



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

Refer to NMFS No: 2010/02467

September 28, 2010

Frank Guzman
Salmon-Challis National Forest
1206 S. Challis Street
Salmon, Idaho 83467

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Middle Fork Salmon River Recreational Floating Activities, Lower Middle Fork Salmon River, 17060206; Upper Middle Fork Salmon River, 17060205; Middle Salmon-Bear Basin, 170602070101, Custer and Lemhi Counties, Idaho (475 projects)

Dear Mr. Guzman:

The enclosed document contains a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7(a)(2) of the Endangered Species Act (ESA) on the effects of the Salmon-Challis National Forest (SCNF) proposed authorization of recreational floating activities on the Middle Fork Salmon River. The SCNF authority to authorize the action is found in the National Forest Management Act of October 22, 1976. In this Opinion, NMFS concluded that the action, as proposed, is not likely to jeopardize the continued existence of Snake River spring/summer Chinook salmon. NMFS also concurred with the SCNF determination that the proposed actions would be “not likely to adversely affect” Snake River Basin steelhead, sockeye salmon, and designated critical habitats for spring/summer Chinook salmon, Snake River Basin steelhead, and sockeye salmon.

As required by section 7 of the ESA, NMFS provided an incidental take statement with the Opinion. The incidental take statement describes reasonable and prudent measures NMFS considers necessary or appropriate to minimize the impact of incidental take associated with this action. The take statement sets forth nondiscretionary terms and conditions, including reporting requirements, that the Federal agency and any person who performs the action must comply with to carry out the reasonable and prudent measures. Incidental take from actions that meet these terms and conditions will be exempt from the ESA take prohibition.

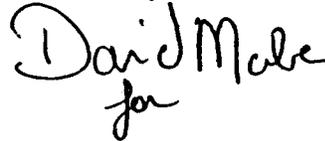
This document also includes the results of our analysis of the action’s likely effects on Essential Fish Habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation



and Management Act (MSA). NMFS concluded that the actions would not result in adverse effects to EFH. Therefore, no conservation recommendations are necessary to avoid, minimize, or otherwise offset potential adverse effects on EFH.

If you have questions regarding this consultation, please contact Chad Fealko, Fisheries Biologist, Salmon Field Office, 208-756-5105 or Bill Lind, Branch Chief, South Idaho Branch Office, 208-378-5697.

Sincerely,

A handwritten signature in black ink that reads "David Mabe" in a cursive style, with the word "for" written below it in a smaller, simpler cursive script.

William W. Stelle, Jr.
Regional Administrator

Enclosure

cc: Chris Grove - SCNF
Russ Holder - FWS
J. Lukens - IDFG
Y. Tuell - Shoshone-Bannock Tribes
M. Lopez - Nez Perce Tribe

Endangered Species Act – Section 7 Consultation Biological Opinion

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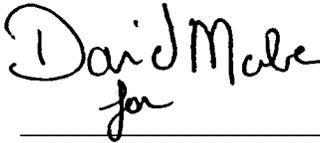
Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Middle Fork Salmon River Recreational Floating Activities, Lower Middle Fork Salmon River,
17060206; Upper Middle Fork Salmon River, 17060205; Middle Salmon-Bear Basin,
170602070101, Custer, Lemhi, and Valley Counties, Idaho

Lead Action Agency: Salmon Challis National Forest

Consultation
Conducted By: National Marine Fisheries Service
Northwest Region

Date Issued: September 28, 2010

Issued by: 

William W. Stelle, Jr.
Regional Administrator

NMFS No.: 2010/02467

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ACRONYMS

AIS	Aquatic Invasive Species
BA	Biological Assessment
BMPs	Best Management Practices
BRT	Biological Review Team
cfs	cubic feet per second
DPS	Distinct Population Segment
DQA	Data Quality Act
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESUs	Evolutionarily Significant Unit
HUC	Hydrologic Unit Code
ICBTRT	Interior Columbia Basin Technical Recovery Team
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IISA	Idaho Invasive Species Act
IISF	Idaho Invasive Species Fund
ISAB	Independent Scientific Advisory Board
LWD	Large Woody Debris
MFSR	Middle Fork Salmon River
MPGs	Major Population Groups
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
Opinion	Biological Opinion
PCEs	Primary Constituent Elements
PFMC	Pacific Fishery Management Council
RM	River Mile
RPMs	Reasonable and Prudent Measures
SCNF	Salmon-Challis National Forest
SNF	Sawtooth National Forest
TMDL	Total Maximum Daily Load
VSP	Viable Salmonid Population

1. INTRODUCTION

The biological opinion (Opinion) and incidental take statement portions of this consultation were prepared by the National Marine Fisheries Service (NMFS) in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531, *et seq.*), and implementing regulations at 50 CFR 402. With respect to designated critical habitat, the following analysis relied only on the statutory provisions of the ESA, and not on the regulatory definition of “destruction or adverse modification” at 50 CFR 402.02.

The Essential Fish Habitat (EFH) consultation was prepared in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801, *et seq.*) and implementing regulations at 50 CFR 600. The administrative record for this consultation is on file at the Idaho State Habitat Office.

1.1. Background and Consultation History

The Salmon-Challis National Forest (SCNF) is proposing to reissue 28, 10-year commercial floatboat permits, and annually issue an average of 396 non-commercial floatboat permits and 19 administrative permits for the next 10 years. Permits are required to float the Middle Fork Salmon River (MFSR) year-round. There are a maximum of seven permits available per day, 365 days per year. During the control season (May 28 to September 3), private permits are issued via a lottery system.

The project area is primarily located within the Frank Church-River of No Return Wilderness Area within Custer, Idaho, Lemhi, and Valley Counties. These lands are administered by the Middle Fork and North Fork Ranger Districts of the SCNF. All floating activities are managed by the Middle Fork Ranger District. The SCNF biological assessment (BA) indicated there are 4,265 acres of state and privately-owned land within the analysis area.

The proposed actions are ongoing and the SCNF has previously received an April 26, 1995, concurrence letter from NMFS (1995/00085). For the current consultation, NMFS received a draft BA on April 2, 2010, and provided the SCNF suggested edits to complete the BA on April 12, 2010. The Salmon-Challis Level 1 Team discussed the draft BA on April 28, 2010, and provided preliminary concurrence with the SCNF’s effects determinations. A final BA and request for ESA consultation was received on June 8, 2010, and formal consultation was initiated at that time. The SCNF’s final BA determined the proposed actions would be “likely to adversely affect” Snake River spring/summer Chinook salmon. The BA also determined that the action would “not likely adversely affect” Snake River Basin steelhead, Snake River sockeye salmon, and designated critical habitats for spring/summer Chinook salmon and Snake River Basin steelhead. No determination was provided for Snake River sockeye salmon. However, because sockeye salmon and their critical habitat occur in the action area, NMFS has assessed potential effects to them in this Opinion.

NMFS shared portions of the draft Opinion with the SCNF on July 22, 2010. The SCNF provided minor comments on August 5, 2010. NMFS completed minor modifications following receipt of the SCNF comments and reviewed them with the SCNF prior to finalizing the document. NMFS met with the SCNF and three Applicants on September 22, 2010, to discuss the draft Opinion. As a result of this meeting, the SCNF made minor changes to the proposed action and resubmitted the BA to NMFS via email on September 23, 2010. NMFS subsequently incorporated the proposed action changes into the Opinion and modified the wording, but not the intent, of two of the mandatory terms and conditions.

Because the proposed action would likely affect tribal trust resources, NMFS contacted the Shoshone-Bannock Tribes and Nez Perce Tribe pursuant to the Secretarial Order (June 5, 1997). A copy of the draft proposed action and terms and conditions were sent to the Nez Perce and Shoshone-Bannock Tribes on July 22, 2010, with a request for comments. No response was received.

1.2. Proposed Action

For purposes of this consultation, the proposed action is: (1) Reissuance of 28 commercial special use permits; (2) annual issuance of approximately 396 non-commercial floatboat permits during the control season; (3) annual issuance of up to seven permits per day outside the control season (10 year average is 144 permits); and (4) issuance of approximately 19 administrative permits for the next 10 years. All actions will occur for the next 10 floating seasons (2011 to 2021). Permits are required to float the MFSR year-round. There are a maximum of seven permits available per day, 365 days per year. During the control season (May 28 to September 3), private permits are issued via a lottery system. Generally, four of the seven daily permits are allocated to non-commercial groups. Permitted activities occur on approximately 108 miles of the mainstem MFSR, and 3.5 miles of the main Salmon River (Figure 1). Permits are not required to float Marsh Creek but the lack of road access to the permitted launch sites in early spring results in permitted floaters floating approximately 16 miles of Marsh Creek to reach the control section (Figure 1). An average of 32 Marsh Creek launches occur annually. With the exception of administrative and dead head trips, no more than seven groups, both commercial and private, may launch on any single day.

1.2.1. Commercial Permits

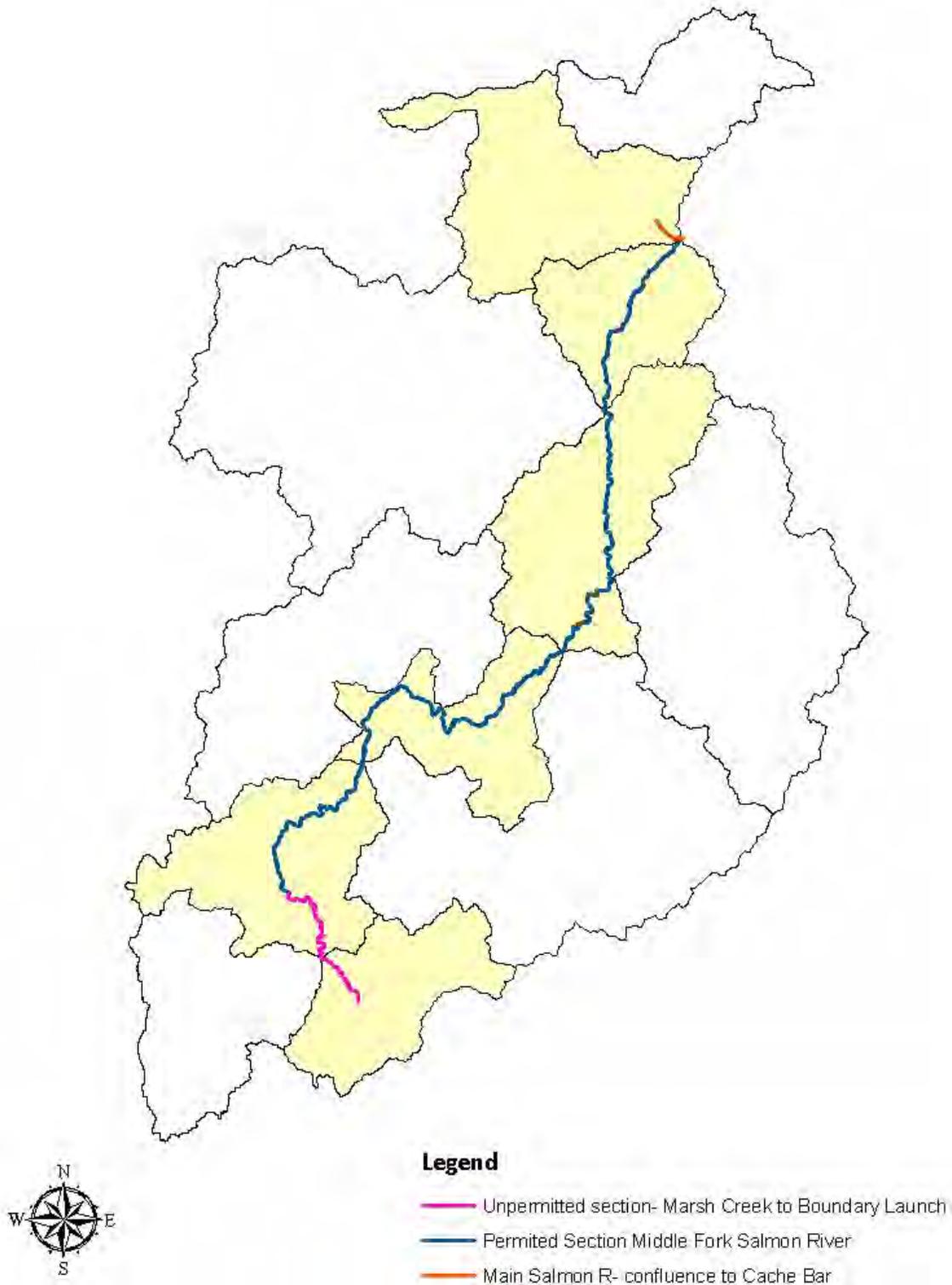
Previous commercial special use permits expired March 31, 2010. Commercial floating on the MFSR is permitted from the Boundary Creek boat ramp to the take-out at Cache Bar, approximately 3.5 miles downstream of the confluence of the Middle Fork and main Salmon Rivers.

The majority of commercial launches occur at Boundary Creek, about one-half mile below Dagger Falls, where the permitted section of the MFSR begins. Later in the season, dependent upon water levels, launches also occur from the Indian Creek Guard Station. On average, 22% of total launches occur from the Indian Creek Guard Station, 25 miles downstream from

Boundary Creek. A small number of launches (on average 6% of total launches) also occur from the Flying B (or Bernard Guard Station), Loon Creek, and Little Creek. Two outfitters walk clients down Big Creek and meet boats on the MFSR. Activities within the Big Creek drainage are administered by the Payette National Forest and are not considered in this Opinion.

Average commercial group size is 24, but can include up to 30 people total. Overall, there is an average of seven boats per group. Assuming the maximum of seven groups (commercial and non-commercial), with an average of seven boats per group, a low estimate of 49 boats may pass any given point on the river during a single day. However, since the number of craft is not regulated, the number could be as high as 168 to 210 (assuming one boat per person). Groups are usually on the river from 10:00 AM to 4:00 PM each day and generally travel together. Some groups get widely dispersed along the river due to varying craft speed, group activities, and skill levels. However, in a typical situation, with seven groups on the river, the average interval between groups would be approximately 45 minutes.

