed to the retention of fall Chinook salmon from October thru December. WDFW estimated that the annual average harvest of Chinook salmon in the White Salmon River was 232 fish, which consisted of 30 listed naturally produced fall Chinook salmon and 32 Spring Creek NFH tule fall Chinook salmon, with the remainder being non-listed hatchery upriver bright fall Chinook salmon (WDFW 2003). Harvest of listed fall Chinook salmon in the proposed tributary fisheries, when combined with ocean and mainstem fisheries, are managed to not exceed the Rebuilding Exploitation Rate (RER) that NMFS has established for all populations of LCR fall Chinook salmon (WDFW 2003). The RER was established to manage fisheries impacts on listed LCR fall Chinook salmon such that the populations within the ESU are expected to rebuild if harvest impacts (exploitation rates) are maintained below the RER. The RER for tule fall Chinook has been 49 percent since 2002, when it was reduced from 61 percent. Ocean and mainstem Columbia River fisheries that target Spring Creek NFH tule fall Chinook are managed to ensure that broodstock goals for the hatchery are achieved and to meet Treaty-trust responsibilities.

3.3 Other Listed Fish Species

3.3.1 Bull Trout

Bull trout (*Salvelinus confluentus*) are relatively dispersed throughout tributaries of the Columbia River basin, including in its headwaters in Montana and Canada. They are typically associated with the colder streams in a river system, although bull trout can occur throughout larger river systems (Fraley and Shepard 1989). Bull trout exhibit both resident and migratory life-history strategies through much of the current range (Rieman and McIntyre 1993). Resident bull trout complete their life cycles in the tributary streams in which they spawn and rear. Migratory bull trout spawn in tributary streams, and juvenile fish rear from 1 to 4 years before migrating to either a lake (adfluvial), river (fluvial), or certain coastal areas (anadromous) to mature (Fraley and Shepard 1989; Goetz 1989). Bull trout typically spawn from August to November during periods of decreasing water temperatures.

Bull trout are estimated to have occupied about 60 percent of the Columbia River basin, and presently occur in 45 percent of the estimated historical range (Quigley and Arbelbide 1997). Middle Columbia River tributaries contain 21 subpopulations of bull trout: White Salmon River (1), Klickitat River (1), Deschutes River (3), John Day River (3), Umatilla River (2), Walla Walla River (3), and Yakima River (8). However, some of these subpopulations occur above barriers impassable to anadromous fish and are, therefore, not within the boundaries of the MCR Steelhead DPS. The decline of bull trout is primarily due to habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, past fisheries management practices, and the introduction of nonnative species. The Columbia River population segment of bull trout was listed as threatened by USFWS in 1998 (63 FR 31647). Abundance estimates for the Columbia River population segment are not available because not all of the subpopulations are surveyed. However, some areas have been surveyed in Oregon and Washington within the action area, for example, almost 3,000 adult spawning bull trout were counted in Oregon

(ODFW 2006b) and over 2,000 in the Yakima River basin (Freudenthal *et al*. 2005). Abundance estimates for the Walla Walla and Klickitat River basins are not available. All bull trout encountered by anglers within the action area must be released unharmed.

3.4 Non-listed Fish Species

3.4.1 Coho Salmon

All historical populations of coho salmon within the boundaries of the MCR Steelhead DPS are considered extinct, including the historical population of coho in the White Salmon River. Coho salmon are currently being reintroduced into basins within the MCR Steelhead DPS including the Yakima, Klickitat, and Umatilla Rivers. Hatchery stocks for these programs are from the LCR Coho Salmon ESU and the coho released into these basins are not listed.

3.4.2 Spring Chinook Salmon

The Middle Columbia River Spring Chinook Salmon ESU includes stream-type Chinook salmon spawning in the Klickitat, Deschutes, John Day, and Yakima Rivers. Historically, spring-run populations from the Walla Walla, and Umatilla Rivers may have also belonged in this ESU, but these populations are now considered extinct. Chinook salmon from this ESU emigrate to the ocean as yearlings and apparently migrate far off-shore, as they do not appear in appreciable numbers in any ocean fisheries. The majority of the adults spawn as 4-year-olds, with the exception of fish returning to the upper tributaries of the Yakima River, which return predominantly at age 5. Populations in this ESU are genetically distinguishable from other stream-type Chinook salmon in the Columbia and Snake rivers. The Yakima and John Day rivers have substantial run sizes, but several stocks within this ESU have been identified as at risk or extinct. Despite low abundances relative to estimated historical levels, long-term trends in abundance have been relatively stable in this ESU. As a result, NMFS concluded in 1998 that spring Chinook salmon in the Middle Columbia River ESU are not presently in danger of extinction, nor are they likely to become endangered in the foreseeable future (63 FR 11482).

Harvest of spring Chinook salmon in tributary fisheries has been highly variable and dependent on the expected return to the hatcheries within these tributaries. Since 2000, spring Chinook salmon harvest has ranged from 0 to 6,495 in the White Salmon River, 0 to 1,136 in the Klickitat River (Woodard 2006), and 0 to 2,024 in the Yakima River (Bosch *et al*. 2005).

In Oregon, fisheries targeting spring Chinook salmon in the Deschutes and Umatilla Rivers would be permitted under the proposed fisheries. The John Day River would continue to be closed to all salmon fishing under the Proposed Action. The recreational tributary fisheries have been highly variable, having been closed for a number of years in the late 1990s. In the Deschutes River, fisheries for spring Chinook were closed in 1994, 1995, 1997, 1998, and 1999 to ensure that broodstock and wild escapement goals were achieved. When fisheries were permitted, harvest has ranged from 344 to 2,802 for the period from 1990 to 2005 (Seals 2006). The Umatilla River spring Chinook salmon recreational fishery has also been highly variable,

with seasons ranging from 12 to 76 days per year, and harvest ranging from 11 to 749 adults (Bailey 2006).

3.4.3 Summer/Fall Chinook Salmon

Beaty (1996) and Lichatowich (1998) have suggested that summer-run Chinook salmon existed in the Deschutes River. In the 1960s, three returning adults that were tagged while passing Bonneville Dam during July were later recovered in the Metolius River, a tributary to the Deschutes River (Galbreath 1966). Genetic samples indicate that a vestigial run of summer-run fish remain in the Deschutes River (CTWSRO 1999). These fish have retained the propensity to migrate farther upstream than fall-run fish. Summer Chinook salmon are included in the non-listed Deschutes River Fall Chinook Salmon ESU (64 FR 50393).

Historically, fall Chinook salmon were found in the John Day, Umatilla, and Walla Walla Rivers, but these populations are now extinct (Myers *et al.* 1998). However, fall Chinook salmon have been reintroduced into the Umatilla River and introduced into the Klickitat River. The only native non-listed fall Chinook salmon populations within the boundaries of the MCR Steelhead DPS are found in the Yakima and Deschutes Rivers.

3.4.4 Redband Trout

There are both resident and anadromous forms of *O. mykiss*. Anadromous forms are termed steelhead, whereas the resident forms are referred to as rainbow or redband trout. Few detailed studies have been conducted regarding the relationship between resident and anadromous *O. mykiss* and, as a result, the relationship between these two life forms is poorly understood. However, anecdotal reports suggest that interbreeding between the two forms is possible, see the discussion in the West Coast Steelhead listing notice (71 FR 834). The resident form of *O. mykiss* in the action area is considered to be Columbia River Redband Trout and these are currently not listed under the ESA by the U.S. Fish and Wild Service (USFWS) (MNHP and MFW&P 2006). Presently, only the anadromous forms of *O. mykiss* are listed under the ESA as part of the MCR Steelhead DPS (71 FR 834).

3.4.5 Warmwater Fish Species

Many introduced warmwater fishes (family Centrarchidae) are found in the MCR Steelhead DPS. The most popular fisheries target bass, crappie, and bluegill, which are abundant where suitable habitat is found within the action area. Because these species tend to be most abundant in standing water bodies and in the mainstem Columbia River, most of the fishing occurs in these areas; however, there are substantial smallmouth bass fisheries in the lower John Day, Umatilla, Walla Walla, and Yakima River mainstems. These fisheries only occur in areas where summer water temperatures prevent salmon and steelhead rearing.

3.4.6 Cutthroat Trout

The westslope cutthroat trout (*O. clarki lewisi*) is 1 of 14 subspecies of cutthroat trout native to the interior regions of North America (Behnke 1992). Characteristics of the cutthroat trout that distinguish this fish from other cutthroat subspecies include a unique pattern of spots on the body, a unique number of chromosomes, and other genetic and morphological traits that appear to reflect a distinct, evolutionary lineage. The USFWS determined that listing this subspecies was not warranted (65 FR 20120). Westslope cutthroat trout are found in the John Day River drainage of the MCR. Coastal cutthroat (*O. clarki clarki*) exhibit three basic variations: resident or primarily non-migratory; freshwater migrants; and anadromous (Northcote 1997; Johnson *et al.* 1999). The USFWS proposed to list the Washington/Columbia River population segment of coastal cutthroat trout as threatened, but the proposed listing was later withdrawn when relatively healthy populations were found in a large portion of their range (64 FR 16397; 67 FR 44934). Coastal cutthroat trout are present in the Klickitat and White Salmon Rivers of the MCR Steelhead DPS.