Figure 1. MFSR Action Area and Vicinity Map.



1.2.2. Non-Commercial Permits

Approximately 428 non-commercial permits are issued annually. Pre- and post-control season permits are issued on a first come-first serve basis. Control season permits (May 28 to September 3) are issued through a lottery. Generally, four of the seven daily launch permits are allocated to non-commercial groups which could total 396 non-commercial control season permits.

Pre-control season groups often launch from Marsh Creek (average 32 times annually), which is accessible from Forest Road 40083, near Highway 21, when access to Boundary Creek is limited by snowpack. Marsh Creek can be floated to above Dagger Falls without a permit. However, permitted floaters are the most likely users as the lack of road access prevents suitable shuttle services to only float Marsh Creek. It takes 1 day to float this 16 mile reach. Water levels are generally too low during control and post-control season to launch from Marsh Creek.

Launch locations and timing are the same as for commercial permits, described above. Groups that float Big Creek must obtain permits from the Payette National Forest, in addition to the permit for the MFSR if the group spends the night on the MFSR. Non-commercial floaters do not need permits on the main Salmon River from the confluence of the MFSR to Corn Creek boat ramp. Each non-commercial permit must launch on the date specified on the permit. Non-commercial group size may be up to 24 people; the average is nine per group. The average number of boats and time of floating is the same as described in commercial, above.

1.2.3. Administrative Use Permits

Permits are also issued for administrative use to the SCNF and Idaho Department of Fish and Game (IDFG). Launch dates for these permits are in addition to the seven commercial and private permits issued daily. On average, there are 19 administrative launches per year with an average of five people and three boats per trip. Launches, known as “deadheads,” are also issued to commercial and private groups when low water levels make navigation of the section between Boundary Creek and Indian Creek difficult. No passengers are allowed under deadhead trips and the trip to Indian Creek must be made in 1 day.

1.2.4. Floatboating Activities

Nearly all floatboats are inflatable (e.g., rafts, sweep boats, catarafts, and kayaks). Rigid hull drift boats, kayaks, and canoes are also used. All the aforementioned craft draw about 6 to 8 inches of water. Grounding is common, especially in the 25 miles between Boundary Creek and Indian Creek, when the river level is below 2 feet. No motors are allowed on the MFSR, so boats are propelled by one of three methods: rowing, paddling, or use of sweeps. In all methods, there is a strong motivation to keep the boat, paddles and/or sweeps from coming in contact with the river bottom and boat operators tend to select deeper runs with fewer obstructions. Virtually all cargo is not hazardous, but there are some exceptions. Portable toilets could be emptied or propane containers could rupture. Other potentially hazardous items include

soap, bleach, charcoal, lighter fluid, and white gas. However, these items are typically packed with redundant or triple containment. For example, the primary container would be within a dry box or in a leak-proof container within a dry box.

Typical activities authorized and engaged in by people floating the river include fishing, wading, and swimming. Stopping to hike along the river and visiting points of interest near the river is common. Camping would continue to be regulated according to the Wilderness Plan. There are a total of 99 designated campsites along the MFSR. All groups floating the MFSR must camp at assigned sites.

While people are in camp, boats are moored in the river along the shore or pulled up on shore, typically in front of the camps. Trash and food waste are contained and carried off the river. Wash water is strained and solids are carried as trash. Cooking is usually conducted with gas or propane stoves, although charcoal or wood is sometimes used. Fires must be contained in a fire pan, and the ashes carried out. Wash water, toothpaste water, and rinse waters are all dispersed above the high water mark. Solid human waste is contained in portable toilets and transported off the river to a disposal station near the town of North Fork. The river is used to discard human urine.

1.2.5. Aquatic Invasive Species

Aquatic invasive species (AIS) are non-native plant and animal species that threaten the diversity or abundance of native species, the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters (IISC Tech. Committee 2007). Four species are of particular concern; quagga mussels (*Dreissena rostriformis bugensis*), zebra mussels (*Dreissena polymorpha*), New Zealand mud snails (*Potamopyrgus antipodarum*), and Didymo (*Didymosphenia geminata*).

To reduce the threat of importing AIS, the SCNF will require all craft and equipment is dry and clean at launch point arrival. Clean means no vegetation, mud, or debris clinging to boats or equipment. Dry means no standing water in boats or equipment and no wet equipment that could provide substrate to AIS. It will be the responsibility of the permit holder to ensure that all craft and equipment floating under the permit comply with this requirement. Boats will be checked at the designated launches during the permit control season to ensure they are not an obvious vector for aquatic nuisance species (i.e., dry and clean). Craft that are used exclusively on the Middle Fork Salmon River are exempt from this requirement. In addition, AIS education will be added to the mandatory control season boater orientation sessions. The AIS information will also be included in the packets sent to permit holders.

1.2.6. Conservation Measures

Camping, cooking and clean up, trash disposal, fires, and human waste have potential for chemical and nutrient leaching from soaps and waste, litter, and possible small fuel spills (IDEQ

2001). The following best management practices (BMPs) are included as standards in the Wilderness Plan for the purpose of maintaining good water quality:

- All human waste, unburnable litter, and refuse material must be packed out.
- The use of portable toilets, and the packing out and properly disposing of human waste will be required. Human waste must be removed from the river corridor.
- Fire-pans will be required for all visitors in the corridor. Ashes and other fire residue must be packed out.
- Use of soap in rivers (below mean high water level) or in hot springs is prohibited.
- Cutting standing trees (live or dead) for firewood or other purposes is prohibited, except for fire control and administrative purposes.
- Exceeding trip duration or maximum party size limits without prior written approval is prohibited.
- Unless approved by permit, and determined to be consistent with the Wilderness Act and necessary for administration of the wilderness, use of motorized equipment and mechanical transport is prohibited, except as allowed by law.

Chinook redds are typically located in gravel substrate in shallower water areas. These areas may be located near designated camps or between camps. Redds could be disturbed by boats floating over, and/or mechanical damage could occur from boats grounding upon them. If the use of a camp, general floating activities, and the location of a redd conflict, the Wilderness Plan provides for conflict resolution. The SCNF proposes the following mitigations:

- Close campsites as needed to provide for public health and safety or to protect resources.
- Camps near redds that will result in disturbance to redds from landing, launching, or other activities associated with recreational floating, will be closed during the Chinook spawning season.

Campsites have the potential to impact Chinook habitat by producing sediment. The Wilderness Plan provides the following outline/management standards and guidelines for river campsites to reduce sediment inputs:

- Campsites are unobtrusive and dispersed. Campsite activity, experiences, and campsite resource conditions do not exhibit a downward trend. Degraded campsite conditions will be addressed using the following sequence of efforts:
 - Educate visitors to change behavior or to encourage protection of certain resource attributes at a campsite.

- Decrease use in the spring and fall to allow for natural green-up and recovery.
- Restore and block certain areas of a campsite with native material barriers.
- Designate kitchen areas, tent sites, and social trails.
- Provide appropriate structures when needed to protect the wilderness resource.
- Close campsites (seasonally first, year-round as needed).
- No more than 45% of river campsites will be in Frissell Condition Class IV, and no more than 7% will be in Condition Class V (Appendix A).
- Improve degraded campsites in Frissell Condition Classes IV and V (Appendix A). Focus management on campsite conditions and measurable adverse effects to resources.

The SCNF has also proposed the following measures that will also be applied as necessary to reduce the potential for disturbance to spawning Chinook salmon:

- Redds will be located, as they are constructed, by SCNF River Patrol personnel during weekly river patrols and by participating outfitters¹. Locations of redds will be identified, mapped, and the following avoidance measures will be applied during the Chinook spawning season:
 - In every possible situation, when able to be achieved safely, routes that avoid floating over redds will be used.
 - Areas near redds will be identified as “quiet” floating areas where boaters will be advised to limit rowing and paddling to the minimum necessary to safely navigate past the area.
- During the Chinook spawning season (August 15 through September 15), the number of craft per party will be limited to 12.
- During the Chinook spawning season (August 15 through September 15), cancelled permits will not be reissued.
- During the control season, camps where typical activities (i.e., ingress, egress, wading, fishing, etc.) would affect spawning fish or incubating eggs will be closed.

¹ SCNF plans to solicit outfitters to commit their guides to look for and document redds while on the river. This is intended to be a voluntary measure that some outfitters will commit to but the number performing this task is unknown (Personal Communication, J. Purvine, SCNF Biologist, July 19, 2010).

- After the control season, camps are assigned below Indian Creek Guard Station. Between Boundary and Indian Creeks, camps with potential redd conflicts will be posted as closed.

The conservation measures described above, in the previous section, and in the consultation initiation package as parts of the proposed action are intended to reduce or avoid adverse effects on listed species and their habitats. NMFS regards these conservation measures as integral components of the proposed action and expects that all proposed project activities will be completed consistent with those measures. We have completed our effects analysis accordingly. Any deviation from these conservation measures will be beyond the scope of this consultation and will not be exempted from the prohibition against take as described in the attached incidental take statement. Further consultation will be required to determine what effect the modified action may have on listed species or designated critical habitats.

1.2.7. Monitoring

There is a need for data regarding location and timing of redd construction. If redds are located as built, they could be mapped and more effectively avoided. To this effect, SCNF River Patrol personnel and participating outfitter personnel will be given appropriate training to identify redd construction and how to look for fish on the redds. When redds are identified, river patrol personnel will either radio the Middle Fork office or call via satellite phone and report the location of observed redds. Participating outfitters could tell personnel at Indian Creek Guard Station, call the Middle Fork office if they have a satellite phone, or pass the information on when they complete their trip. That information will then be conveyed to personnel at the Boundary and Indian Creek Guard Stations, who will relay the information to boaters. Maps of known redd locations and redd avoidance information will be posted at launch sites as well.

1.3. Action Area

‘Action area’ means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For purposes of this consultation, the action area includes all aquatic habitats in the unpermitted section of the Marsh Creek, from Highway 21 downstream to Dagger Falls, and in the permitted section from Dagger Falls downstream to Cache Bar on the main Salmon River (Figure 1). There is approximately 108 miles of mainstem MFSR, 3.5 miles of the main Salmon River, and 16 miles of Marsh Creek within this area. All designated camp sites within this area are also included in the action area.

Snake River spring/summer Chinook salmon, Snake River Basin steelhead, sockeye salmon, and their designated critical habitats are present in the action area. The MFSR is primarily migratory habitat for Snake River Basin steelhead and Chinook salmon. However, some Chinook salmon spawning does occur in the upper reaches of the river and Snake River Basin steelhead spawning may occur but has not been documented. The main Salmon River, in the action area, is

migratory habitat only and is also the only part of the action area where sockeye salmon or their critical habitat occur. Table 1 displays the listing history for each species assessed in this Opinion.

Table 1. Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation.

Species	Listing Status	Critical Habitat	Protective Regulations
Chinook salmon (<i>Oncorhynchus tshawytscha</i>)			
Snake River spring/summer run	T 6/28/05; 70 FR 37160	10/25/99; 64 FR 57399	6/28/05; 70 FR 37160
Sockeye salmon (<i>O. nerka</i>)			
Snake River	E 6/28/05; 70 FR 37160	12/28/93; 58 FR 68543	ESA section 9 applies
Steelhead (<i>O. mykiss</i>)			
Snake River Basin	T 1/05/06; 71 FR 834	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160

Note: Listing status: 'T' means listed as threatened under the ESA; 'E' means listed as endangered.

2. ENDANGERED SPECIES ACT

The ESA establishes a national program to conserve threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with U.S. Fish and Wildlife Service, NMFS, or both, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. Section 7(b)(4) requires the provision of an incidental take statement that specifies the impact of any incidental taking and includes reasonable and prudent measures (RPMs) to minimize such impacts.

2.1. Biological Opinion

This Opinion presents NMFS' review of the status of each listed species of Pacific salmon and steelhead² considered in this consultation, the condition of designated critical habitat, the environmental baseline for the action area, all the effects of the action as proposed, and cumulative effects (50 CFR 402.14(g)). For the jeopardy analysis, NMFS analyzes those combined factors to conclude whether the proposed action is likely to appreciably reduce the likelihood of both the survival and recovery of the affected listed species.

The critical habitat analysis determines whether the proposed action will destroy or adversely modify designated critical habitat for listed species by examining any change in the conservation

² An 'evolutionarily significant unit' (ESU) of Pacific salmon (Waples 1991) and a 'distinct population segment' (DPS) of steelhead (final steelhead FR notice) are considered to be 'species,' as defined in section 3 of the ESA.

value of the essential features of that critical habitat. This analysis relies on statutory provisions of the ESA, including those in section 3 that define “critical habitat” and “conservation,” in section 4 that describe the designation process, and in section 7 that sets forth the substantive protections and procedural aspects of consultation. The regulatory definition of “destruction or adverse modification” at 50 CFR 402.02 is not used in this Opinion.

2.1.1. Status of the Species and Critical Habitat

This section defines the biological requirements of each listed species affected by the proposed action, and the status of each designated critical habitat relative to those requirements. Listed species facing a high risk of extinction and critical habitats with degraded conservation value are more vulnerable to the aggregation of effects considered under the environmental baseline, the effects of the proposed action, and cumulative effects.

2.1.1.1. Status of the Species

NMFS reviews the condition of the listed species affected by the proposed action using criteria that describe a ‘viable salmonid population’ (VSP) (McElhany et al. 2000). Attributes associated with a VSP include abundance, productivity, spatial structure, and genetic diversity that maintain its capacity to adapt to various environmental conditions and allow it to sustain itself in the natural environment. These attributes are influenced by survival, behavior, and experiences throughout the entire life cycle, characteristics that are influenced, in turn, by habitat and other environmental conditions.

Snake River Spring/Summer Chinook Salmon. This species occupies the Snake River basin, which drains portions of southeastern Washington, northeastern Oregon, and north/central Idaho. Environmental conditions are generally drier and warmer in these areas than in areas occupied by other Chinook species. Chinook-producing drainages occupied by Snake River spring/summer Chinook salmon include the Grande Ronde, Imnaha, Salmon, and Tucannon River systems.

Snake River spring/summer Chinook salmon exhibit a stream-type life history. Juvenile fish mature in fresh water for 1 year before they migrate to the ocean in the spring of their second year. Adults reenter the Columbia River in late February and early March after 2 or 3 years in the ocean. In high elevation areas, mature fish hold in cool, deep pools until late summer and early fall, when they return to their native streams to begin spawning. Eggs incubate through the fall and winter and emergence begins in the late winter and early spring. Juveniles migrate out of rearing areas starting in early May through July.

Although direct estimates of historical annual Snake River spring/summer Chinook returns are not available, returns may have declined by as much as 97% between the late 1800s and 2000. According to Matthews and Waples (1991), total annual Snake River spring/summer Chinook salmon production may have exceeded 1.5 million adult fish in the late 1800s. Total (natural + hatchery origin) returns fell to roughly 100,000 spawners by the late 1960s (Fulton 1968) and were below 10,000 by 1980. Between 1981 and 2000, total returns fluctuated between

extremes of 1,800 and 44,000 fish. The 2001 and 2002 total returns increased to over 185,000 and 97,184 adults, respectively. However, it is important to note that over 80% of the 2001 return and over 60% of the 2002 return originated in hatcheries (Good et al. 2005). The 2003 and 2004 runs remained relatively high at 98,763 and 94,469 respectively. Adult returns appeared to decline during 2005 to 2007 (average 40,659 adults), before increasing to an average of 100,178 fish in 2008 and 2009. Hatchery returns still made up about 75% of the total run for these years. Thus, despite the recent increases in total spring/summer Chinook salmon returns to the basin, natural origin abundance and productivity are still far below their targets. The Biological Review Team (BRT) has noted that Snake River spring/summer Chinook salmon remains likely to become endangered (Good et al. 2005).

The Interior Columbia Basin Technical Recovery Team (ICBTRT) (2003) has identified 32 populations in five major population groups (MPGs) for this species. The five MPGs are the Upper Salmon River, South Fork Salmon River, MFSR, Grande Ronde/Imnaha, and Lower Snake Mainstem Tributaries. Historic populations above Hells Canyon Dam are considered extinct (ICBTRT 2003). The proposed action would occur entirely within the MFSR MPG. Currently, all nine Upper Salmon River populations are extant and a minimum of five of these populations need to meet or exceed viability criteria (ICBTRT 2007) for the entire MPG to be considered viable. None of the nine extant populations currently meet viability criteria (NMFS 2010). The MPG is predominately confined to wilderness and the populations in the MPG are unique in that none have received hatchery supplementation and there is no history of hatchery-origin Chinook salmon spawning in the MPG.

Eight of the nine MFSR populations could be affected by the proposed action. The Chamberlain Creek population occurs downstream of the action area and will not be affected. Fish from each of the remaining eight populations migrate through the action area. Approximately 98% of the spawning in the MPG occurs in tributary streams (Thurow 2009). Mainstem MFSR spawning typically occurs in only the higher reaches but has been observed 3 miles upstream from the MFSR mouth. Floatboating interactions with spawning adults or redds is only anticipated in the following populations: (1) MFSR below Indian Creek (Lower MFSR); (2) MFSR above Indian Creek (Upper MFSR); and (3) Marsh Creek. This Opinion will focus on these three populations as they are most likely to be affected by the potential adverse effects. The current viability status criteria (ICBTRT 2007) for these populations is provided in Table 2.

Table 2. Current Viability Status of the Camas Creek Population Affected by the Proposed Action.

		Spatial Structure/Diversity Risk			
		Very Low	Low	Moderate	High
Abundance/ Productivity Risk	Very Low (<1%*)	HV	HV	V	M
	Low (1-5%)	V	V	V	M
	Moderate (5-25%)	M	M	M	
	High (>25%)		Marsh Creek	Lower MFSR, Upper MFSR	

Viability Key: HV – Highly Viable; V – Viable; M – Maintained; Shaded cells not meeting viability criteria (darkest cells are at greatest risk)

*The identified percentage values indicate the risk of population extinction over a 100 year time period (ICTRT 2007)

All three of these populations are currently not viable. The Upper MFSR population is an “intermediate” sized population with a minimum abundance threshold of 750 adults. There are very little data available for this population. The abundance/productivity status is tentatively rated at High Risk, consistent with the seven populations in the MFSR MPG where data were available. Spatial structure/diversity risk is currently moderate. Lower MFSR and Marsh Creek are both “basic” sized populations with a minimum abundance threshold of 500 adults in each. Abundance/productivity risks are high for each basic sized population although data are only available for Marsh Creek. Spatial structure/diversity is rated as moderate risk for the Lower MFSR population and low for Marsh Creek. Population specific abundance/productivity values for each population are presented in Table 3. Improvements in abundance/productivity status are required for these populations to be considered viable.

Table 3. Abundance/Productivity values for affected populations in the action area.

Population	Population Size	Abundance		Productivity	
		10-year Geomean Adult Returns	Minimum Abundance	20-Year Return/Spawner Average	Minimum Requirement for Viable Status
Lower MFSR	Basic	no data	500	no data	1.9
Upper MFSR	Intermediate	no data	750	no data	1.6
Marsh Creek	Basic	41	500	1.13	1.9

Limiting factors identified for this ESU include: (1) Hydrosystem mortality; (2) reduced stream flow; (3) altered channel morphology and floodplain; (4) excessive fine sediment; and (5) degraded water quality (NMFS 2010). The majority of these populations occur within wilderness areas and there are no known in-basin habitat limitations affecting abundance/productivity. A primary limiting factor for each of these three populations is out of basin survival. Recovery strategies for these populations are to protect currently functioning habitats and improve out of basin survival.

Snake River Basin Steelhead. The Snake River Basin steelhead DPS includes all naturally spawned populations of steelhead (and their progeny) in streams in the Snake River Basin of southeast Washington, northeast Oregon, and Idaho (62 FR 43937; August 18, 1997). The Snake River Basin steelhead listing does not include resident forms of *O. mykiss* (rainbow trout) co-occurring with these steelhead.

The ICBTRT (2003) identified 23 populations in the following six MPG's in this DPS: Clearwater River, Grande Ronde River, Hells Canyon, Imnaha River, Lower Snake River, and Salmon River. The BRT noted that Snake River Basin steelhead remain spatially well-distributed in each of the six major geographic areas in the Snake River Basin (Good et al. 2005). Environmental conditions are generally drier and warmer in these areas than in areas occupied by other steelhead species in the Pacific Northwest. Snake River Basin steelhead were blocked from portions of the Upper Snake River beginning in the late 1800s and culminating with the construction of Hells Canyon Dam in the 1960s. The Snake River Basin steelhead "B-run" population levels remain particularly depressed. The ICBTRT has not completed its viability assessment for Snake River Basin steelhead.

The proposed action is located entirely in the Salmon River MPG, which consists of 12 individual populations. Since there are 12 populations in the Salmon River MPG, at least six must be viable for the MPG to be viable and all remaining populations need to be maintained (McElhany et al. 2000). Three of the Salmon River MPG populations (i.e., Lower Middle Fork, Upper Middle Fork, and Panther Creek) would be affected by the proposed action. The 3.5 miles of mainstem Salmon River within the Panther Creek population is entirely migratory habitat and will not be discussed in detail in this Opinion due to the lack of significant effects in that area. There are insufficient population data to complete viability assessments for these populations. Preliminary estimates of abundance and productivity data were made for generic A- and B-run populations. The generic datasets were derived by evaluating "wild" fish counts at Lower Granite Dam and distributing the wild counts equally across the respective number of populations for each life history (ICBTRT 2010). Because the average size category across populations was intermediate, the ICBTRT measured abundance/productivity risk against a minimum threshold of 1,000 spawners with a minimum productivity of 1.14 recruits per spawner. Results indicated all three populations are at High abundance/productivity risk and are not viable Table 4.

Table 4. Current Viability Status of the Lower Middle Fork Steelhead Population Potentially Affected by the Proposed Action.

		Spatial Structure/Diversity Risk			
		Very Low	Low	Moderate	High
Abundance/ Productivity Risk	Very Low (<1%*)	HV	HV	V	M
	Low (1-5%)	V	V	V	M
	Moderate (5-25%)	M	M	M	Panther Creek
	High (>25%)		Lower MFSR, Upper MFSR		

Viability Key: HV – Highly Viable; V – Viable; M – Maintained; Shaded cells-- not meeting viability criteria (darkest cells are at greatest risk)

*The identified percentage values indicate the risk of population extinction over a 100 year time period (ICBTRT 2007)

For A-run fish, the calculated 10-year geometric mean natural abundance was 556 fish, or just 56% of the minimum threshold abundance. Productivity calculations produced a generic 20-year mean return/spawner value of 1.86, higher than the 1.14 required at 1,000 spawner abundance (Table 5). For B-run fish, the calculated 10-year geometric mean natural abundance was 345, or just 35% of the minimum threshold abundance. Productivity calculations produced a 20-year mean return/spawner value of 1.09, just less than the 1.14 required at 1,000 spawner abundance.

Table 5. Abundance/Productivity values for affected populations in the action area.

Population	Life History	Population Size	Abundance		Productivity	
			Generic 10-year Geomean Adult Returns	Minimum Abundance	Generic 20-Year Return/Spawner Average	Minimum Requirement for Viable Status
Lower MFSR	B-Run	Intermediate	345	1,000	1.86	1.14
Upper MFSR	B-Run	Intermediate	345	1,000	1.86	1.14
Panther Creek	A-Run	Basic	556 ¹	500	1.09	1.14

¹Estimate was for an intermediate size population.

All populations in the MPG are currently at sufficiently low spatial structure/diversity risk to achieve population-level and MPG-level viability. However, none of the populations currently meet population-level viability criteria because of Moderate abundance/productivity risks. The VSP parameters abundance and productivity are currently the primary or sole impairments to population viability. Survival rate increases that lead to increases in abundance and productivity will need to occur before the populations can be considered viable. There is a high degree of uncertainty in the abundance/productivity risk ratings for these populations, as only an average dataset has been applied.

Limiting factors identified for Snake River Basin steelhead include: (1) Hydrosystem mortality; (2) reduced stream flow; (3) altered channel morphology and floodplain; (4) excessive sediment; (5) degraded water quality; (6) harvest impacts; and (7) hatchery impacts (NMFS 2010). Major threats to Snake River Basin steelhead in the action area are out of basin survival.

Snake River Sockeye Salmon ESU. The first formal ESA status review for salmon in the Pacific Northwest was conducted in response to a 1990 petition to list sockeye salmon from Redfish Lake in Idaho as an endangered species. The Snake River sockeye salmon ESU was listed as “endangered” in November 1991 (56 FR 58619) and included populations of anadromous sockeye salmon from Redfish Lake and the Snake River Basin, Idaho (extant populations occur only in the Salmon River drainage).

After the 1991 ESA listing, additional forms of residual sockeye salmon were identified within Redfish Lake. The three identified forms of sockeye salmon in Redfish Lake make the population unique within the range of the species: (1) an anadromous, shoal spawning population; (2) a resident, shoal spawning population with the same genetic haplotype as the anadromous form; and (3) a resident “kokanee” (with a similar but different haplotype) that spawns in Fishhook Creek (Waples et al. 1997). This ESU was updated in 1993 to include these residual sockeye salmon in Redfish Lake and progeny of fish that are propagated artificially in the captive broodstock program (58 FR 17573). The most proximate spawning area remaining for sockeye salmon from the proposed action area occurs within Redfish Lake, approximately 20 to 80 air miles south southwest (approximately 200 river miles upstream of the MFSR’s mouth).

Historically five lakes in the Stanley Basin were thought to have contained sockeye salmon: Alturas, Pettit, Redfish, Stanley, and Yellowbelly (Bjornn et al. 1968). All of the lakes fall within the Snake River sockeye salmon ESU. At the time of ESA listing, Redfish Lake was the only lake with an extant population; the rest had been extirpated as a result of irrigation diversions, Sunbeam Dam, overfishing, and historical eradication efforts by the IDFG in the mid-1900s. Reintroduced sockeye are now found in Redfish Lake, Alturas Lake, and Petit Lake.

Adult Snake River sockeye salmon begin to enter the Columbia River in early June and generally reach the spawning lakes between June through the end of September. Within the action area, adult sockeye salmon are expected to be migrating through the 3.5 mile main Salmon River reach during floating season. The entire mainstem Salmon River downstream from Alturas Lake Creek has been designated as critical habitat for sockeye salmon (50 CFR Part 226, December 28, 1993), but all spawning and rearing habitat for the Idaho population occurs in the Stanley Basin. Anadromous sockeye salmon returning to spawn in Redfish Lake in Idaho’s Stanley Basin are unique in that they travel a greater distance from the sea (approximately 900 miles) to a higher elevation (6,600 feet) than any other sockeye salmon population in the world (Waples *et al.* 1991).

Recent annual abundances of natural origin sockeye salmon to the Stanley Basin have been extremely low. No natural origin anadromous adults have returned since 1998 and the abundance of residual sockeye salmon in Redfish Lake is unknown. The ESU is entirely

supported by adults produced through the captive broodstock program. Sockeye returning to Redfish Lake Creek and Sawtooth Hatchery from 1995 to 2009 ranged from 0 to 833 adults (Table 6.). The current average productivity likely is substantially less than the productivity required for any population to be at Low extinction risk (1% to 5%) at the minimum abundance threshold. The Snake River sockeye salmon ESU is not currently viable based on recent abundance and productivity information.