3.5 Social and Economic Environment

Columbia River salmon and steelhead have been central to Native American life for thousands of years. Although Native Americans continue their pursuit of salmon for sustenance, commerce, and as part of their cultural heritage, many of their historic fishing spots have been destroyed by federal dams. Prior to the completion of The Dalles Dam in 1957, treaty Indians and non-Indians both had commercial fisheries in the mainstem Columbia River from 15 miles above Bonneville Dam to the mouth of the Deschutes River. The treaty Indian dipnet fishery at Celilo Falls and nearby fishing sites accounted for most of the catch. After the completion of The Dalles Dam, treaty Indian fishing sites were inundated virtually eliminating the traditional dipnet fishery. The current treaty Indian fishing area was established in 1969 and is located between Bonneville and McNary Dams. Other important tribal fishing areas within the boundaries of the MCR Steelhead DPS are located on the Klickitat, Deschutes, Yakima, and Umatilla Rivers.

The early history of non-Indian use of fishery resources in the Columbia River Basin was described by Craig and Hacker (1940). Early traders, trappers, and settlers began arriving around 1800. These early immigrants began taking salmon for their own use and consumption, often trading with the Indians to obtain fish. Early attempts at commercial taking of salmon began in 1829, with salmon harvest as a commercial industry beginning in earnest by the mid-1880s. The first cannery on the Columbia River produced its first pack of canned salmon in 1866. By 1887, the number of canneries in the basin peaked at 39. Salting, mild-curing, and other methods of salmon preparation were also taking place, and Columbia River salmon were becoming well-known internationally. The total production of canned, mild-cured, and frozen salmon and steelhead in the Columbia River Basin rose from 272,000 pounds in 1886 to annual productions between 20 and 50 million pounds from 1874 through 1936.

The gear used to fish commercially for Columbia River salmon included gill nets, purse seines, traps, dip nets, fish wheels, and a variety of other methods (Craig and Hacker 1940). The

combined gear types landed an average of 24,477,370 pounds of salmon and steelhead annually between 1927 and 1934.

The increased use of gasoline engines on boats enhanced the development of trolling as a commercial salmon harvest method after about 1905, predominantly for Chinook salmon and coho salmon. Between 1926 and 1934, the average annual troll catch in the Columbia River was 894,000 pounds of Chinook salmon and 2.6 million pounds of coho salmon (Craig and Hacker 1940).

In the early 1900s, increased agriculture, industry, and land development began to reduce the amount of suitable habitat for salmon spawning and rearing. In that period, the annual catch of Chinook salmon fluctuated widely. As Chinook salmon abundances began to decline, starting around 1911, the focus of commercial harvest operations began to shift to other species. As total salmonid abundances in Columbia River fisheries continued to decline, concerns for the continued health of salmonid stocks increased. Management actions began to be developed and implemented to slow the decline of salmon abundances, including the elimination of fish wheels and purse seines on the Columbia River and the reduction of commercial gillnet seasons.

Fisheries managed for, or directed at, the harvest of hatchery-origin fish have been identified as one of the primary factors leading to the decline of many naturally produced salmonid stocks (Flagg *et al.* 1995; Myers *et al.* 1998; WCSBRT 2003). Depending on the characteristics of a fishery regime, the commercial and recreational pursuit of hatchery fish can lead to the harvest of naturally produced fish in excess of levels compatible with their survival and recovery (NRC 1996). Listed salmon and steelhead may be intercepted in mixed stock fisheries targeting predominately returning hatchery fish or healthy natural stocks (Mundy 1997). Fisheries can also be managed for the aggregate return of hatchery and naturally produced fish, which can lead to higher than expected harvest of naturally produced stocks.

In recent years harvest management has undergone substantial reforms and many of the past problems have been addressed. Principles of weak stock management are now the prevailing paradigm. Listed salmon and steelhead are no longer the target of fisheries, as a result, mixed stock fisheries are managed based on the needs of natural-origin stocks. In many areas fisheries have been closed to protect natural-origin populations (e.g., before 2005 upper Salmon River, Idaho, spring Chinook fisheries were closed to non-treaty recreational fishing for more than 20 years). Managers also account, where possible, for total harvest mortality across all fisheries. The focus is now correctly on conservation and secondarily on providing harvest opportunity where possible directed at harvestable hatchery and natural-origin stocks. One way to conserve natural-origin steelhead is to target only hatchery steelhead through mark selective fisheries. In selective fisheries only hatchery steelhead that are externally marked with an adipose fin-clip are allow to be retained and any natural-origin steelhead caught must be immediately released unharmed.

Hydropower development and habitat degradation are the two major threats to salmon and steelhead populations. However, harvest and hatchery practices have also contributed to their decline (Busby *et al*. 1996; Myers *et al*. 1998; WCSBRT 2003). In recent years commercial and recreational fisheries have been considerably reduced from former levels to the point where harvest of MCR steelhead is no longer considered to be one of the primary factors limiting recovery of the DPS (PCSRF 2006). Harvest rates will continue to be managed at conservative levels until improvements in other sectors of the environment are able to take effect. Even with these restrictions, the MCR region attracts many anglers annually and provides economic benefits to local communities from the sale of fishing licenses, boats, tackle, lodging, gasoline, and food.

Recreational fisheries are an important part of Oregon and Washington's culture and economy. The USFWS periodically surveys anglers at the state level to determine economic impacts; in 2001 (the latest year studied), they estimated 687,000 residents and non-residents fished in Oregon (USDOI *et al.* 2001). A total of 611,000 of these anglers fished for freshwater species, with 122,000 targeting steelhead. Oregon residents made up 513,000 or 75 percent of the total, with 461,000 fishing in freshwater and of those 100,000 anglers targeting steelhead. The residents of Oregon fished over 7.3 million days, and of these days fished, over 1.2 million were spent targeting steelhead. It should be noted that the survey does not itemize these state-wide numbers to the basin level or even to the Mid-Columbia region level where the proposed fisheries would occur.

In Washington, an estimated 938,000 residents and non-residents fished in Washington (USDOI *et al.* 2001). A total of 659,000 of these anglers fished for freshwater species, with 156,000 targeting steelhead. Washington residents made up 808,000 or 86 percent of the total, with 611,000 fishing in freshwater and, of those, 143,000 anglers targeting steelhead. The residents of Washington fished almost 9.5 million days, and of those days fished, over 2.3 million were spent targeting steelhead. Again, it should be noted that the survey does not itemize these state-wide numbers to the basin level or even to the Mid-Columbia region level where the proposed fisheries would occur.

The resident and non-resident anglers that fished in Oregon were estimated to have spent a total of $601,780,000 for all expenditures associated with the fishing (USDOI *et al*. 2001). This compares to the estimated total income for Oregon in 2001 of $98,950,393,400 (OED 2006). In Washington, total fishing related expenditures for 2001 were estimated to be $853,761,000 (USDOI *et al.* 2001). This compares to an estimated total income in 1999 of $284,621,208,969. Again, it should be noted that the fisheries expenditures are for the entire states of Oregon and Washington. These totals include cost estimates for food and lodging, transportation, fishing equipment, licenses and fees, and other equipment and miscellaneous costs (USDOI *et al*. 2001).

The Independent Economic Analysis Board (IEAB) of the Northwest Power and Conservation Council, estimated that the total economic impact of the tributary steelhead fisheries in the Columbia River basin, was over $6,900,000 (this was based on early 2000's production and

harvest regimes)(IEAB 2005). The IEAB, in their calculations, assumed that it took two fishing days for every steelhead caught and that the regional economic impact per steelhead was $120 per fish or $60 per day fished for steelhead. This compares to an average $90 per day spent by all anglers in Washington and $82 per day by anglers in Oregon based on the USFWS survey estimates (USDOI *et al*. 2001).

The costs of being able to fish legally in Oregon in 2006 for resident anglers is shown in Table 2 (ODFW 2006a). The maximum cost to participate in the salmon or steelhead fishery would be if a person bought an annual license and adult tag (for salmon and steelhead) for $46.25, which allows the person to fish in all Oregon rivers and lakes. The cost for resident anglers in Washington to fish legally in 2006 is listed in Table 3 (WDFW 2006). The maximum cost for a resident angler for a license and adult tag would be $21.90, the steelhead tag is included with the license. The costs of fishing gear and tackle generally exceed the costs of the fishing license.