Table 6. Actual or estimated numbers of anadromous sockeye reaching Redfish Lake Creek and the Sawtooth Hatchery 1995-2009.

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Fish	0	1	~4-8	1	7	257	26	22	3	27	6	3	4	650	833

2.1.1.2. Status of Critical Habitat

NMFS reviews the status of designated critical habitat affected by the proposed action by examining the condition and trends of primary constituent elements (PCEs) throughout the designated area. The PCEs consist of the physical and biological features identified as essential to the conservation of the listed species in the documents that designate critical habitat (Table 7).

Table 7. Types of sites and essential physical and biological features designated as PCEs, and the species life stage each PCE supports.

Site	Essential Physical and Biological Features	ESA-listed Species Life Stage
Snake River Steelhead^a		
Freshwater spawning	Water quality, water quantity, and substrate	Spawning, incubation, and larval development
Freshwater rearing	Water quantity & floodplain connectivity to form and maintain physical habitat conditions	Juvenile growth and mobility
	Water quality and forage ^b	Juvenile development
	Natural cover ^c	Juvenile mobility and survival
Freshwater migration	Free of artificial obstructions, water quality and quantity, and natural cover ^c	Juvenile and adult mobility and survival
Snake River Spring/summer Chinook Salmon		
Spawning & Juvenile Rearing	Spawning gravel, water quality and quantity, cover/shelter, food, riparian vegetation, and space	Juvenile and adult.
Migration	Substrate, water quality and quantity, water temperature, water velocity, cover/shelter, food ^d , riparian vegetation, space, safe passage	Juvenile and adult.
Snake River Sockeye Salmon		
Spawning & Juvenile Rearing	Spawning gravel, water quality and quantity, water temperature, food, riparian vegetation, and access	Juvenile and adult.
Migration	Substrate, water quality and quantity, water temperature, water velocity, cover/shelter, food ^d , riparian vegetation, space, safe passage	Juvenile and adult.

a Additional PCEs pertaining to estuarine, nearshore, and offshore marine areas have also been described for Snake River steelhead. These PCEs will not be affected by the proposed action and have therefore not been described in this Opinion.

b Forage includes aquatic invertebrate and fish species that support growth and maturation.

c Natural cover includes shade, large wood, log jams, beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

d Food applies to juvenile migration only.

Since the ESA-listed species addressed in this Opinion occupy many of the same geographic areas and have similar life history characteristics, PCEs are similar. In general, these PCEs include sites essential to support spawning, rearing, migration, and foraging and contain physical or biological features essential to the conservation of the listed species (e.g., spawning gravels, water quality and quantity, side channels, or food).

When designated as critical habitat, the action area contained one or more PCEs within the acceptable range of values required to support the biological processes for which ESA-listed species use that habitat. The PCEs most likely to be affected by the proposed action include water quality (chemical contamination), spawning substrate, food (invasive species), and riparian vegetation. Any modification of these PCEs may affect freshwater spawning, rearing or migration in the action area. Proper function of these PCEs is necessary to support successful adult and juvenile migration, adult holding, spawning, incubation, rearing, and the growth and development of juvenile fish. The riparian zone adjacent to critical habitat waterways is also considered critical habitat for spring/summer Chinook salmon. The riparian zone typically extends outward 300 feet from the normal high water mark and is critical because it provides shade, sediment and nutrient/chemical regulation, streambank stability, and input of large woody debris (LWD)/organic matter to the aquatic habitat.

Migratory habitat quality for the affected ESUs/DPS has been impacted by the development and operation of the Federal Columbia River Power System dams in the mainstem Columbia River and privately owned dams in the Snake and Upper Columbia River basins. Hydroelectric development has modified natural flow regimes, resulting in higher water temperatures, changes in fish community structure leading to increased rates of piscivorous and avian predation on juvenile salmonids, and delayed migration time for both adult and juvenile salmonids. Physical features of dams such as turbines also kill migrating fish. Construction of Hells Canyon Dam eliminated access to several historic production areas in Oregon and Idaho including the Burnt, Powder, Weiser, Payette, Malheur, Owyhee, and Boise River basins (Good *et al.* 2005).

The MFSR and its tributary stream's fish habitat are mostly pristine as the majority of the basin is designated as wilderness. Some localized areas in the MFSR basin have been more extensively developed and habitat quality has minor impairments. Lack of summer stream flows, impaired water quality, and reduction of habitat complexity are issues for critical habitat in the few developed areas. Management activities on Federal lands outside designated wilderness include limited road construction, historic mining activities, grazing, minor timber extraction, fire management, and recreational activities, including outfitter and guide services.

Climate change is likely to have negative implications for the conservation value of designated critical habitats in the Pacific Northwest (CIG 2004; Scheuerell and Williams 2005; Zabel et al. 2006; Independent Scientific Advisory Board [ISAB] 2007). Average annual Northwest air temperatures have increased by approximately 1°C since 1900, or about 50% more than the global average warming over the same period (ISAB 2007). The latest climate models project a warming of 0.1 °C to 0.6 °C per decade over the next century. According to the ISAB, these effects may have the following physical impacts within the next 40 or so years:

- Warmer air temperatures will result in a shift to more winter/spring rain and runoff, rather than snow that is stored until the spring/summer melt season.
- With a shift to more rain and less snow, the snowpacks will diminish in those areas that typically accumulate and store water until the spring freshet.

- With a smaller snowpack, these watersheds will see their runoff diminished and exhausted earlier in the season, resulting in lower streamflows in the June through September period.
- River flows in general and peak river flows are likely to increase during the winter due to more precipitation falling as rain rather than snow.
- Water temperatures will continue to rise, especially during the summer months when lower streamflow and warmer air temperatures will contribute to the warming regional waters.

These changes will not be spatially homogenous. Areas with elevations high enough to maintain temperatures well below freezing for most of the winter and early spring would be less affected. Low-lying areas that historically have received scant precipitation contribute little to total streamflow and are likely to be more affected. These long-term effects may include, but are not limited to, depletion of cold water habitat, variation in quality and quantity of tributary rearing habitat, alterations to migration patterns, accelerated embryo development, premature emergence of fry, and increased competition among species.

2.1.2. Environmental Baseline

‘Environmental baseline’ includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR 402.02). An environmental baseline that does not meet the biological requirements of a listed species may increase the likelihood that adverse effects of the proposed action will result in jeopardy to a listed species or in destruction or adverse modification of a designated critical habitat.

NMFS describes the environmental baseline in terms of the biological requirements for habitat features and processes necessary to support all life stages of each listed species within the action area. Each listed species considered in this Opinion resides in or migrates through the action area. Thus, for this action area, the biological requirements for Chinook salmon and steelhead are the habitat characteristics that support successful completion of spawning rearing, and freshwater migration. For sockeye salmon, habitat characteristics necessary for successful freshwater migration are required.

2.1.2.1. Chinook Salmon Presence in Action Area

Due in part to the remoteness of the area, monitoring has not been conducted throughout the spawning season, therefore, there is no conclusive information regarding the timing of Chinook spawning in the mainstem MFSR. Based upon the timing of spawning in the upper tributaries, spawning likely commences in the mainstem MFSR in mid-August.

NMFS modeled intrinsic habitat potential for spawning and rearing habitat (ICBTRT 2007b). Modeling suggests intrinsic spawning habitat primarily occurs in the Marsh Creek and Elkhorn-MFSR 5th field Hydrologic Unit Code (HUC), which is in the upper portion of the action area. Annual surveys of Chinook salmon spawning activity from the headwaters and tributaries of the MFSR to the confluence with the main Salmon River have been conducted by the U.S. Forest Service Rocky Mountain Research Station since 1996. The majority of spawning (98%) they documented occurs in tributaries to the MFSR. On average, just 2% of the annual Chinook salmon run spawn in the mainstem MFSR. No spawning activity has been recorded in the main Salmon River from the confluence of the MFSR downstream to Cache Bar.

Within the MFSR, Chinook salmon redds have been identified from the headwaters of Marsh Creek to approximately 3 miles above the confluence of the MFSR with the main Salmon River (Thurow 2009). Redd densities are not be expected to be continuous across this entire length of river as much of the river is too steep and substrate too large to provide suitable spawning habitat. This results in individual or small concentrations of redds being widely distributed in sites providing suitable substrate and water conditions throughout the mainstem MFSR.

Actions or activities that have occurred or continue to occur within the Upper and Lower MFSR Watersheds are historic mining, livestock grazing, trails, water diversions, outfitting and guide operations, back-country airstrips, and recreation. There are several private inholdings within the wilderness. The principal landscape-changing force in the area is wildfire, which is predominantly lightning-caused.

Within the action area, redd data identified between three and 44 redds in the unpermitted section of Marsh Creek and the MFSR (from Highway 21 to Dagger Falls). Within the permitted section, surveys on the mainstem MFSR indicate that most redds occur within the Little Loon 5th field HUC, with larger numbers observed in the early 2000s and lower numbers observed during the mid and late 2000s (Table 8 and Appendix B). Redd numbers in the permitted section ranged from zero to 34 during this period but were fewer than 16 in 11 of the 13 years for which data are available. Considering the total number of observed redds in the entire MFSR, an average of 2% of the total number of observed redds were exposed to floatboating annually, but the impacts ranged from 0% to 6.5% of observed redds.

Table 8. Redd Counts within Mainstem Marsh Creek and Mainstem MFSR, by HUC 5 Watershed within the Action Area.

Unpermitted Section Watersheds ¹		Permitted Section Watersheds ²			
Year	Marsh and Elkhorn	Elkhorn	Little Loon	Wilson	Papoose
1996	2	1	0	0	0
1997	6	0	4	0	0
1998	8	3	1	0	0
1999	3	0	0	0	0
2000	4	0	6	9	1
2001	38	8	18	8	0
2002	39	4	8	0	0
2003	44	11	10	1	5
2004	4	3	6	2	1
2005	11	3	3	0	0
2006	5	1	1	1	0
2007	9	1	2	0	0
2008	10	3	1	2	0

¹ Marsh Creek from Highway 21 to Dagger Falls

² Dagger Falls to confluence with the main Salmon River

2.1.2.2. Steelhead Presence in Action Area

There is very little information on spawning Snake River Basin steelhead in the mainstem MFSR. Mainstem spawning likely occurs in scattered locations but comprehensive redd surveys have not been completed. The MFSR tributaries likely support the majority of steelhead spawning in the MFSR. Core spawning areas within the subbasin are within tributaries (ICBTRT 2003).

High potential intrinsic spawning habitat for steelhead (ICBTRT 2007b) occurs mostly in the Marsh Creek and Elkhorn-MFSR 5th field HUCs. These areas are located at the upstream end of the action area. Spawning is believed to initiate in early April and may last through mid June, with eggs incubating through the second week of July (USBWP 2005). The BA cited personal communications with Russ Thurow who suggests steelhead incubation in the MFSR drainage can potentially extend as late as the third week of August, if and when cool seasonal conditions were to result in late season spawning followed by low stream temperature regimes which prolong incubation periods.

2.1.2.3. Baseline Habitat Conditions

The MFSR is a major tributary of the Salmon River, with a drainage area of approximately 2,830 square miles. Elevations within the basin range from 10,400 feet in the headwater mountains to 3,030 feet at the confluence with the mainstem Salmon River. The drainage basin

is approximately 69% forested, and receives approximately 27 inches of annual precipitation (USGS 2009). The MFSR has a mean annual flow of approximately 2,754 cubic feet per second (cfs) near its mouth. Flows generally peak in June and are at their lowest in February. Streamflows near the Middle Fork Lodge (elevation 4,380 feet) are typically about one-half the volumes observed near the mouth.

Soils over much of the area are granitic parent material and include quartz monzonites of the Idaho Batholith. Elevations range from 6,600 feet, where Marsh Creek is accessible from Highway 21, to 3,030 feet at the confluence of the MFSR and the main Salmon River. Vegetation at the upper portion of the analysis area consists of forest communities of Douglas-fir, grand fir, and subalpine fir, with pockets of lodgepole pine and aspen. Lower elevation plant communities consist of grasslands, shrublands, ponderosa pine and Douglas-fir (Kosterman et al. 2008).

Fish habitat conditions of mainstem reaches and tributaries of the MFSR are in generally pristine condition. Overall physical habitat quality, including the elements of water quality, flow/hydrology, channel conditions and structural habitat elements is considered good, and connectivity is excellent. The Idaho Department of Environmental Quality (IDEQ) completed the Idaho Assessment of Ecological Condition and identified the MFSR as a “least impacted” waterbody which was rated in “good” condition based on physical habitat characteristics, water chemistry metrics, and macroinvertebrate communities (Kosterman et al. 2008).

While limited data is available, indications are that aquatic habitats within the Marsh Creek, Elkhorn, Little Loon, Wilson, and Papoose watersheds are in good to excellent condition. Marsh Creek is the only drainage within the analysis area that has a developed total maximum daily load (TMDL) for temperature. Effective shade targets have been identified for the source to Knapp Creek reach, which is above the action area. The portion of Marsh Creek within the action area does not have a developed TMDL (Kosterman et al. 2008).

Approximately 95% of the affected watersheds lie within designated wilderness, and habitat conditions are generally considered to be within the natural ranges of variability and functionality. Disturbances within the watershed have not been of sufficient scope or magnitude to influence flow regimes in the MFSR or produce significant increases in drainage networks within tributaries. Very little of the watersheds vegetation stands are less than 30 years old. Riparian habitats are considered to be in good to excellent condition. Anthropomorphic habitat alterations are minimal. Fire is a prominent landscape-level perturbation. Debris flows are common occurrences in recently burned areas after heavy, localized rainstorms. These debris flows result in increased sedimentation and channel alterations, such as localized damming. They also contribute episodic LWD pulses to the river system.