Due to the importance of recreational fisheries, the USFWS and NMFS jointly issued the "The Policy for Conserving Species Listed or Proposed for Listing Under the Endangered Species Act While Providing and Enhancing Recreational Fisheries Opportunities" on June 3, 1996 (61 FR 27978),which was issued pursuant to the Presidential Executive order 12962, issued on June 7, 1995. That order requires Federal agencies, to the extent permitted by law, and where practical and in cooperation with States and Tribes, to improve the quality, function, sustainable productivity, and distribution of aquatic resources for increased recreational fishing opportunity. Among other actions, the order requires all Federal agencies to aggressively work to promote compatibility and reduce conflict between administration of the ESA and recreational fisheries.

3.6 Environmental Justice

Executive Order 12898 (59 FR 7629) states that Federal agencies shall identify and address, as appropriate "…disproportionately high and adverse human health or environmental effects of [their] programs, policies and activities on minority populations and low-income populations…." While there are many economic, social, and cultural elements that influence the viability and location of such populations and their communities, certainly the development, implementation and enforcement of environmental laws, regulations and policies can have impacts. Therefore, Federal agencies, including NMFS, must ensure fair treatment, equal protection, and meaningful involvement for minority populations and low-income populations as they develop and apply the laws under their jurisdiction.

In the analysis area, there are minority and low income populations that this Executive Order could apply to, including Native American Indian tribes and Hispanics. The U.S. Census Bureau reported the race composition of Oregon residents in 2000 (U.S. Census Bureau 2006) to be 86.6 percent White, 8.0 percent Hispanic, 3.0 percent Asian, 1.6 percent Black or African American, 1.3 percent Native American, and 7.3 percent reported as other or two or more races. The composition of Washington residents in the 2000 census was reported to be 81.8 percent White, 7.5 percent Hispanic, 5.5 percent Asian, 3.2 percent Black or African American, 1.6 percent Native American, and 7.5 percent reported as other or two or more races (U.S. Census Bureau

Table 2. Oregon resident annual costs for licenses in 2006 (ODFW 2006a).

Age Class	Cost of License ($US)	Cost of Steelhead permit (tag)	Total Cost to Participate In Proposed Fishery ($US)
Adult (18 and older) license	24.75	21.50	46.25
Juvenile (14 to 17 years of age)	6.75	6.50	13.25
Senior	12.00	21.50	33.50
1-day license	12.00	Included with license	12.00
3-day license	33.00	Included with license	33.00

Table 3. Washington resident annual costs for licenses in 2006 (WDFW 2006).

Age Class	Cost of Freshwater License ($US)	Cost of Steelhead permit (tag)	Total Cost to Participate In Proposed Fishery ($US)
Adult (16 and older) license	21.90	Included with license	21.90
Juvenile (15 years of age)	7.67	Included with license	7.67
Senior	5.48	Included with license	5.48
1-day license	7.00	Included with license	7.00
3-day license	13.00	Included with license	13.00

2006). The composition of the angling public in Oregon and Washington, as reported in the 2001 survey (USDOI *et al*. 2001), did not reflect participation by minorities with whites accounting for 96 and 94 percent of the participants in Oregon and Washington, respectively. However, it is believed that all ethnic groups do engage in recreational fishing.

Figures 2 and 3 compare the proportion of residents in each income segment and the proportion participating in recreational fishing for Oregon and Washington, respectively (USDOI *et al.* 2001). While it is likely that members of all groups participate in recreational fishing, it appears that for both Oregon and Washington anglers there may be few in the low income groups and more in the middle and upper income segments who participate. It is unknown how many of the minority and low income families are dependent on income from the recreational fishing industry.

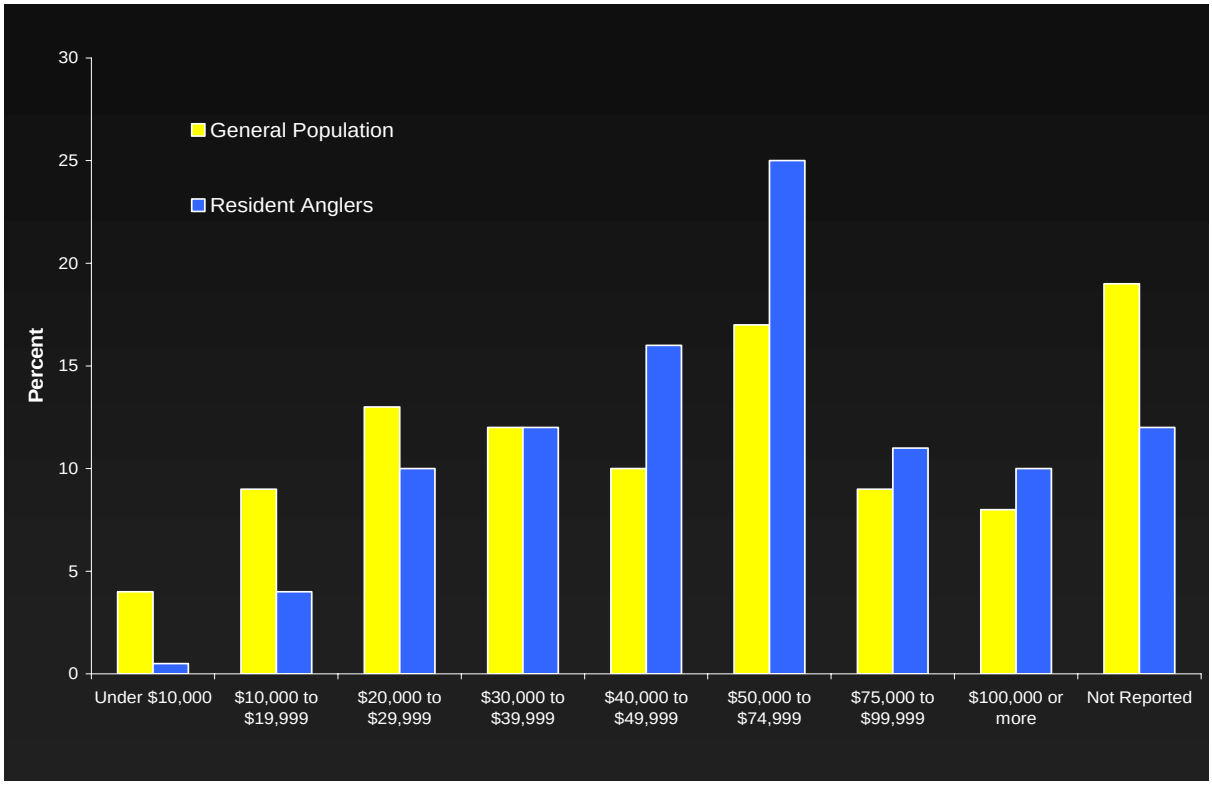

Figure 2. Annual household income of Oregon resident anglers, 2001, in comparison with the general population of Oregon residents (USDOI *et al.* 2001).

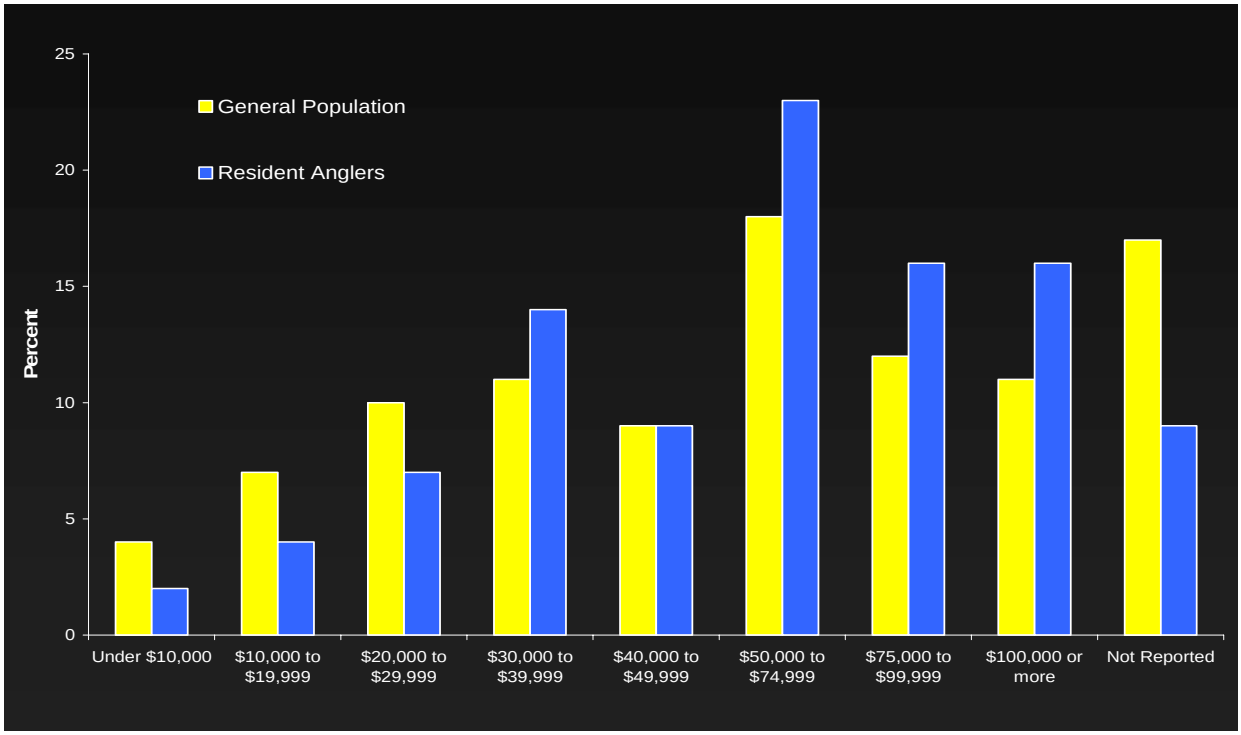

Figure 3. Annual household income of Washington resident anglers, 2001, in comparison with the general population of Washington residents (USDOI *et al.* 2001).

4.0 Environmental Consequences

An EA was prepared for NMFS' application of the ESA 4(d) Rule to the MCR Steelhead DPS (NMFS 2000b). Because the 4(d) Rule explicitly includes description of the necessary information and process for evaluating fishery management actions under Limit 4, the broader consideration of implementing the 4(d) Rule with respect to FMEPs and fishery management has occurred. NMFS determined that the ESA 4(d) Rule and its implementation would not significantly affect the quality of the human environment. The analysis and findings in the EA and Finding of No Significant Impact are incorporated by reference herein. The analysis below describes impacts expected to resources potentially affected by each alternative considered in this EA.

4.1 Alternative 1 (No Action)

If the FMEPs are not approved under the 4(d) Rule, the implementation of ODFW's and WDFW's fishery programs would likely result in the unauthorized take of ESA-listed anadromous fish species. As described in section 2.1, it is unlikely that ODFW and WDFW would allow salmon, steelhead, or trout fisheries under the No Action scenario. The environmental impacts related to these assumptions are identified in the following sections.

4.1.1 Effects on Water Quality/Riparian Vegetation

There would be no adverse impacts to the physical environment under the No Action alternative. No structures or other physical factors would be moved, removed, or altered as the result of not opening fisheries. Most fishing related activities that would have occurred are in existing recreational areas and would have been of limited magnitude and duration. Such impacts include those from boats disturbing eggs, juveniles, or adults, or of anglers walking and wading along the streambanks, and are largely in areas already experiencing traffic or improved for streamside use (e.g., existing boat ramps and parks). These impacts could be reduced somewhat under this alternative by eliminating the amount of boat or foot traffic due to salmonid fisheries; however, even with a fishing closure, most areas impacted by fishing access would continue to be used for other river activities, such as boating and rafting, and some of the use would likely shift from salmonid fishing to these other activities.

The effect of this alternative on the stream habitat that is in need of restoration (see section 3.1, Water Quality/Riparian Vegetation) would be negligible based on the discussion above because the majority of the areas needing restoration occur on private lands or in areas that are closed to fishing activities. Furthermore, the absence of tributary fisheries would have no effect on overgrazing, water withdrawal, low summer flows, or high water temperatures.

If the fisheries are closed, as would be expected under the No Action scenario, those fish that would have been harvested would provide carcasses to the ecosystem and the additional nutrients would be provided to aquatic organisms, including listed salmon and steelhead. The actual number of additional carcasses from hatchery steelhead for individual basins in the action area would depend on past hatchery releases in those basins and the survival of hatchery smolts to returning adults. The number of hatchery carcasses would decline over time as hatchery steelhead releases designed to support the closed fisheries are eliminated.

4.1.2 Effects on Anadromous Fish Listed Under the ESA

4.1.2.1 Middle Columbia River Steelhead

Harvest rates on salmonid stocks have been drastically reduced in the past decade through increasingly strict fisheries management. The complete curtailment of all MCR tributary fisheries potentially catching ESA-listed fish in the Columbia River tributaries would further decrease harvest impacts. However, the proposed fisheries target hatchery fish, so closing all fisheries may lead to only small increases in natural steelhead escapement. Under the No Action alternative, the proportion of naturally spawning hatchery fish would increase and, as a result, could reduce natural steelhead productivity (Chilcote 2001). The effects of hatchery fish on the natural productivity of fall Chinook salmon and coho salmon has not been determined but would be expected to be similar. Additional naturally spawning hatchery steelhead could compete with natural-origin fish for holding and spawning sites reducing their abundance and productivity. Productivity could be further reduced through genetic introgression if stray hatchery fish spawn naturally and through ecological interactions with the resulting progeny. These affects would

depend on the abundance of hatchery-origin steelhead within the population and would be greatest in those populations where stray hatchery adults are considered a limiting factor (see subsection 3.2.1, Middle Columbia River Steelhead).

4.1.2.2 Lower Columbia River Coho Salmon

The prohibition of fisheries under the No Action alternative would have no effect on listed LCR coho salmon because the populations in the action area are considered to be functionally extinct and are being supported by stray hatchery coho salmon. The increase in naturally spawning hatchery salmon could compete with natural-origin fish for holding and spawning sites reducing their abundance and productivity. Productivity could be further reduced if stray hatchery fish spawn naturally through genetic introgression, and from the resulting progeny, through ecological interactions. These affects are not a concern at the present since coho salmon are functionally extinct but increased hatchery coho salmon strays could hinder reintroduction efforts once Condit Dam is removed on the White Salmon River.

4.1.2.3 Salmon and Steelhead from the Upper Columbia and Snake Rivers

Under the No Action alternative, the potential for Upper Columbia River and Snake River salmon and steelhead that stray into the MCR area tributaries to be harvested would be eliminated and may increase escapement, however these potential increases are expected to be small for natural origin adults because encounter rates and mortality are low in these selective fisheries. Fall Chinook salmon and marked hatchery steelhead from the Upper Columbia River and the Snake River may see an increase in escapement as these fish would normally be retained in the selective fisheries, and in the Drano Lake fishery at the mouth of the Little White Salmon River. Genetic introgression from non-local hatchery steelhead spawning with Deschutes River populations of MCR steelhead is considered one the major limiting factors for these populations. One mechanism to reduce the abundance of hatchery origin steelhead is to remove them through selective fisheries. Under this alternative, these fisheries would not be permitted, and the result would be an increase in the number of non-local (e.g., Snake River steelhead) adults that could spawn naturally reducing the productivity of these populations (Chilcote 2001).

4.1.2.4 Lower Columbia River Chinook Salmon

Harvest rates on salmonid stocks have been drastically reduced in the past decade through stricter fisheries management. The complete curtailment of all MCR tributary fisheries that could potentially catch ESA-listed fish would further decrease harvest impacts, but the impact would be minor and would not address other fisheries that contribute to harvest being one of the limiting factors for this ESU. The No Action alternative would have a minor effect on LCR Chinook salmon populations by increasing the number of adult hatchery-origin salmon from inside and outside of the ESU as well as a small number of adult natural-origin fall Chinook salmon that could spawn naturally (see 3.2.4, Lower Columbia River Chinook Salmon). The natural-origin LCR Chinook salmon in the Upper Gorge tributaries and the White Salmon River

populations are primarily from stray hatchery fall Chinook salmon or naturally produced fall Chinook salmon that are the offspring of naturally spawning hatchery salmon. The reduction in the removal of non-local fall Chinook salmon that would result under the No Action alternative could potentially increase competition for spawning sites and genetic introgression if those fish that would have been harvested spawn with LCR fall Chinook salmon. These impacts could reduce the productivity of those LCR fall Chinook that spawn naturally and would eventually impact reintroduction and recovery efforts that will begin when Condit Dam is removed.

4.1.3 Other Listed Fish Species

4.1.3.1 Bull Trout

Under the No Action alternative, effects on bull trout would be very minor due to a reduction in effort for other species and because under present fishing regulations the harvest of bull trout is prohibited. This alternative would have no effect on bull trout life history elements that are controlled by water temperature limitations or on the distribution of bull trout within their habitat.

4.1.4 Effects on Non-listed Fish Species

4.1.4.1 Coho Salmon

Under the No Action alternative, most angling would be prohibited within the boundaries of the MCR Steelhead DPS. As a result, no impacts from harvest would be expected on coho salmon in that area, however there is the potential for increased escapement of hatchery coho that would normally have been removed in the fisheries. These coho are from reintroduction and harvest programs and would increase the numbers of naturally spawning hatchery coho. This may benefit reintroduction efforts but this benefit would be expected to decline as the number of hatchery coho released for fisheries purposes is reduced, however if production is continued then the establishment of naturally produced populations of coho salmon could be accelerated with increased numbers of natural spawning coho salmon. Because this ESU is extinct, the reintroduction efforts are designed to test the feasibility of reestablishing coho salmon in these basins, but would not change the status of the ESU.