The SCNF final BA ranked MFSR habitat baseline conditions for each 5th field HUC using NMFS’ matrix of pathways and indicators process (NMFS 1996). Nearly all habitat indicators

for all five 5th field HUCs in the action area³ are “*functioning appropriately.*” Only the Cottonwood Creek- Salmon River HUC had any indicators categorized as “*functioning at risk.*” These indicators were water temperature, sediment, streambank condition, and riparian conservation areas.

2.1.3. Effects of the Action

‘Effects of the action’ means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02). Effects of the action that reduce the ability of a listed species to meet its biological requirements may increase the likelihood that the proposed action will result in jeopardy to that listed species or in destruction or adverse modification of a designated critical habitat.

The proposed action would authorize boats to float through sections of river while spring/summer Chinook salmon and steelhead are preparing redds and potentially after redds are established. For redds that occur within the action area, passing boats could potentially displace fish and reduce adult energy reserves, or grounded boats and/or wading boaters and campers may cause damage to eggs by trampling. Because of the distance these ESA-listed fish travel and their proximity to realizing their reproductive potential, human-induced disturbances of pre-spawning or spawning fish could result in reduced reproductive success, and/or premature death. Damage to embryos in the gravel may occur if boats ground or floaters wade over redds.

In an evaluation of energy expenditure from migration until after spawning, Mesa and Magie (2006) reported that Chinook salmon in the Yakima River used 95% to 99% of their muscle and 73% to 86% of their visceral lipid stores by the time of death. Although they did not report on energy reserves during spawning initiation, these values suggest that any additional energy use could reduce energy reserves, which could have adverse effects on survival and/or reproductive success. Low numbers of returning adult salmon increases the importance that each fish that successfully migrates to the area successfully spawns.

2.1.3.1. MFSR Floating Use

The floating segments of the river can be broken down into two primary sections – the “permitted” and “unpermitted” sections. The permitted section begins at the Boundary Creek boat ramp, approximately 0.5 miles below Dagger Falls, and extends downstream to the Corn Creek boat ramp (approximately 100 miles). At low water levels private floaters and outfitters often launch from Indian Creek, Flying B Ranch, Loon Creek, and Little Creek. These trips account for approximately 28% of annual river launches. Indian Creek is the most popular alternative launch point (i.e., 22% of total launches) and is approximately 25 miles downstream

³ Fifth field HUCS in the action area include: (1) Marsh Creek – 1706020503; (2) Upper Middle Fork Elkhorn Creek – 1706020504; (3) Upper Middle Fork-Little Loon Creek – 1706020506; (4) Upper Middle Fork-Wilson Creek – 1706020506; (5) Lower Middle Fork-Papoose Creek – 1706020610; (6) Cottonwood Creek – Salmon River – 1706020701.

of Dagger Falls. The other launch points are further downstream. Floaters using these launch points do not float the upper section⁴ which is the shallowest and most prone to boat grounding. The unpermitted section begins at the Highway 21 crossing of Marsh Creek, extends 16 miles down Marsh Creek to its confluence with the MFSR, and continues to Dagger Falls for a total of approximately 28 miles. This reach is primarily floated early in the season when snow restricts access to Dagger Falls. An average of 32 launches float this reach annually (approximately 5% of total launches).

River launches, commercial and private, are limited to seven per day during the control season. Four of the seven daily launches are allocated to non-commercial parties. Commercial group size may be up to 30 people, although the average is 24 per group. Non-commercial group size is limited to 24 people, with an average size of 9 per group. The 10 year average number of craft and people floating the MFSR is provided in Table 9. Overall, there is an average of seven boats per group. However, the number of boats per group is not regulated, and this number has been rising. Assuming the maximum of seven groups (commercial and non-commercial), with an average of seven boats per group, a low estimate of 49 boats may pass any given point on the river during a single day. However, since the number of craft is not regulated, the number could be theoretically as high as 168 to 210 boats daily (assuming one boat per person). Groups are usually on the river from 10:00 AM to 4:00 PM each day and generally travel together. Some groups get widely dispersed along the river due to varying craft speed, group activities, and skill levels. However, in a typical situation, with seven groups on the river, the average interval between groups would be approximately 45 minutes.

Table 9. River Use Statistics for Control and Non-Control Seasons on the MFSR.

Year	# Control Season Permits (05/28-09/03)	# People (Control Season)	# Non-Control Season Permits	# People (Non-Control Season)	Total # Permits	Total # People	Total # of Craft
2000	480	8,877	110	828	590	9,705	5,046
2001	531	8,598	165	1,339	696	9,937	4,250
2002	592	9,753	153	1,162	745	10,915	5,532
2003	564	9,280	174	1,229	738	10,509	5,400
2004	608	9,911	150	1,165	758	11,076	5,557
2005	650	9,858	163	1,101	813	10,959	6,124
2006	567	10,063	110	883	677	10,946	5,217
2007	522	8,404	95	555	617	8,959	4,523
2008	588	9,501	159	1,107	747	10,608	5,088
2009	622	9,001	157	1,002	779	10,003	5,012
10 Yr Avg.	572	9,325	144	1,037	716	10,362	5,175

⁴ Some boats are deadheaded (i.e., floated without passengers and with no camps) from the Boundary Creek launch down to the alternative launch site). Deadheaded boats can result in more boats launching from Boundary than the 7 party limit identified in the proposed action.

2.1.3.2. Habitat Effects

An average of 10,362 people will be dispersed across 99 individual campsites each year. Each day an average of 588 people will be scattered across these camps. This use has the potential to degrade streamside areas or water quality. However, the SCNF has established multiple conservation measures intended to reduce the potential for water quality impacts and to minimize the potential for riparian degradation. Significant conservation measures being required of permittees include: (1) Requiring all human waste, unburnable litter and refuse be packed out; (2) prohibiting use of soap in rivers or in hot springs; (3) prohibiting cutting of standing trees (live or dead) for firewood or other purposes; (4) adhering to minimum party size; and (5) requiring the use of fire pans and the packing out of fire ash/residue. In addition, the SCNF has established standards and guidelines in their Wilderness Plan that will also reduce potential impacts on habitat from floatboating activities. Section 1.2.6 above described the entire list of options but more prominent measures include regular evaluation of campsite conditions with limits on allowed disturbance levels and the ability to modify or completely restrict use of problem sites.

The SCNF monitoring of campsite conditions completed in 2009 indicated that 28% of sites are in Frissell Condition Class IV and 9% are in Condition Class V. This indicates that there are areas of bare soil, trailing, lack of firewood, non-native species present, and vegetative impacts (see appendix A for complete definitions). Camps in condition class V currently exceed SCNF standards of less than 7% of sites at a Class V level. NMFS assumes that the specific management actions described in section 1.2.6 will be taken to improve sites that are currently exceeding plan standards. Included in potential mitigations is the closing of campsites where necessary to provide for public health and safety or to protect resources and remain consistent with SCNF Wilderness Plan standards. Combined, these measures are anticipated to limit effects from camp use to an insignificant level.

2.1.3.3. Aquatic Invasive Species

Risk of AIS is also a habitat related impact but is discussed individually. High risk species for the action area include zebra and quagga mussels, New Zealand mud snails, and Didymo. New Zealand mud snails are classified as high priority nuisance species known to occur in Idaho. No AIS are currently known to occur in the action area, although New Zealand mud snails have been found in the main Salmon River near the mouth of the Pahsimeroi River and near Tower Rock Campground, approximately 11 miles south of North Fork, Idaho. Didymo has also been found in the Salmon River.

The AIS infestations within the action area waterways could alter fundamental food webs and habitat structure (Strayer et al. 1999, IISC Tech. Committee 2007). The mussels are very proficient filter-feeders that remove substantial amounts of phytoplankton and suspended particulates from the water. This removes the food source for zooplankton and alters the food web significantly. The mussels are also effective bioaccumulators of pollutants, which can affect

species that feed upon them. The snails are classified as scraper/grazers and feed on diatoms, plant and animal detritus, and attached periphyton. Because of their densities, they cause a decrease in native macroinvertebrate populations and significantly alter primary production.

Larvae and adults can be transported by recreational boats, trailers, and equipment. Adults can survive out of water for weeks if temperatures are cool and humidity is high (USFWS 2007). Snails are transported to new waterbodies by vectors such as wet equipment, boats, fishing gear, and clothing. Mud snails have no attachment mechanism, but they can be carried on or in debris, mud, vegetation, and standing water in boats and equipment. Mud snails can live for weeks out of water in wet and cool conditions, but are killed by heat and drying (Richards et al. 2004).

The New Zealand mud snail presents a principle threat currently. They have been documented in the Salmon River, upstream of the MFSR confluence, in two locations. They are known to colonize riverine habitats similar to those within the action area, and are opportunistic and invasive. Once colonized, they rapidly expand, replace, and dominate the native prey base for salmonids throughout accessible habitats (Kerans et al 2005). Tragically, as salmonids prey on them, they provide little nutrition since they are poorly assimilated within salmonid digestive systems, leading to reduced fitness (Vinson and Baker 2008).

The SCNF has proposed measures to reduce the threat of inadvertent introduction of AIS and they are anticipated to be effective. Principle measures include: (1) It will be the responsibility of the permit holder to ensure that all craft and equipment be dry and clean⁵ at arrival to launch point; (2) boats will be checked at the designated launches during the permit control season to ensure they are not an obvious vector for aquatic nuisance species (i.e., dry and clean); (3) AIS education will be added to the mandatory control season boater orientation; (4) AIS educational materials will be included in packets sent to permit holders; and (5) the Idaho Invasive Species Act (IISA) of 2008 requires all boats over 10 feet in length have a valid Idaho Invasive Species Fund (IISF) sticker displayed to legally launch and operate in Idaho. These measures are believed to greatly reduce the threat of infestation by the proposed action. For example, Rothlisberger et al. (2010) found that high and low pressure washing were 91% and 74% effective, respectively, in removing small bodied organisms. Effectiveness of these measures on smooth hulled boats common in the action area is likely to be higher. The SCNF proposed compliance checks are anticipated to ensure boats are in fact clean and dry prior to launching. For these reasons the risk of AIS infection of the action area as a result of the proposed action are very small and discountable.

2.1.3.4. Steelhead Exposure to Floatboats

Although Snake River Basin steelhead and their redds are likely to occur in the action area during the permitted activities, there is very little potential for significant exposure to occur. Snake River Basin steelhead spawning occurs from mid-April to June and corresponds with high water floating conditions. Steelhead typically spawn in smaller streams than Chinook salmon and within the action area, the highest potential for exposure is in the unpermitted section from

⁵ Clean means no vegetation, mud, or debris clinging to boats or equipment. Dry means no standing water in boats or equipment and no wet equipment that could provide substrate to AIS.

Highway 21 to Dagger Falls. Floating use of this reach primarily occurs during early spring, before the onset of steelhead spawning, but some use may occur during steelhead spawning. High streamflows during this period provide physical separation between boats and fish and also increase the speed which boats pass a point on the river. Only 22% of all boat launches float this reach of river and group sizes are generally smaller this early in the season. Although some boats are likely to pass over individual steelhead, and potentially redds, the high water and short duration of exposure will not result in significant effects to exposed fish. High water also significantly reduces the likelihood of boats being grounded and thus the risk of physically disturbing a redd is minimal. For these reasons the likelihood of the action having adverse effects on steelhead is discountable and NMFS concurs with the SCNF's determination that the proposed action will be "not likely to adversely affect" Snake River Basin steelhead.

2.1.3.5. Sockeye Salmon Exposure to Floatboats

Sockeye salmon migrate through 3.5 miles of the mainstem Salmon River included in the action area. This is the only overlap of the action with sockeye salmon. The Salmon River is a large river with deep pools below the confluence with the MFSR. This river section does not require a permit to float. However, permitted boats are likely to pass over migrating sockeye salmon en route to the Corn Creek boat ramp. Deep water combined with the migratory behavior of the sockeye salmon in this reach will result in only insignificant effects to exposed fish.

2.1.3.6. Chinook Salmon Exposure to Floatboats

Chinook salmon redds in the action area have been aerially counted and mapped since 1996 (Appendix B). There are several areas that provide appropriate spawning habitat which is demonstrated by repeated spawning occurring there during the period of record. Exposure potential is evaluated for each 5th field HUC in the action area. Likely redd locations are displayed in the figures found in Appendix B.

Marsh Creek. Marsh Creek occurs within the unpermitted section of the action area and floating use is limited to approximately 32 annual launches, all occurring in early spring. Because use occurs only in the early season, before Chinook salmon spawning, no exposure to Chinook salmon would occur in this reach. Chinook salmon eggs buried the previous fall are expected to emerge prior to May and thus only the earliest floaters would have potential to float over incubating eggs.

Marsh Creek cannot be floated until the stream is ice free, typically early May. Road access to the Boundary Creek launch site varies with the weather. Over the past 10 years vehicle access has been possible as early as the second week in May and as late as mid June. Peak flows in Marsh Creek also vary annually but typically crest near mid May. It takes just 1 day to float this reach and users do not typically access any campsites en route to the MFSR proper. Water levels are typically increasing or at their peak when Marsh Creek is being floated and grounding of boats on gravels is infrequent.

Elkhorn-MFSR. Floating activities along the unpermitted section of the MFSR, between the confluence of Bear Valley and Marsh Creeks to Dagger Falls, would not affect spawning Chinook salmon. No commercial trips occur on this reach and private use does not occur here during the Chinook salmon spawning period.

In the permitted section of this HUC, likely spawning habitat occurs near Cable Hole Camp (River mile [RM] 1.6), above Sulphur Slide Rapid (RM 2.45), and above the Chutes Rapid (RM 8.0). Boats may not be able to avoid floating over the spawning habitat above the Chutes, but the other areas are avoidable with a deep thalweg being present on the side of the river opposite of the spawning gravels.