4.1.4.2 Spring Chinook Salmon

Under the No Action alternative, most angling would be prohibited within the boundaries of the MCR steelhead DPS. As a result, no adverse impacts would be expected on non-listed spring Chinook salmon, and some benefits, such as increased abundance, may accrue due to an increase in the escapement of fish that would have died due to catch-and-release mortality in the fisheries targeting hatchery spring Chinook salmon. The extent of this benefit would depend on the abundance of both the hatchery and natural-origin spring Chinook salmon, and past harvest rates within a specific basin.

The No Action alternative would have no effect on the abundance trends for the John Day or Yakima River populations because fisheries for spring Chinook salmon are already closed in these basins. Abundances would potentially increase in the Deschutes River and the Klickitat Rivers where spring Chinook salmon fisheries have occurred targeting marked hatchery spring Chinook salmon. Impacts in these basins are already low so any reduction in mortality related to the recreational fisheries is not expected to affect abundance trends for these populations.

Reduction in harvest impacts in the Umatilla River would increase the number of spring Chinook salmon that could potentially spawn naturally or be harvested in tribal fisheries (see discussion below). The increased abundance of hatchery and natural-origin adults that could spawn naturally may accelerate the reestablishment of spring Chinook salmon in the Umatilla River basin. However, since hatchery and naturally produced spring Chinook salmon in the Umatilla River were derived from a hatchery population that is not part of the MCR spring Chinook ESU, increased abundance of these fish would not change the status of the extinct population or the ESU.

4.1.4.3 Summer/Fall Chinook Salmon

Under the No Action alternative, most angling would be prohibited within the boundaries of the MCR steelhead DPS. As a result, no adverse impacts would be expected on non-listed summer/fall Chinook salmon, and some benefits such as an increase in abundance, that may accrue due to an increase in escapement from hatchery fish that would have been caught in the fisheries and from those natural-origin fish that would have died due to catch-and-release mortality. The extent of this benefit would depend on the abundance of both the hatchery and natural-origin summer/fall Chinook salmon, and past harvest rates within a specific basin.

In the Deschutes River this alternative is not expected to affect the population where fisheries are closed unless the population meets escapement goals. It may increase the number of natural-origin fall Chinook salmon in the Yakima River population by eliminating the loss of adult salmon taken in the tributary fisheries targeting returning non-local hatchery fall Chinook salmon. In the other basins, the fisheries target returning hatchery fall Chinook salmon that are not part of the ESU, and if the fisheries are closed there would be an increase in the number of hatchery fall Chinook salmon on the spawning grounds but this increase would be temporary because the hatchery programs that produce fall Chinook salmon for harvest would be discontinued.

4.1.4.4 Redband Trout

Under the No Action alternative, most angling would be prohibited within the boundaries of the MCR steelhead DPS. As a result, no adverse impacts would be expected on non-listed redband trout, and some benefits such as an increase in abundance, may accrue due to the reduction in effort and catch. The extent of this benefit would depend on the abundance of the redband trout and past harvest rates within a specific basin.

4.1.4.5 Warmwater Fish Species

Under the No Action alternative, most angling would be prohibited within the boundaries of the MCR steelhead DPS. However, ODFW and WDFW would likely continue to operate their warmwater fishery under the No Action alternative because this fishery occurs in areas devoid of salmon and steelhead. However, this would likely result in fisheries at least somewhat reduced in scope and effort than would occur under the proposed management, and so some benefits such as in increase in abundance, might accrue to the non-listed fish species through reduction in effort and catch due to area closures and reduced license sales.

4.1.4.6 Cutthroat Trout

Under the No Action alternative, most angling would be prohibited within the boundaries of the MCR steelhead DPS. As a result, no adverse impacts would be expected on non-listed cutthroat trout, and some benefits may accrue such as an increase in abundance and distribution, due to the reduction in effort and catch. The extent of this benefit would depend on the abundance of the cutthroat trout and past harvest rates within a specific basin.

4.1.5 Effects on the Social and Economic Environment

The No Action alternative would effectively prohibit implementation of recreational salmon, steelhead, and redband trout fisheries in MCR tributaries and would result in economic losses to local fishermen and communities. A 2001 survey showed anglers in Oregon spend approximately $82 per day for fishing-related expenditures, and anglers in Washington spend approximately $90 per day (USDOI *et al*. 2001). Assuming that one-quarter of the anglers that fished in the freshwater spent a total of 8 days fishing annually, then the value of these fisheries would be over $100 million and over $120 million in Oregon and Washington, respectively. This compares to the estimated $601,780,000 spent by all anglers in Oregon and the estimated $853,761,000 spent by all anglers in Washington (USDOI *et al*. 2001). The majority of recreational anglers are from middle to high income levels in both Oregon and Washington, and probably would not be adversely affected by the No Action alternative, other than having to extend additional funds to pursue fisheries in other areas.

In addition, prohibiting these fisheries would likely be inconsistent with the Policy for Conserving Species Listed or Proposed for Listing Under the Endangered Species Act While Providing and Enhancing Recreational Fisheries Opportunities because recreational fishing opportunities would be lost due to ESA restrictions.

4.1.6 Effects on Environmental Justice

As described above in Section 3.6, while all ethnic groups in the action area likely fish, the majority of recreational anglers are from middle to high income levels in both Oregon and Washington. These income sectors probably would not be adversely affected by the prohibition of these recreational fisheries because they would presumably have the means to pursue fisheries

in other areas. It is unknown if low income anglers are dependent on the recreational fisheries to supplement their diets and if they are employed at a higher rate in fisheries related industries than middle or upper income populations; if either case were true, prohibition of the recreational fisheries would have a disproportional adverse effect on these groups because it would substantially decrease a possible food source and eliminate jobs in the fishing industry.

4.2 Alternative 2 (Proposed Action)

NMFS' action of approving the FMEPs would allow the implementation of salmon, steelhead, redband trout, and warmwater fisheries in the MCR tributaries. The following section discusses the effects of the proposed action and its associated fisheries.

4.2.1 Effects on the Water Quality/Riparian Vegetation

Impacts of the proposed activities on the habitat of the ESA-listed species are expected to be only somewhat greater than the No Action alternative. Most activities would occur in existing recreational areas or are of limited magnitude and duration. Impacts may include those of boats or of anglers walking and wading along the streambanks, movement of boats and gear to the water, and other streamside use, and would occur largely in areas already experiencing traffic or improved for streamside use. Under the Proposed Action, there would be an increase in these activities, however, the impact of these activities would not be substantially different from the No Action alternative because most areas impacted by fishing access would continue to be used for other river activities, such as boating and rafting. Construction activities directly related to fisheries would remain limited to maintenance and repair of existing facilities, and are not expected to result in additional impacts on riparian habitats. The facilities used in association with river fisheries are essentially all in place.

The effect of the Proposed Action on the stream habitat that is in need of restoration (see section 3.1, TITLE) would be negligible and no different from the No Action alternative. The majority of the habitat that is need of restoration occurs on private lands or in areas that are closed to fishing activities and thus would not be affected by the proposed fisheries. Furthermore, the Proposed Action, like the No Action alternative, would have no effect on overgrazing, water withdrawal, low summer flows, or high water temperatures.

Water quality could be adversely affected to a small extent by the proposed fisheries as a result of the release of boat engine byproducts, trash, and other effluents into the water. However, such substances are released in small quantities, dilution effects that would occur immediately and would result in a nearly negligible impact on water quality as a whole. There would be little discernable difference in water quality observed under the Propose Action when compared to the No Action alternative because fishing effort would remain low as in recent years due to the sharply constrained fisheries, and water quality conditions are expected to gradually improve.

An alternate effect on water quality is related to the presence of salmonid carcasses in the water, as a result of dying after spawning or dying during unsuccessful upstream migration. Under the Proposed Action those salmon and steelhead that are harvested in the fisheries cannot contribute marine derived nutrients to the environment and thus the level of contribution would be less than would be observed for the No Action alternative. However, the difference in the level of nutrient contribution would be a short-term effect because under the No Action alternative hatchery production for fisheries would be reduced or eliminated, thus removing the source of the nutrients. The historical amounts of nutrients available to the ecosystem from naturally produced and hatchery carcasses was large, and contributed to the enhancement of many forms of aquatic life, including the organisms juvenile salmon feed upon during rearing. The removal from the water of species targeted by fisheries would reduce the amount of nutrients available to the ecosystem. Hatchery fish that are released for harvest are not intended to spawn naturally but are expected to be caught or return to the hatchery. These fish are not intended to provide nutrient enhancement, however, those hatchery fish that are not caught or return to the hatchery can provide marine derived nutrients to the ecosystem. Fisheries would also target non-native fish species that do provide marine derived nutrients to the ecosystem.