Little Loon-MFSR. Quality spawning gravels were identified in the left and right channels below Big Snag Camp (RM 19.0). Gravels in the right main channel are associated with the pool tailout. Good spawning gravels also occur below Cannon Rapid (RM 19.3). Boats would likely pass over any redds that occur in the right channel and below the rapid. The SCNF indicated that closure of the Big Snag and/or Dolly Lake Camps (RM 19.1) during spawning season (if redds are constructed) may be an option to avoid physical disturbance but did not indicate this was definitively proposed.

Good spawning gravels and documented spawning activity occur in the pool tailout below Sunflower Hot Spring (RM 32.6). This area may be unavoidable for river floaters, but closure of the nearby camp during the spawning season may also help avoid physical disturbance.

Spawning gravels at RM 46.6 cannot be avoided. A camp previously located at this location has been closed and is no longer used. Considerable spawning habitat and documented spawning also occurs right before Loon Creek (approximately RM 49). The width of the channel in this area appears to allow floating to the right or left of the channel to avoid floating directly over spawning gravels.

Wilson-MFSR. Only scattered individual redds have been observed in this HUC. Potential spawning gravels below Wilson Creek (RM 72.9) and above Wollard Creek (RM 74.9) are unavoidable. No spawning activity has been documented at either area making the likelihood of direct disturbance small.

Papoose-MFSR. Only scattered individual redds have been observed in this HUC. Quality spawning substrate exists near the Cliffside Camp (RM 89.7). Keeping boats in the thalweg will easily avoid the spawning gravels present. However, landing and launching near these areas could cause physical disturbance to gravels and redds if present.

Mid Salmon-Cottonwood. No Chinook spawning activity has been documented in this section of the main Salmon River.

Summary. Redd data across the action area was presented in the Environmental Baseline section above. Chinook salmon spawning occurs late in the year when water levels are low. Chinook salmon spawning is widely distributed, occurring across most of the action area. As a result, boats will likely float over some fish and redds, likely in shallow water, causing pre- or

post-spawn fish to flee. Boats could be drug across redds when accessing some designated camp sites and increased human activities near camps may pose additional disturbance risks to nearby spawning fish. However, there is potential to close some camps where these risks are highest and thus minimize the risk. Total redds observed in the permitted section ranged from 0 to 34 during the period of record, but fewer than 16 redds occurred in 85% of the years surveyed. Considering the entire MFSR Chinook salmon run, an average of 2% of the total number of observed redds (not counting Big Creek) were exposed to floatboating annually (range 0% to 6.5%). The greatest number of redds are present in the two upper 5th field HUUS (Elkhorn and Little Loon). Because of low water late in the floatboat season, when Chinook salmon are spawning, a significant number of launches avoid these reaches by launching at alternative sites at least 25 miles downstream of Boundary Creek. This launch pattern reduces the number of boats that may pass by redds in the upper section of the action area.

Fry are expected to have exited gravels by the time boaters float Marsh Creek in the spring. High flows during this period also greatly reduce the likelihood that boats would ground on stream substrate. Therefore there is very little risk of contacting incubating eggs while floating Marsh Creek.

2.1.3.7. Effects on Listed Species

Effects from Floatboat Exposure. The proposed action could directly or indirectly affect adult Snake River spring/summer Chinook salmon redd site selection, redd construction, pre-spawning and spawning behaviors, and/or egg and pre-emergent fry survival. Effects on individual salmon adults, eggs or pre-emergent fry can significantly affect short- and long-term population viability due to the low number of adults expected to return as spawners in most years. Effects to spring/summer Chinook salmon in the action area can be categorized into three approximate periods: (1) Pre-spawning (early to mid August); (2) spawning (mid August to late September); and (3) post-spawning (late September to the following May).

During the pre-spawning period, floating boats or people wading through spawning habitats are likely to disrupt natural site selection behavior by introducing a perceived threat. Fish would likely flee to other, potentially less suitable, habitats, delay spawning, or abandon spawning altogether. There is no monitoring information from the action area to determine the frequency of interactions between boaters and redds. However, two instances of fish abandoning ‘test redds’ that were exposed to floating boats have been observed by the adjacent Sawtooth National Forest (SNF) (2009). Test redds occur naturally so it is impossible to definitively assign floatboating as the cause of the abandonments. However, the SNF observances may reflect potential effects of increased disturbance during this sensitive period.

Spawning site selection and date of redd establishment may be affected by the action. In a study of Chinook salmon and floatboat interactions in the Upper Salmon River, Fornander (2008) concluded no temporal shift in redd initiation occurred and the mean date of redd establishment was consistent between floated and non-floated areas. The Upper Salmon River is similar in

elevation and size to portions of the action area and these results are believed to be an appropriate surrogate. Therefore, the chance of the actions causing significant changes in spawning site selection or redd initiation is discountable.

Pre-spawn and spawning Chinook salmon are near the end of energy reserves (Mesa and Magie 2006), and extra energy expenditures caused from human-induced disturbances could result in premature death, reduced reproductive success, or damage to embryos in gravels (if eggs are laid too shallow). Effects to post-spawn fish are not as severe as these fish have realized their reproductive potential. For the few spawning salmon that are exposed to floatboat activities each year (0 to 34 redds), some critical energy reserves must be used in flight and avoidance behaviors.

Campbell and Moyle (1992) reported that rafting over staging adult Chinook salmon resulted in a six-time increase in the number of individual fish movements made every 20-minutes (1.1 fish movements/20 minutes vs. 0.2 fish movements/20 minutes). However, the number of movements for both the control fish and disturbed fish was still very low. Unfortunately, floatboating has not been researched extensively and there are no studies that address its effect on the reproductive success of spawning salmon (Fornander 2008).

Fish response to the expected disturbances is an important factor in assessing the action's impact. In an attempt to evaluate fish response to floatboating, the adjacent SNF has completed multiple evaluations over the long history of floatboating on that Forest. A summary of these mostly anecdotal observations is provided below:

1. Adult salmon were not typically displaced from redds if boats passed at a distance greater than 25 feet (James 1976; Dufour 1994; Olson 1996; SNF 2009).
2. Salmon typically fled from boats passing within 25 feet of an active redd. Salmon returned to the redd within 5 to 60 minutes of displacement (Ries 1995; Olson 1996; SNF 2009).
3. There are instances when boats float close to active fish and no displacement occurs, even when floaters exhibit heavy paddling in close proximity to spawning fish (SNF 2009; Olson 1996; Dufour 1994).
4. Salmon were observed to routinely move away from redds as a result of natural spawning behavior (e.g., chasing, redd defense from egg eating fish, avoidance of predatory birds, and avoidance of other fishes, etc.) and natural disturbances such as passing ducks and osprey (Ries 1995; Olson 1996; Dufour 1994; SNF 2009).
5. The resulting energy expenditure and effects of displacements on spawning success could not be determined.

Fish behavior observed by the SNF tended to be highly influenced by individual fish and/or individual site characteristics where interactions occurred. For example, salmon were observed to flee some boats when they passed quietly at 40 feet while others remained stalwart with the redd, even when boats passed directly overhead and the occupants were busy paddling.

Although reproductive success is likely to be affected in some instances, the extent of the potential effect has been minimized by the proposed action. Redd surveys for the past 13 years indicate that a maximum of 34 redds have been exposed to floating activities and that most years fewer than 16 redds have been exposed. Because most Chinook salmon in the MFSR populations spawn in tributary streams, an average of less than 2% of documented Chinook salmon redds in the MFSR system have been exposed annually (range 0% to 6.5%). A small number of adult Chinook salmon will be disturbed from floatboat activities, and the total effect of this disturbance on the extended population is expected to be very small.

The SCNF will limit the number of boats to 12 per launch during the Chinook salmon spawning season (August 15 to September 15), and will not reissue cancelled permits during this time period. The SCNF has also included measures that allow real time reporting of new redd locations throughout the season back to the Boundary Creek launch point. Once redds are found, the SCNF proposes to map, identify appropriate avoidance measures, and prescribe quiet floating behavior in those areas to avoid or minimize potential disturbances. The SCNF also proposes to close camp sites where typical activities would cause unnecessary disturbance to redds or spawning fish. The low water levels during Chinook spawning periods also causes many floaters to launch downstream of the primary spawning areas and reduces the number of boats floating there. Under the proposed action, approximately 2% of spawning fish/redds in the MFSR populations could be exposed to floatboating activities.

Once spawning is complete, trampling of redds could also occur if floatboaters exit the boat and walk on a redd, or if a boat becomes grounded in shallow water on a redd. Although Chinook salmon have been recorded to spawn at stream depths between 2 inches and 23 feet (Meehan 1991), Chinook salmon spawning in the action area is believed to occur between 1.5- and 3.5-foot depths. Floatboats draft less than 1 foot of water and typically stay near the deepest portion of the channel to avoid grounding the boat. Although grounding of a boat or walking on a redd is conceivable, no occurrences have been reported. The proposed measures to close campsites where ingress/egress of boats would be near established redds will greatly reduce the potential for redd trampling by floaters. For these reasons, the likelihood of grounding the boat and/or walking on redds is discountable.

For floatboats using the unpermitted reach, Highway 21 to Boundary Creek, there is a discountable chance that boats could ground and disturb or destroy incubating eggs. Fry are expected to have emerged from stream substrates prior to this reach being floated. If some embryos remained in the gravels into May, peak flows during May and early June greatly reduce the likelihood of boats grounding. For these reasons MFSR permit holders that access the MFSR via Marsh Creek have a discountable chance of affecting spring/summer Chinook salmon.

Summary. Available survey data indicates that an average of approximately 2% (range 0% to 6.5%) of the total number of the Chinook salmon redds in the MFSR populations may be

exposed to floatboating each year. Proposed conservation measures will minimize interactions between boats and spawning fish/redds but will not eliminate them. Fish that were observed to be displaced by floating on the SNF returned to their redds within 5 to 60 minutes following the disturbance. For these reasons, floatboat disturbance of pre-spawn and spawning fish is likely to take the form of harassment resulting in minor behavioral responses and not necessarily harm. Because only minor harassment and/or harm is likely to occur, disturbed fish are likely to return to their spawning activities and are expected to survive to spawn. Considering 93.5% to 100% of the MFSR population's redds and the fish tending them will not be exposed to floatboating, and the other 0% to 6.5% of redds/spawning fish are expected to experience only minor harassment and/or harm, the proposed action is not expected to affect VSP parameters of abundance and productivity. Due to the nature of the action, the action has no potential to affect spatial structure/diversity measures. Because the population's VSP criteria will not be significantly affected by the anticipated harassment, the VSP criteria for the ESU will also not be affected. As such the viability of the affected populations will not be reduced.

2.1.3.8. Effects on Critical Habitat

Designated critical habitat for Snake River spring/summer Chinook salmon and Snake River Basin steelhead is present throughout the action area. Designated critical habitat for sockeye salmon is present in the 3.5 miles of mainstem Salmon River in the action area. Critical habitat within the action area has an associated combination of physical and biological features essential for supporting freshwater rearing, migration, and spawning for Chinook salmon and Snake River Basin steelhead, and migration for sockeye salmon. The critical habitat elements potentially affected by the proposed action include water quality (chemical contamination), spawning substrate, food (invasive species), and riparian vegetation.

PCEs - Freshwater spawning, rearing and migration sites

Water Quality – Habitat impacts associated with these actions include the potential introduction of soaps and or human excrement to the MFSR and/or its tributaries. Permits require all wash water be disposed above the ordinary high water mark to reduce potential for delivery to surface waters. Use of soaps below the mean high water level or in hot springs is also prohibited. All human waste, unburnable litter, and refuse is required to be carried off the river and disposed of at designated sites. Urine is discarded in the river. An average of 588 people are on the river and urinating each day. Given the mean monthly discharge of the MFSR near Middle Fork Lodge (approximately halfway down) ranges from approximately 600 cfs to 4,400 cfs, this amount of urine will quickly dissipate in the river and is insignificant.

The MFSR is classified as a “least impacted” waterbody which was rated in “good” condition based on physical habitat characteristics, water chemistry metrics, and macroinvertebrate communities (Kosterman et al. 2008). The proposed action has been occurring for decades and water quality has remained *functioning appropriately*. The proposed conservation measures are expected to retain the *functioning appropriately* condition and minimize the risk of chemical contamination from camp related impacts to an insignificant level.

Substrate – Permittees will routinely camp at 99 designated campsites within the action area. Repeated use of camp sites, along with boat launching and landing, can degrade shoreline and riparian conditions. These impacts can result in minor sediment inputs from campsites during rain events or while snow cover melts off. The SCNF monitored the campsites in 2009 and found that 9% of them were classified as Frissell Conditions Class V (Appendix A). This exceeds the Wilderness Plan standard indicating no more than 7% of sites will be in this class. This rating means there is obvious bank erosion with several satellite areas and several trails present. These impacts increase the likelihood of sediment introductions to the MFSR.

The proposed action indicated the SCNF can take the following course of actions to reduce potential sediment inputs from degraded sites: (1) Educate visitors to change behavior or to encourage protection of certain resource attributes at campsites; (2) decrease use in spring and fall to allow for natural green-up and recovery; (3) restore and block certain areas of a campsites with native material barriers; (4) designate kitchen areas, tent sites and social trails; (5) provide appropriate structures when needed to protect the wilderness resource; and (6) close campsites as needed. Because the current number of sites at Frissell Condition Class V exceeds the Wilderness standard NMFS assumes closure of some sites will occur. The BA indicated that restoration of campsites would be focused where measureable effects to resources were occurring. NMFS assumes that the SCNF will immediately close and/or rehabilitate an appropriate number of campsites to meet the wilderness standards/proposed conservation measures and thus reduce current sediment inputs.

Although there are 99 campsites in the action area, they are distributed across 108 miles of river (216 miles of shoreline). If each campsite's shoreline footprint is a maximum of 150 feet (considered an overestimate), approximately 2.8 miles of action area shoreline (1.3%) would be affected to some degree. Although a measurable amount of the action area will be affected, the SCNF commitment to maintaining site conditions, combined with the high rock content of action area streambanks, should reduce potential for sediment contributions to insignificant levels for this PCE.