Under the proposed fisheries, there is not expected to be a decrease in the level of marine derived nutrients from natural-origin salmon and steelhead because the anticipated mortality for these fish is from catch-and-release mortality. The impact would be not different than under the No Action alternative because most of the fish that die from catch-and-release mortality will still be within the river and available for decomposition and use by other organisms. The number of carcasses produced by the proposed fisheries is the number expected to die through catch-and-release mortality, some of which would have died prior to reaching a hatchery or natural production areas. This total number of carcasses would vary year to year, based ultimately on the run size and the design of the fishery given that run size, but would not be a large proportion of the fish returning to the action area and would be an even smaller proportion of the fish returning to natural spawning areas, because of the fisheries' focus on returning hatchery fish. This small number of carcasses would be available for the same environmental processes as non-fishery related mortalities, though some proportion of the fishery mortalities would occur lower in the stream systems and therefore not be available to exactly the same rearing areas.

4.2.2 Effects on Anadromous Fish Listed Under the ESA

Under the proposed fisheries, most of the impacts on listed salmon and steelhead would be from incidental mortality, direct mortality at very low levels may also occur from illegal retention of natural-origin fish. The level of impacts and the supporting analysis are fully described in section 2, "Effects on ESA-listed salmonids," of the FMEPs (ODFW 2005a; 2005b; 2005c; 2005d; WDFW 2003) and summarized below.

The proposed harvest actions reflect conservative management policies by ODFW and WDFW and concern for the health of listed salmon and steelhead. There is little additional risk to listed anadromous fish species from the proposed fisheries compared to the No Action alternative. Below is a summary of how these conclusions were reached for each of the fish species.

4.2.2.1 Middle Columbia River Steelhead

The Proposed Action would likely have an impact on steelhead populations within the DPS compared to the No Action alternative, but because of the protective measures proposed, the effect on the DPS as a whole is not expected to be large.

Steelhead fisheries have been reformed substantially over the past decade to further protect listed populations. The biggest change has been the shift to selective fisheries that prohibit the retention of any unmarked, naturally produced steelhead caught in any rivers of the MCR steelhead DPS. All of the proposed tributary fisheries for steelhead under this alternative require the release of unmarked steelhead, and allows for the retention of only externally marked (usually an adipose fin-clip) hatchery steelhead. By implementing this selective fishery for marked hatchery steelhead, impacts on adult naturally produced steelhead would be reduced to incidental injuries associated with catch-and-release.

Information assessing catch-and-release mortality of adult steelhead is limited. However, available information suggests that hook-and-release mortality is low. Hooton (1987) found catch-and-release mortality of adults in winter steelhead fisheries to be, on average, less than 5 percent when using barbed and barbless hooks, bait and artificial lures; Hooton (1987) concluded that catch-and-release of adult steelhead was an effective mechanism for maintaining angling opportunity without negatively impacting stock recruitment. Reingold (1975) showed that adult steelhead hooked, played to exhaustion, and then released returned to their target spawning stream as well as steelhead not hooked and played to exhaustion. Similarly, Nelson *et al*. (2005) observed that the catch-and-release mortality for radio-tagged wild winter steelhead was 2.5 percent and that tagged steelhead survived to spawning even after be caught and released up to three times.

WDFW (2003) uses an estimated 8 percent catch-and-release mortality for summer steelhead due to fisheries occurring during periods of warmer water temperatures. Historically, in the Sandy River, Cramer *et al.* (1997) and Murtaugh *et al.* (1997) estimated harvest rates of naturally produced steelhead to be in the range of 50-80 percent. By implementing catch-and-release fisheries for naturally produced steelhead and using previous harvest rates as the handling or encounter rate, fishery related mortality of Sandy River winter steelhead was reduced to less than 4 percent of the population. A similar reduction in impacts would apply to steelhead fisheries in the MCR steelhead DPS. For example, in the Deschutes River basin harvest rates on juvenile and adult natural-origin summer steelhead where in the 50-80 percent range prior to 1978 when the basin went to a selective fishery for marked hatchery steelhead only. Fisheries regulations protecting natural-origin juvenile steelhead and redband trout (see subsection 2.2.1, Proposed FMEPs) have also reduced the level of fisheries impacts on natural-origin summer steelhead to less than 10 percent of the annual abundance (ODFW 2005a).

Under the Proposed Action, impacts from the adult and juvenile fisheries are not expected to exceed 10 percent of the annual abundance of natural-origin adult and juvenile steelhead within

the tributaries of the MCR Steelhead DPS. Fisheries related mortality for juvenile steelhead under this alternative is expected to be less than 1 percent of the annual abundance due to all of the protective regulations that would be implemented under this proposal (see subsection 2.2.1, Proposed FMEPs).

The level of fishing related mortality under this proposal would vary between populations within the MCR Steelhead DPS due to different fisheries regulations and area closures for each of the 20 populations (see subsection 2.2.1, Proposed FMEPs). For example, fisheries for adult steelhead would be closed in the Yakima River basin (affecting four populations) and in Fifteenmile Creek (one population). For these populations, fisheries related mortality would be less than 1 percent due to fisheries that may impact juvenile steelhead. Basins where fisheries related mortality would be higher include the Klickitat, Deschutes, Umatilla, and Walla Walla basins that have hatchery steelhead programs designed to support recreational fisheries. But even in these basins fisheries mortality is expected to be well below 10 percent.

The impacts from the tributaries fisheries under the Proposed Action, as described above, would be in addition to any impacts on listed MCR steelhead under the No Action alternative. Under the proposed fisheries there would be a reduction in the abundance of natural-origin adult and juvenile steelhead as compared to the No Action alternative. However, the proposed fisheries would remove hatchery-origin steelhead that could negatively interact and compete with natural-origin steelhead for holding and spawning sites thus potentially increasing the productivity of the natural population as compared to the No Action alternative. Furthermore, the removal of hatchery steelhead through the proposed fisheries would reduce a potential negative impact on the productivity of the natural-origin populations from genetic introgression, and adverse ecological interactions that may occur because hatchery steelhead would be more abundant than under the No Action alternative. The removal of hatchery-origin steelhead in selective fisheries is one measure that can be taken to reduce the number of hatchery steelhead that could spawn naturally thus, at least partially, addressing one of the limiting factors for the MCR Steelhead DPS.

4.2.2.2 Lower Columbia River Coho

Fishery impacts on naturally produced coho salmon from the Lower Columbia River ESU would occur primarily from fisheries targeting hatchery coho salmon and fall Chinook salmon. Coho salmon fisheries in the Little White Salmon and White Salmon Rivers would target hatchery coho salmon returning to the Little White Salmon National Fish Hatchery, to the Klickitat River, and other non-listed programs. Fisheries targeting hatchery coho salmon would be required to release all unmarked coho salmon, and would be expected to have a minimal impact on listed coho salmon in the basins.

Natural-origin coho salmon populations are considered to be functionally extinct in the tributaries between the mouth of the Wind River and the White Salmon River due to the inundation of spawning and rearing habitat by the pool behind Bonneville Dam and Condit Dam in the White Salmon River. Tributary fisheries impacts on any naturally produced coho would

come from catch-and-release mortality and is expected to be less than 1 percent of the naturally produced coho salmon annually. The fisheries under the Proposed Action would reduce the number of potential natural-origin spawners by 1 percent compared to the No Action alternative.

The removal of hatchery origin coho salmon adults via the proposed fisheries would reduce the potential for competition and genetic introgression by hatchery origin coho that may occur under the No Action alternative. The impacts on the LCR Coho Salmon ESU from either of the alternatives would not be meaningful since naturally spawning coho salmon populations in these basins are currently sustained by stray hatchery coho. However, in the near future when Condit Dam is removed, the harvest of stray hatchery coho salmon under the proposed fisheries would support reintroduction efforts in the White Salmon River basin and lessen the possibility of genetic introgression and competition as compared to the No Action alternative. The harvest of stray hatchery coho salmon would also address one of the limiting factors that was identified for this ESU (see subsection 3.2.2., Lower Columbia River Coho Salmon).

4.2.2.3 Salmon and Steelhead from the Upper Columbia and Snake Rivers.

Under the Proposed Action, there is the potential for Upper Columbia River and Snake River adult salmon and steelhead that stray into the MCR area tributaries to be harvested. This would eliminate the potential increase in escapement when compared to the No Action alternative, however, the potential decrease in escapement from the proposed fisheries is expected to be small for natural origin adults because encounter rates and mortality would be low in the proposed fisheries.

Fall Chinook salmon and marked hatchery steelhead from the Upper Columbia River and the Snake River may see a decrease in escapement when compared to the No Action alternative, as these fish would be retained in the selective fisheries and in the Drano Lake fishery at the mouth of the Little White Salmon River. Genetic introgression from non-local hatchery steelhead spawning with Deschutes River populations of MCR steelhead is considered one the major limiting factors for these populations. One mechanism to reduce the abundance of hatchery origin steelhead is to remove them through selective fisheries as planned under the Proposed Action. Under the Proposed Action, these fisheries would be permitted and the result would be a decease in the number of non-local (e.g., Snake River steelhead) adults that could spawn naturally thus reducing the potential to decrease the productivity of these populations (Chilcote 2001).