Forage – The proposed actions have the potential to introduce AIS to the action area. The AIS introductions would likely result in significant modification to primary production in the action area, which could in turn affect forage opportunities for rearing and migrating fish (IISC Tech. Committee 2007; Kerans et al. 2005; Strayer et al. 1999).

The SCNF proposes several measures to reduce the likelihood of AIS introductions. These measures are: (1) It will be the responsibility of the permit holder to ensure all craft and equipment be dry and clean at arrival to launch point; (2) boats will be checked at the designated launches during the permit control season to ensure they are not an obvious vector for aquatic nuisance species (i.e., dry and clean); (3) AIS education will be added to the mandatory control season boater orientation; (4) AIS educational materials will be included in packets sent to permit holders; and (5) the IISA of 2008 requires all boats over 10 feet in length have a valid IISF sticker displayed to legally launch and operate in Idaho. These measures are believed to greatly reduce the threat of infestation by the proposed action. For example, Rothlisberger et al. (2010) found that high and low pressure washing were 91% and 74% effective, respectively, in removing small bodied organisms. Effectiveness of these measures, on the smooth hulled boats

common in the action area, is likely to be higher. Onsite inspection of craft prior to launch will ensure craft are dry and clean and will significantly reduce the risk of AIS introduction. For these reasons the risk of AIS being introduced to the action area as a result of the proposed action are very small and discountable.

Riparian Vegetation – Effects to riparian vegetation are similar to those described for substrate above. Impacts are only likely to occur at the 99 established campsites along the MFSR. These campsites already exist and riparian impacts associated with landing/launching boats and trailing to campsites are already part of the baseline. Riparian vegetation is *functioning appropriately* at all 5th field HUCs that contain campsites. The Cottonwood Creek- Salmon River HUC's riparian conservation rating was *functioning at risk*, but this HUC has no campsites and the action will not affect riparian vegetation there.

The proposed action prohibits the cutting of standing trees for firewood or other purposes. The SCNF also employs Wilderness Plan standards and guidelines to ensure campsites are unobtrusive and resource conditions do not exhibit a downward trend. The BA identified a sequence of efforts that will be used to address degraded sites (section 1.2.6). These measures are expected to maintain the current *functioning appropriately* conditions for the duration of the proposed action. Therefore, the effects of the actions on riparian vegetation will be insignificant.

2.1.4. Cumulative Effects

'Cumulative effects' are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02). Cumulative effects that reduce the ability of a listed species to meet its biological requirements may increase the likelihood that the proposed action will result in jeopardy to that listed species or in destruction or adverse modification of a designated critical habitat.

Between 2000 and 2009, the population of Custer County decreased by 2.3%, while the populations of Valley and Lemhi Counties increased by 14.1% and 1.3%, respectively⁶. However the action area is almost entirely wilderness with only a few small landlocked private parcels and additional development or growth in the action area is unlikely. Therefore, NMFS assumes that future private actions will continue within the action area at the same level presently occurring. The conservation value of the action area is likely to be maintained with only continuing ongoing private activities on very limited properties in the action area. NMFS is not aware of any specific future non-Federal activities within the action area that would cause greater effects to a listed species or a designated critical habitat than presently occurs.

⁶ U.S. Census Bureau, State and County Quickfacts, Custer, Valley, and Lemhi Counties. Available at <http://quickfacts.census.gov/qfd/states/16/16037.html>

2.1.5. Conclusion

After reviewing the status of spring/summer Chinook salmon, Snake River Basin steelhead, sockeye salmon, their designated critical habitats, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects, NMFS: (1) Concurs with the SCNF determination that the proposed action is “not likely to adversely affect” sockeye salmon, Snake River Basin steelhead, and designated critical habitat for spring/summer Chinook salmon, steelhead, and sockeye salmon; and (2) concludes that the proposed action is not likely to jeopardize the continued existence of spring/summer Chinook salmon. These conclusions are based on the following considerations.

- Spawning Snake River Basin steelhead and their redds mainly occur in tributaries to the MFSR (which are not floated) and in the unpermitted section of the action area. Recreational floating use in the unpermitted section typically only occurs very early in the season when snow prevents land access to Boundary Creek. High water during this period provides physical separation and cover between spawning steelhead and passing boats. These factors combined produce very few boat/fish interactions which occur when there is adequate cover for fish. Therefore, the interactions are expected to be insignificant.
- Sockeye salmon migrate through 3.5 miles of the Salmon River in the action area and will be exposed to passing boats. Deep water combined with the migratory behavior of exposed fish result in only insignificant effects from boats passing overhead.
- Effects of the actions on designated critical habitats are limited to: (1) Potential water quality effects (i.e., soap and excrement) from campers at 99 designated campsites; (2) sediment introductions from campsites; (3) forage impacts from potential AIS introductions; and (4) riparian vegetation impacts at campsites. Conservation measures presented in the proposed action are sufficient to minimize the effects to water quality, to substrate from sediment introduction, and to riparian vegetation to insignificant levels. The SCNF has also proposed to implement multiple measures that reduce the risk of AIS introductions to a discountable level.
- Pre-spawn, spawning, and post-spawn Chinook salmon will be exposed to floatboat activity including ingress/egress to designated campsites. Fewer than 16 redds are likely to be exposed most years but a maximum of approximately 34 redds could be exposed. Minor harassment and/or harm of the fish tending the exposed redds is anticipated. Although the biological endpoint of this type and amount of stress is largely unknown, the effects are believed to be minor as all available anecdotal evidence suggests that harassed fish return to redds shortly after displacement. Therefore, these measures are expected to result in sublethal harassment of pre-spawn, spawning, and post spawn fish, and are generally not expected to result in mortality or failure of adults to spawn. Individual redds are not expected to be trampled because of the SCNF proposed redd monitoring and closure of camps where this could occur. Redd avoidance measures, that

keep boats away from redds, are also proposed to minimize disturbances. Therefore, the proposed action is unlikely to result in mortality and affect the abundance/productivity values of the affected populations.

2.1.6. Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. The following recommendations are discretionary measures that NMFS believes are consistent with this obligation and therefore should be carried out by the SCNF:

1. To mitigate the effects of climate change on ESA-listed salmonids, follow recommendations by the ISAB (2007) to plan now for future climate conditions by implementing protective tributary, mainstem, and estuarine habitat measures; as well as protective hydropower mitigation measures. In particular, implement measures to protect or restore riparian buffers, wetlands, and floodplains; remove stream barriers; and to ensure late summer and fall tributary streamflows.
2. Currently, there are no floating restrictions from Highway 21 to Boundary Creek. Although it likely occurs infrequently, floating this reach in the fall is likely to expose significant numbers of spawning Chinook salmon and incubating eggs to disturbance or potential trampling. To eliminate this risk the SCNF should administratively close floating on this reach from mid August until ice out in the spring.
3. Currently, 9% of designated campsites are Frissell Condition Class V, which exceeds the 7% limit identified in the Wilderness Plan. To ensure sediment and riparian impacts are effectively minimized, the SCNF should immediately begin implementing the processes identified in the BA and in this Opinion to bring campsite conditions in line with the Wilderness Plan's standards and guidelines.
4. To ensure the IISF receives adequate receipts to maintain AIS prevention, education, and control operations in Idaho, the SCNF should deny MFSR permits for craft longer than 10 feet that show up at launch sites without the IISF sticker displayed.
5. The SCNF should post AIS education information at all Federal boat ramps within their jurisdiction to help prevent the transport and introduction of AIS and improve public knowledge of the risks of AIS introduction.
6. AIS education materials should also be prominently displayed on the SCNF website and the Four Rivers Lottery website to inform the public of the risk of introduction and educate them on appropriate preventative measures.

Please notify NMFS if the SCNF carries out any of these recommendations so that we will be kept informed of actions that minimize or avoid adverse effects and those that benefit listed species or their designated critical habitats.

2.1.7. Reinitiation of Consultation

Reinitiation of formal consultation is required and shall be requested by the Federal agency or by NMFS where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that has an effect to the listed species or designated critical habitat that was not considered in the Opinion; or (d) if a new species is listed or critical habitat is designated that may be affected by the identified action (50 CFR 402.16).

To reinitiate consultation, contact the Idaho State Habitat Office of NMFS and refer to consultation number 2010/02467.

2.2. Incidental Take Statement

Section 9(a)(1) of the ESA prohibits the taking of endangered species without a specific permit or exemption. Protective regulations adopted pursuant to section 4(d) extend the prohibition to threatened species. Among other things, an action that harasses, wounds, or kills an individual of a listed species or harms a species by altering habitat in a way that significantly impairs its essential behavioral patterns is a taking (50 CFR 222.102). Incidental take refers to takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(o)(2) exempts any taking that meets the terms and conditions of a written incidental take statement from the taking prohibition.

2.2.1. Amount or Extent of Take

Adult spring/summer Chinook salmon are likely to be exposed to the actions during pre-spawn, spawning, and post-spawning periods. Fish tending redds will be exposed to floatboats and may be displaced. When displacement occurs, fish are expected to temporarily move away from redds for 5 to 60 minutes. This level of harassment is not expected to result in increased energy expenditure that would result in mortality or unsuccessful spawning but is considered harassment and/or harm. Because the action may harass and/or harm exposed ESA-listed fish, take is reasonably certain to occur.

Because redds are established at different dates, the number of fish tending each redd varies, and different numbers of boats float each day, it is impossible for NMFS to determine how many fish will be exposed to floatboat interactions. Therefore, NMFS will use the number of redds

occurring in permitted floating areas as a surrogate for the amount of take. Available survey data (1996 to 2008) observed zero to 34 redds in the permitted section of the action area (Boundary Creek to Corn Creek boat ramp), but fewer than 16 redds occurred in 11 of the 13 survey years. The number of redds in the permitted section appear to remain relatively constant regardless of a large or small return year. This indicates that there may be limited spawning habitat in the mainstem MFSR. Assuming this is true, it is more appropriate to use the highest number of redds observed in the permitted section than the highest percentage of redds that have been observed in the permitted section. Therefore, NMFS will consider the extent of take exceeded if more than 34 redds occur in the permitted section of the MFSR, as determined by the annual aerial count performed in the second week of September. Exceeding this limit will trigger the reinitiation provisions of this Opinion.

2.2.2. Reasonable and Prudent Measures

The RPMs are nondiscretionary measures to avoid or minimize take that must be carried out by cooperators for the exemption in section 7(o)(2) to apply. The SCNF has the continuing duty to regulate the activities covered in this incidental take statement where discretionary Federal involvement or control over the action has been retained or is authorized by law. The protective coverage of section 7(o)(2) will lapse if the SCNF fails to exercise its discretion to require adherence to terms and conditions of the incidental take statement, or to exercise that discretion as necessary to retain the oversight to ensure compliance with these terms and conditions. Similarly, if any applicant fails to act in accordance with the terms and conditions of the incidental take statement, protective coverage will lapse.

NMFS believes that full application of conservation measures included as part of the proposed action, together with use of the RPMs and terms and conditions described below, are necessary and appropriate to minimize the likelihood of incidental take of listed species due to completion of the proposed action.

The SCNF shall:

1. Minimize the incidental take resulting from harm and/or harassment of spring/summer Chinook salmon and their redds that is likely to result from issuance of the permits described in the proposed action.
2. Ensure completion of a monitoring and reporting program to confirm that the terms and conditions in this incidental take statement are effective in avoiding and minimizing incidental take from permitted activities and that the amount of take is not exceeded.

2.2.3. Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the SCNF and its cooperators, including the permittees, must fully comply with conservation measures described as part of the

proposed action and the following terms and conditions that implement the RPMs described above. Partial compliance with these terms and conditions may invalidate this take exemption, result in more take than anticipated, and lead NMFS to a different conclusion regarding whether the proposed action will result in jeopardy or the destruction or adverse modification of designated critical habitats.

1. To implement RPM #1, the SCNF shall ensure that:
 - a. All conservation measures presented in the BA as part of the proposed action and repeated as conservation measures/BMPs in this Opinion are implemented as described.
 - b. Camps are closed as soon as weekly redd surveys identify active or completed redds in a location where normal camp activities (i.e., ingress, egress, swimming, etc.) would affect spawning fish or completed redds. The following camps were identified as those most likely to have redd conflicts:
 - (1) Big Snag and/or Dolly Lake (RM 19.1)
 - (2) Sunflower Hot Spring and Camp (RM 32.6)
 - (3) Cliffside Camp (RM 89.7)
 - c. The following steps are completed immediately after SCNF or participating Outfitter staff identify a new redd in the permitted section:
 - (1) The SCNF River Patrol staff will radio redd coordinates to the Boundary Creek launch site;
 - (2) The SCNF staff at the Boundary Creek and Indian Creek launch sites will immediately add new redd locations to an existing base map, with appropriate landmarks and river mileages;
 - (3) The SCNF staff at the Boundary Creek and Indian Creek launch sites will update the permit holder's river guide map, and distribute a handout describing appropriate redd avoidance measures (e.g., quiet behavior) to safely avoid floating within 25 feet of identified redds (safety permitting), to all departing parties each day.
 - (4) The SCNF staff at Boundary Creek and Indian Creek launch sites will also immediately notify all departing parties of campsites closed to protect spawning Chinook salmon and/or their redds.
 - (5) An online version of the maps and closures described above shall be posted on the SCNF website weekly.