The proposed fisheries would reduce the number of non-local steelhead that could potential spawn with MCR steelhead and thus the fisheries would be partially addressing one of the limiting factors for the MCR Steelhead DPS (see subsection 3.2.1. Middle Columbia River Steelhead). The proposed fisheries would have no impact on juvenile salmon and steelhead from the Upper Columbia or Snake Rivers because they are not encountered in the fisheries.

4.2.2.4 Lower Columbia River Chinook Salmon

As described in section subsection 3.2.4 Lower Columbia River Chinook Salmon), there are two extant populations of LCR Chinook Salmon ESU in the area of the MCR Steelhead DPS that would be affected by the proposed fisheries: the upper Gorge (small tributaries above Bonneville Dam including the Little White Salmon River), and the White Salmon River fall Chinook salmon populations WDFW estimates that on average 30 naturally produced and 32 Spring Creek National Fish Hatchery tule fall Chinook salmon would be harvested in the tributaries fisheries under the Proposed Action. The impact to the LCR Chinook Salmon ESU from the tributary fisheries would be minor and similar to that of the No Action alternative, because the naturally spawning fall Chinook salmon in this area are derived from stray hatchery tule fall Chinook salmon or naturally produced fall Chinook salmon that are the offspring of naturally spawning hatchery salmon. Ocean and mainstem Columbia River fisheries that also harvest fall Chinook salmon from these populations would continue to be managed to meet Spring Creek National Fish Hatchery adult broodstock goals.

The ocean and mainstem Columbia River fisheries management has changed to address impact on listed LCR Chinook salmon; harvest rates have declined from over 70 percent to 45 percent in recent years through the development of Rebuilding Exploitation Rates (RERs) for LCR tule fall Chinook salmon. These RERs set that maximum exploitation or harvest rate that can be permitted and still allow for the natural-origin populations to rebuild towards recovery. The proposed tributary fisheries would be managed not to exceed the RER for tule fall Chinook salmon, while also ensuring that the broodstock needs at the Spring Creek NFH are being achieved. These harvest management actions, including the proposed tributary fisheries, would be expected to reduce the effect overfishing as a contributing factor to the decline of the LCR Chinook Salmon ESU.

Managing escapement to meet broodstock goals at the Spring Creek National Fish Hatchery would also create additional returning adults that would support natural spawning within the two fall Chinook salmon populations. Management to meet the hatchery broodstock goals would be the same under the Proposed Action and the No Action alternative because the hatchery program is expected to be used in reintroduction efforts when Condit Dam is removed. The proposed fisheries would benefit this recovery effort by harvesting and removing on average over 230 non-local hatchery fall Chinook that could spawn naturally and compete with tule fall Chinook intended to reintroduce fall Chinook into the White Salmon River.

4.2.3 Other Listed Fish Species

4.2.3.1 Bull Trout

The fishery impacts on threatened bull trout would be expected to be negligible or nonexistent because bull trout would not likely to be present where the proposed fisheries occur, and if they were present, encounter rates would be expected to be very low (less than 50 fish handled annually for all fisheries from a population estimated to be well over 5,000 within the action

area. The estimate is based on surveys in only a part of the population's available habitat). Bull trout tend to be found in the upper reaches of the tributaries in areas where the majority of the habitat would be closed to angling or restricted to artificial flies and lures (which would tend to further reduce effort and associated mortality). Under the proposed fisheries, the regulations would continue to prohibit the harvest of bull trout in the action area. The Proposed Action would be expected to have the same effect on bull trout life history elements (that are controlled by water temperature) and the distribution of bull trout with their habitat as under the No Action alternative.

4.2.4 Effects on Non-listed Fish Species

The primary purpose of the proposed FMEPs was to describe the management of fisheries in the tributaries of the Middle Columbia River and to assess the potential impacts of those fisheries on listed salmon and steelhead. Fisheries for non-listed fish species were evaluated in the context of what the potential impacts would be to listed salmon and steelhead. The effects of the fisheries on non-listed fish species were not described or analyzed in the FMEPs. Below is a brief assessment of effects of the proposed fisheries on the non-listed fish species identified in subsection 3.4, Non-listed Fish Species).

4.2.4.1 Coho Salmon

Fisheries targeting non-listed coho salmon would be open in most years in Drano Lake, and in the White Salmon, Klickitat, and Yakima Rivers in Washington. The primary coho fishery in Oregon is in the Umatilla River. All of these fisheries target returning hatchery coho salmon, but future harvest would likely be reduced in Drano Lake and the White Salmon River due to the termination of hatchery coho releases from the Little White Salmon/Willard National Fish Hatchery complex. Hatchery coho salmon would not be released into any of the other Oregon tributaries in the action area; however, coho salmon are reported to be harvested in the Deschutes River, but at very low numbers. The fisheries are expected to harvest hatchery and natural origin coho salmon in those basins where hatchery coho salmon are released for both reintroduction and harvest purposes.

The impact from the proposed fisheries on non-listed coho salmon would be similar to what would be expected under the No Action alternative, in that the fisheries would be managed to allow for increased natural production and the collection of localized broodstock to continue the reintroduction programs. These impacts would be limited through season openings and bag limits, and actual harvest impacts on coho salmon would vary from basin to basin depending on the number of returning adults and the natural escapement and broodstock needs. For example, from 1998 to 2003 the harvest of coho salmon in the Umatilla River has ranged from 89 to 729 adults (or 2.0 to 7.5 percent of the run) (ODFW 2006c). Because the ESU is extinct, the reintroduction efforts are designed to test the feasibility of reestablishing coho salmon in these basins, but would not change the status of the ESU.

4.2.4.2 Spring Chinook Salmon

Fisheries targeting spring Chinook salmon would be open in some years in Drano Lake, and in the White Salmon, and Klickitat Rivers, in Washington and in the Deschutes and Umatilla Rivers in Oregon and would depend on the expected escapement of natural and hatchery spring Chinook salmon. The proposed fisheries would allow for the retention of only marked hatchery salmon, and would be managed to ensure that hatchery broodstock needs are achieved before the fisheries would be implemented.

There would be no difference in the level of impact on non-listed spring Chinook salmon under the Proposed Action and the No Action alternative for those populations within John Day River and Yakima River basins where spring Chinook salmon fisheries would continue to be closed. These closures are expected to ensure that these populations continue to remain abundant and stable. The harvest of spring Chinook salmon under the Proposed Action would be expected to reduce the number of naturally spawning spring Chinook salmon as compared to the No Action alternative, in those basins that would allow spring Chinook salmon fisheries. Abundances would potentially decrease under the Proposed Action, relative to the No Action alternative, in the Deschutes River and the Klickitat Rivers where spring Chinook salmon fisheries would occur targeting marked hatchery spring Chinook salmon. However, the impacts from the proposed fisheries in these basins would continue to be low and not expected to affect abundance trends for these populations. The level of reduction would depend on the timing and location of the spring Chinook salmon fisheries and the abundance of natural-origin spring Chinook salmon. The longer a season or area is open to the fishery, the greater the potential that a natural-origin spring Chinook salmon would be caught and released in the fishery. For example, in the Umatilla if it is assumed that natural-origin fish are harvested at the same rate as the hatchery fish and that the catch-and-release mortality is 10 percent, as a result between 1 and 75 naturally produce spring Chinook could be lost depending on the length of the season.

The impact from the proposed fisheries in the Umatilla River would decrease the number of spring Chinook salmon that could potentially spawn naturally or be harvested in tribal fisheries (see discussion below) and may slow the reestablishment of spring Chinook salmon in the Umatilla River basin compared to the No Action alternative. However, under the proposed fisheries harvest would be managed to ensure that reintroduction efforts would continue.

The hatchery and naturally produced spring Chinook salmon in the Umatilla River were derived from a hatchery population that is not part of the MCR spring Chinook ESU, increased abundance of these fish will not change the status of the extinct population or the ESU.

4.2.4.3 Summer/Fall Chinook Salmon

Recreational fisheries would occur within the Action Area under the Proposed Action that would target returning non-listed fall Chinook salmon. In Washington, these fisheries would occur in Drano Lake, the White Salmon River, the Klickitat River, and the Yakima River basins. These fisheries would target non-listed hatchery upriver bright fall Chinook salmon that are released

into all of these basins. The exception would be in the White Salmon River, where the fishery would target hatchery strays from the Little White Salmon NFH and the Klickitat River. Recreational fall Chinook salmon fisheries under the Proposed Action would also occur in the Deschutes and Umatilla Rivers. The John Day River basin is closed to all salmon harvest and impacts in this basin would not change relative to the No Action alternative. The proposed fisheries would reduce the abundance of hatchery and natural-origin summer/fall chinook in those basins where the fisheries would occur compared to the No Action alternative. The level of the reduction would depend on the abundance of both hatchery and natural-origin fall Chinook salmon in a basin. For example, in the past the harvest of fall Chinook salmon in the Deschutes River has ranged from 0 (when the fishery was closed from 1992-1997 and again in 2001) to a recent harvest of 406 in 2005 (Seals 2006). This was a harvest of naturally produced fall Chinook salmon and would reduce the number of naturally spawning adults in the basin because hatchery fall Chinook salmon are not released into the Deschutes River basin. However, this is not expected to affect the status of the population because the fisheries would remain closed unless the escapement goal for the population is met.