- d. All early season (ice out to mid June) permittees receive a map of all spring/summer Chinook salmon redds identified the previous fall along with instructions to avoid grounding boats in these locations. Maps will cover both the permitted MFSR and the unpermitted action area reach (Highway 21 to Boundary Creek).
2. To implement RPM # 2 the SCNF shall:
- a. Monitor the compliance of commercial and non-commercial floatboaters in meeting the relevant terms and conditions listed above and the conservation measures presented in the proposed action. Monitoring methods shall be defined by the SCNF and reviewed by the Salmon-Challis Level 1 Team before the 2011 floating season begins.
 - b. Annually monitor the number of redds that occur in the permitted section of the action area prior to river closure or review aerial redd count data completed by other parties by mid-September. Monitoring shall continue to spatially map redd locations.
 - (1) If the number of redds identified in the permitted floating section exceeds 34 the SCNF, with input from NMFS Level 1 staff, shall immediately implement additional floating measures, as necessary to protect additional redds for the remainder of the floating season. Subsequently, the SCNF shall notify NMFS to reinitiate ESA consultation.
 - c. The SCNF shall submit an annual report to NMFS by March 1 addressing the monitoring identified in the proposed action and these terms and conditions.
 - (1) Submit post-project report to:

Idaho State Director
Habitat Conservation Division
National Marine Fisheries Service
Attn: 2010/02467
10095 W Emerald St.
Boise, ID 83704

3. MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT

The consultation requirement of section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions, or proposed actions that may adversely affect EFH. Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside EFH, and may include

site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that may be taken by the action agency to conserve EFH.

The Pacific Fishery Management Council (PFMC) has designated EFH for Chinook salmon (PFMC 1999). The proposed action and action area for this consultation are described in the introduction to this document. The action area includes areas designated as EFH for various life-history stages of Chinook salmon. Based on information provided in the BA and the analysis of effects presented in the ESA portion of this document, NMFS concludes that proposed action will have no adverse effects on EFH designated for Pacific Coast salmon.

3.1. EFH Conservation Recommendations

Because there are no adverse effects to EFH, no conservation measures are necessary to avoid, mitigate, or offset the impact of the proposed action on EFH.

3.2. Supplemental Consultation

The SCNF must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations [50 CFR 600.920(l)(1)].

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

Section 515 of the Treasury and General Government Appropriations Act of 2001 (Public Law 106-554) (Data Quality Act [DQA]) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the Opinion addresses these DQA components, documents compliance with the DQA, and certifies that this Opinion has undergone pre-dissemination review.

Utility: Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users.

This ESA consultation concludes that the proposed issuance of commercial, non-commercial and administrative floating permits will not jeopardize the affected listed species. Therefore, the SCNF can authorize these actions in accordance with its authority under National Forest Management Act of October 22, 1976. The intended users are the SCNF and their permittees.

Individual copies were provided to the above-listed entities. This consultation will be posted on NMFS Northwest Region website (<http://www.nwr.noaa.gov>). The format and naming adheres to conventional standards for style.

Integrity: This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

Objectivity:

Information Product Category: Natural Resource Plan.

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including NMFS ESA Consultation Handbook, ESA Regulations, 50 CFR 402.01, *et seq.*, and the MSA implementing regulations regarding EFH, 50 CFR 600.920(j).

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the Literature Cited section. The analyses in this Opinion/EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with Northwest Region ESA quality control and assurance processes.

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APPENDIX A

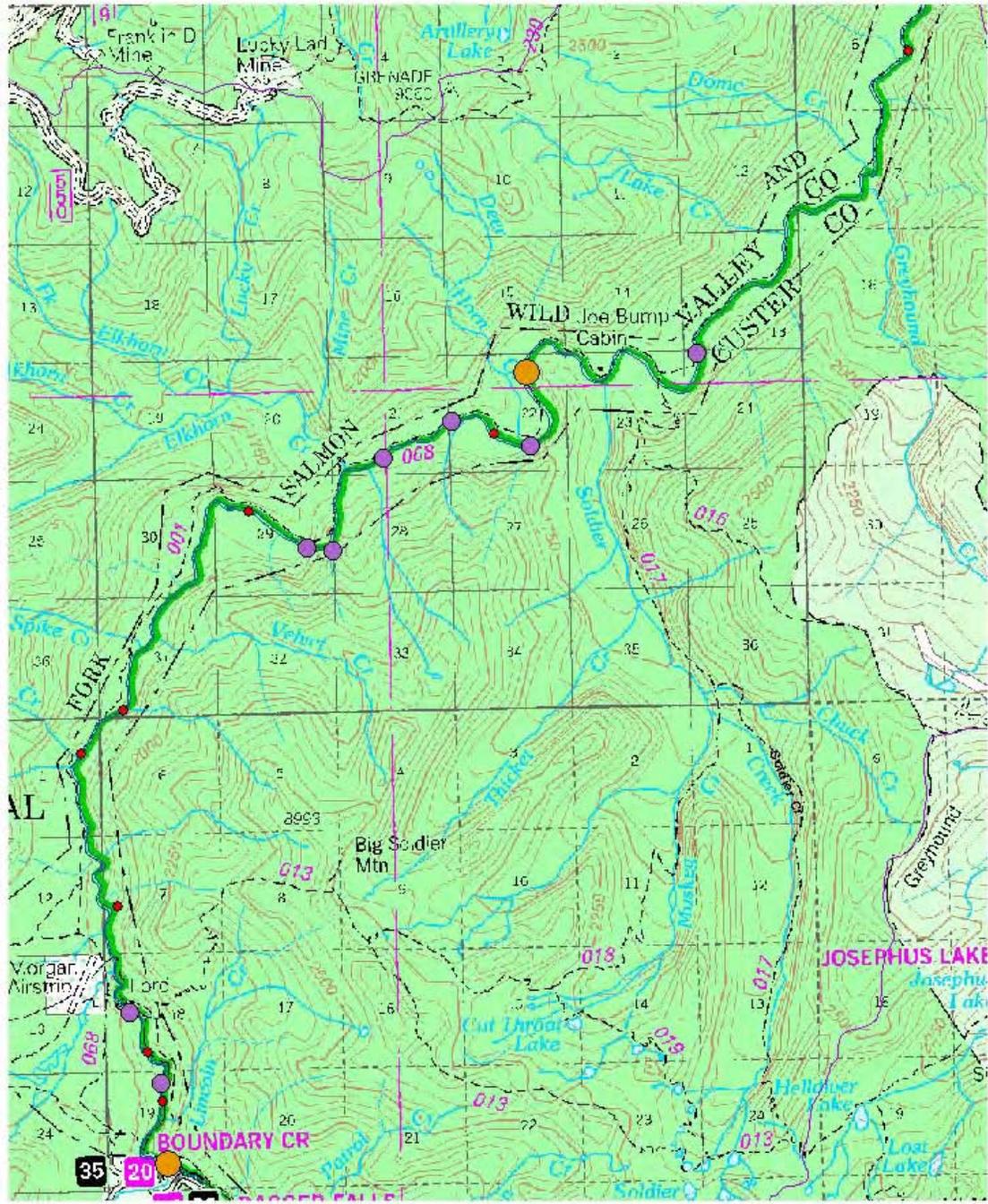
FRISSELL CAMPSITE CONDITION STANDARDS AS DEFINED FOR THE FC-RONR WILDERNESS

Class I	Class II	Class III	Class IV	Class V
Ground vegetation flattened but not permanently injured. Minimal physical change except for possibly a simple rock fireplace.	Ground vegetation worn away around fireplace or center of activity.	Ground vegetation lost on most of the site, but humus and litter still present in all but a few areas.	Bare mineral soil widespread. Tree roots exposed on the surface.	Soil erosion significant (>50% of the area). Trees reduced in vigor or dead.
<u>Land:</u> Site looks natural. No non-native plants. As much firewood as surrounding area. No worn social trails. No tree damage.	Site looks natural with only slight damage to plants. No non-native plants. Less firewood than surrounding area but still abundant. One worn social trail.	Site is less than 50% barren. Few non-native plants. Little tree damage. Little firewood compared to surrounding area. A few worn social trails.	Site is more than 50% barren. Moderate number of non-native plants. Large amount of tree damage. No firewood on site; surrounding area has less firewood than occurs naturally. Many social trails.	Extensive bare area. Non-native plants on most of the site. Extensive tree damage. No firewood on site or surrounding area. Extensive number of social trails and satellite areas.
<u>Stock:</u> Area <100 sq. ft. and often hidden. No tree trunks scarred or mutilated. No dished tree bases. No hay or artificial feed present.	Area >100, <200 sq. ft. Bare soil along hitch line. Minor (<20%) tree trunk scarring and occasional (<20%) dished tree bases. Some trace of feed (<20% of area).	Area >200, <400 sq. ft. Majority (>50%) of tree roots exposed but no circles of radical tree root exposure. Moderate (>20%, <50%) tree trunk scarring. Moderate amounts of manure and artificial feed present (>20%, <50% of area).	Area >400 sq. ft. Only islands of humus/duff. All tree roots exposed somewhat. Most tree trunks scarred. Large amounts of feed & manure (>50%, <80% of area).	Area >400 sq. ft. Bare mineral soil throughout. All tree roots exposed. Many trees dying. Feed & manure over 80% of area.
<u>River:</u> Site looks natural with little or no sign of pullout.	Well-defined pullout with little or no vegetation loss in other areas.	Obvious pullout area and vegetation loss. Organic layer present. No satellite areas. Slight damage to trees and brush on the site.	Multiple, well-worn pullouts and vegetation loss. Satellite sites and trails present.	Obvious bank erosion with several satellite areas and several trails. Extensive human damage to vegetation. No firewood on site or surrounding area.

Appendix B

Chinook Redd Locations from 1996-2008 by 5th Code HUC in the Action Area

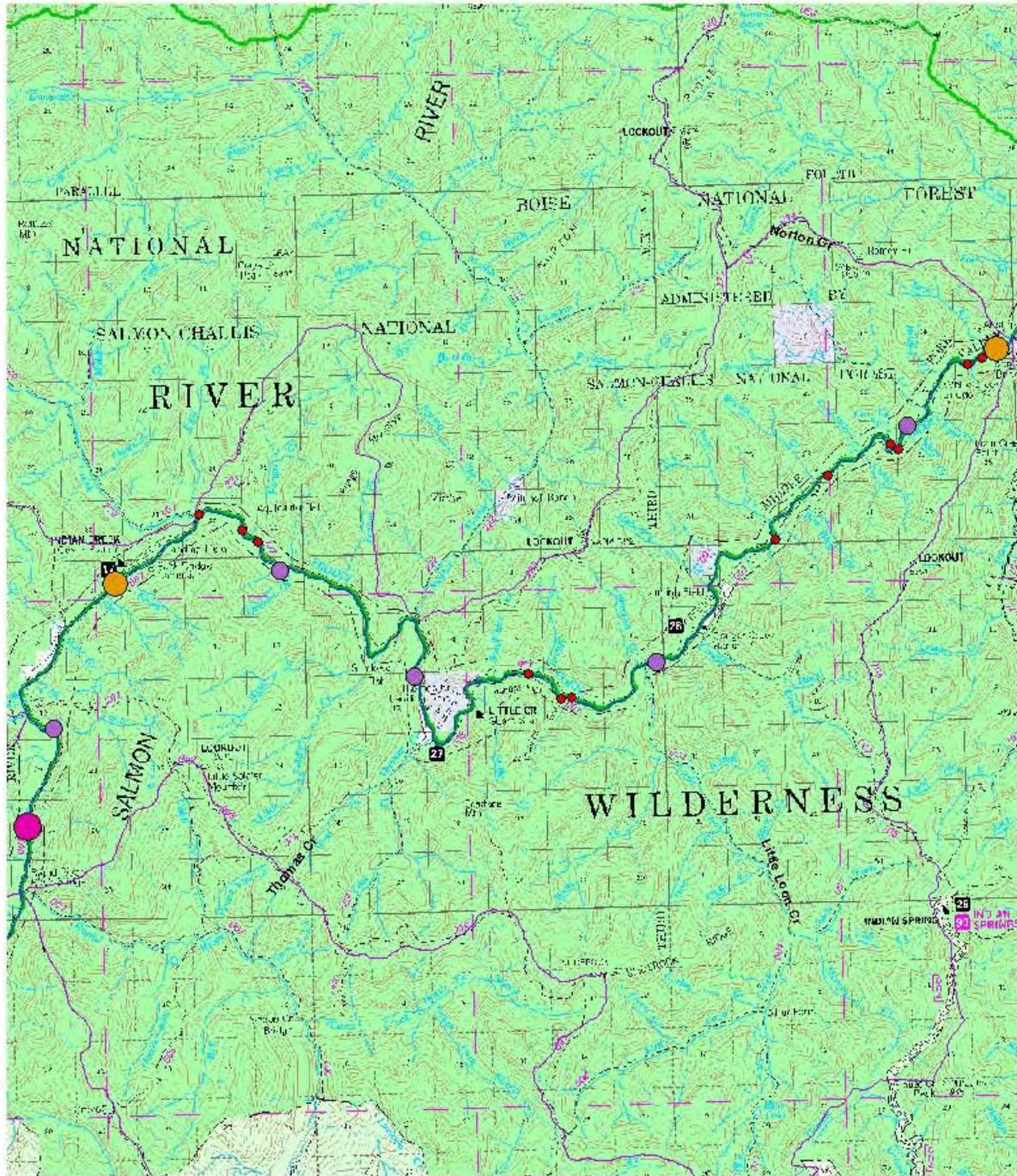
Figure 1. CHINOOK REDD LOCATIONS- UPPER MIDDLE FORK-ELKHORN CREEK HUC 5



Chinook Salmon Redd Locations 1996-2008
Upper Middle Fork-Elkhorn Creek HUC 5 Watershed

- 5 to 7 redds
- 2 to 4 redds
- 1 redd

Figure 2. CHINOOK REDD LOCATIONS- UPPER MIDDLE FORK-LITTLE LOON CREEK HUC 5



Chinook Salmon Redd Locations 1996-2008
Upper Middle Fork-Little Loon Creek HUC 5 Watershed

- 8 or more redds
- 5 to 7 redds
- 2 to 4 redds
- 1 redd

Figure 3. CHINOOK REDD LOCATIONS- LOWER MIDDLE FORK-WILSON CREEK HUC 5