The proposed fishery in the Umatilla River would target returning non-listed hatchery fall Chinook and would be limited to only jack salmon (jacks and mini-jacks, which, in this case, are fish less than 16 inches) and thus would have a very minor affect on adult fall Chinook salmon due to catch-and-release mortality. In the past, the harvest in this fishery has ranged from 11 to 588 fall Chinook salmon during the period from 1992 to 2003 (Bailey 2006). The proposed fisheries may decrease the number of natural-origin fall Chinook salmon in the Yakima River population when adult salmon are harvested in fisheries that would be targeting returning non-local hatchery fall Chinook salmon. In the other basins, the proposed fisheries would target returning hatchery fall Chinook salmon that are not part of the ESU, and would decrease in the number of hatchery fall Chinook salmon on the spawning grounds. However, in the basins where hatchery fall Chinook salmon are released, the fall Chinook salmon fisheries would be managed to ensure that broodstock and natural spawning escapement needs are met. The fisheries under the Proposed Action would reduce the abundance of fall Chinook salmon compared to the No Action alternative, but a decrease in abundance would not be expected to reduce the productivity or status of the non-listed populations of summer/fall Chinook salmon.

4.2.4.4 Redband Trout

Current management of *O. mykiss* is focused on protecting juvenile steelhead in MCR tributaries while providing some angling opportunity for resident trout. Trout fisheries have been reformed in recent years to reduce incidental impacts to juvenile steelhead. The changes in management include catch-and-release fisheries, prohibitions on the use of bait during the general trout season, use of artificial flies and lures, reductions in daily bag limits, an increase in the minimum size for trout, and the closure of important steelhead spawning and rearing areas to fishing (see 2.2.1). These changes would continue to provide benefits to resident redband populations under the Proposed Action. The fisheries that would be expected to occur under the Proposed Action would increase the level of impacts compared to the No Action alternative due to an increase in effort and from catch-and-release mortality. However, the increase in impacts would be minor,

decreasing the annual abundance of juvenile steelhead and resident redband trout by less than 1 percent annually relative to the No Action alternative. This level of impact would have no measurable effect on the status of the redband trout populations in the MCR area.

4.2.4.5 Warmwater Fish Species

Centrarchids are present in many of the basins throughout the MCR. Restrictive regulations are currently in effect for most warmwater species and would continue under the Proposed Action. Available information suggests the past harvest of bass does not appreciably affect the overall abundance and population dynamics of these introduced species (ODFW and NMFS 1999). The impacts on warmwater fish under the Proposed Action would be similar to the No Action alternative because these fisheries occur in areas generally devoid of salmon and steelhead and, therefore, ODFW and WDFW would likely continue to operate their warmwater fisheries under either alternative. Effort would be expected to increase versus the No Action alternative because more people would likely purchase licenses, and more areas would be open to angling, however, the potential increase in effort is not expected to affect the abundance or population dynamics of the warmwater fish species.

4.2.4.6 Cutthroat Trout

As described above, fishing regulation changes for redband trout that have occurred in the past and would be continued under the Proposed Action would be expected to also benefit cutthroat trout populations. Most of the proposed harvest regulations for each stream in the Proposed Action do not distinguish between redband and cutthroat trout and thus actions that reduce impacts for redband trout would also reduce impacts to cutthroat trout. NMFS has not fully assessed the overall impacts of fishing on cutthroat in the MCR but expects cutthroat to benefit from fishery restrictions aimed at protecting adult and juvenile steelhead. The proposed fisheries would be expected to increase harvest effort relative to the No Action alternative, however, the increase in impacts would be minor, decreasing the annual abundance of cutthroat trout by less than 1 percent annually. This level of impact would have no measurable effect on the status of the cutthroat trout populations in the MCR area.

4.2.5 Effects on the Social and Economic Environment

If the FMEPs are approved under the Proposed Action and the proposed fisheries are allowed to occur, economic benefits would accrue to residents within the Middle Columbia River region. This alternative would also maintain recreational fishing opportunities and public support of salmon and steelhead recovery efforts, this support would be expected to decline under the No Action alternative. The economic impact under the No Action alternative has a potential loss of an estimated $100 million in Oregon and $120 million in Washington from fisheries related expenditures (see subsection 4.1.5, Effects on the Social and Economic Environment). If the fisheries under the Proposed Action were implemented then this economic impact would probably be eliminated. The majority of recreational anglers are from middle to high income levels in both Oregon and Washington, and probably would not be adversely affected by the

proposed recreational fisheries under this alternative, other than not having to extend additional funds to pursue fisheries in other areas.

At a more local scale, the economic effect of the proposed fisheries can be estimated for the Umatilla River basin by using the average number of angler trips in the Umatilla River, as an estimate of days fished, and the estimated dollars spent per day fished for steelhead as described in subsection 3.5, Social and Economic Environment, above. Based on these criteria, the steelhead fishery in the Umatilla River, under the Proposed Action is worth approximately $105,000 annually at $60/day (IEAB 2005) to $143,500 annually at $82/day (USDOI *et al*. 2001) to the economy of the Umatilla River basin. If the spring Chinook, fall Chinook and coho salmon fisheries are included, and assuming the same amount spent per day, the value to the Umatilla River basin of all the fisheries is estimated to range from $324,780 to $443,866. Though not substantial when compared to the estimated total income in Umatilla County for 2001 of $1,560,509,000 (OED 2006), the economic impact is still important and would not be available under the No Action alternative. As described above in subsection 3.5 impacts from fisheries are no longer considered to be factor contributing to the decline of the MCR Steelhead DPS (PCSRF 2006), and even though there would be additional impacts from the fisheries under the Proposed Action, as compared to the No Action alternative, the tributary fisheries would continue to be managed to minimize impacts to listed salmon and steelhead such that harvest would not contribute to the decline of listed and non-species.

4.2.6 Effects on Environmental Justice

As described above in subsection 3.6, Environmental Justice, the survey data reflects that minority and low income populations do not participate in the fisheries to a high degree and thus, it is uncertain how dependent minority groups are on salmon and steelhead fisheries for sustenance and recreation. If they were not dependent on the proposed fisheries for sustenance and recreation, then there would be no discernable difference between the Proposed Action and the No Action alternative. It is unknown if low income anglers are employed at a higher rate in fisheries related industries; to whatever extent they might be, the proposed fisheries would have a potential beneficial effect on these groups because the fishing activities would support the continuation of the fishing industry. If low income populations rely on fishing as a major food source, the Proposed Action would provide a continuation of this source as compared to the No Action alternative, which would substantially decrease the opportunity to harvest salmon and steelhead.

4.2.7 Cumulative Impacts

Cumulative impacts from NMFS' current proposed action under 4(d) rule Limit 4 would be minor. Incremental impacts on the environment are included in the discussion above. NMFS' 4(d) rule is only one element of a large suite of regulations and environmental factors that may influence the overall management of fishery actions in the affected environment, and that may impact the health of listed salmon populations and their habitat. In many cases, for example, natural production of fish is limited by the lack of available habitat or by poor habitat conditions;

if usable habitat is made available, additional production might be expected, which would result in an increased number of natural-origin fish in the return, which would be expected to result in increasing impacts on natural-origin salmonids from the proposed fisheries. However, while actions are being planned at various levels of complexity to address such issues as habitat restoration and water quality, few substantial actions are anticipated that would benefit the species considered here to a degree that would have measurable results. Recovery plans currently under development are expected to help direct the implementation of actions that would benefit listed species; the effects of actions that may be called for as a part of the recovery plans could change the needs of the salmonid populations affected by the current proposed action, but the time frame for such effects is relatively long, the effects are currently unknown, and any adjustments to changes in run sizes and composition are already built into the FMEPs. The FMEPs included in this EA address all fisheries in the tributaries of the MCR Steelhead DPS. There are no other fishery programs that need ESA authorization in this area if the FMEPs are approved. The impacts from fisheries occurring in other areas (e.g., ocean, estuary, and mainstem Columbia River) are included in the assessment of cumulative harvest impacts in the FMEPs. Those fishery programs that meet the requirements of the 4(d) rule Limit 4 include monitoring and adaptive management measures so that fishery managers can respond to changes in the status of affected listed salmon and steelhead populations. Monitoring and adaptive management would help ensure that the affected ESUs and DPSs are adequately protected and would help counter-balance any negative cumulative impacts.

5.0 Agencies Consulted

NOAA's National Marine Fisheries Service
Oregon Department of Fish and Wildlife
Washington Department of Fish and Wildlife

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