UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OREGON 97232

Refer to NMFS No.: WCRO-2019-02750

November 1, 2019

Thomas Montoya
Forest Supervisor
Wallowa-Whitman National Forest
1550 Dewey Avenue, Suite A
Baker City, Oregon 97814

Re: Endangered Species Act Section 7 Formal Consultation for the Cold Elk Range Analysis, Wallowa County, Oregon, HUCs 1706010606, 1706010604, and 1706010301

Dear Mr. Montoya:

Thank you for your letter dated September 16, 2019 requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Cold Elk Range Analysis. The proposed action would authorize grazing on the Cold Springs and Teepee Elk Allotments for 2020-2029. Updates to the regulations governing interagency consultation (50 CFR part 402) were effective on October 28, 2019 [84 FR 44976]. This consultation was pending at that time, and we are applying the updated regulations to the consultation. The enclosed document contains a biological opinion (Opinion) prepared by NMFS pursuant to section 7(a)(2) of the ESA on the effects of the Wallowa-Whitman National Forest (WWNF) authorizing livestock grazing on federal lands within the Cold Elk Range Analysis.

In this Opinion, NMFS concludes that the action, as proposed, is not likely to jeopardize the continued existence of Snake River Basin steelhead. NMFS also determined the action will not destroy or adversely modify designated critical habitat for the species. Rationale for our conclusions is provided in the attached Opinion.

As required by section 7 of the ESA, NMFS provides an incidental take statement (ITS) with the Opinion. The ITS describes reasonable and prudent measures (RPMs) 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 WWNF and any permittee who performs any portion of the action must comply with to carry out the RPMs. Incidental take from actions that meet these terms and conditions will be exempt from the ESA take prohibition.

Please contact Sarah Fesenmyer, Southern Snake Branch Office, at (208) 378-5660 or sarah.fesenmyer@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

Michael P. Tehan
Assistant Regional Administrator
Interior Columbia Basin Office

Enclosure

cc: A. Miller – WWNF
L. Kring – WWNF
M. Lopez – NPT

Endangered Species Act Section 7(a)(2) Biological Opinion

Cold Elk Range Analysis, Wallowa County, Oregon, HUCs 1706010606, 1706010604, and 1706010301
NMFS Consultation Number: WCRO-2019-02750

Action Agency: USDA Forest Service, Wallowa-Whitman National Forest

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?	Is Action Likely To Jeopardize the Species?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Snake River Basin steelhead (*Oncorhynchus mykiss*)	Threatened	Yes	No	No

Consultation Conducted By: National Marine Fisheries Service, West Coast Region

Issued By:

Michael P. Tehan
Assistant Regional Administrator

Date: November 1, 2019

TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

ACRONYMS

ACRONYM	DEFINITION
Allotments	Cold Springs and Teepee Elk Allotments
BA	Biological Assessment
DPS	Distinct Population Segment
DMA	Designated monitoring area
DQA	Data Quality Act
ESA	Endangered Species Act
FAR	Functioning at risk
GIS	Geographic Information System
ITS	Incidental Take Statement
MIM	Multiple Indicator Monitoring
MPG	Major Population Group
NMFS	National Marine Fisheries Service
NWFSC	Northwest Fisheries Science Center
ODEQ	Oregon Department of Environmental Quality
Opinion	Biological Opinion
PBF	Physical or Biological Features

ACRONYM	DEFINITION
PCE	Primary Constituent Element
PIBO	PACFISH-INFISH Biological Opinion
PFC	Properly functioning condition
RMO	Riparian Management Objective
RPM	Reasonable and Prudent Measures
USFWS	U.S. Fish and Wildlife Service
VSP	Viable Salmonid Population
WWNF	Wallowa-Whitman National Forest

1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3 below.

1.1 Background

National Marine Fisheries Service (NMFS) prepared the biological opinion (Opinion) and incidental take statement (ITS) portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 U.S.C 1531 et seq.), and implementing regulations at 50 CFR 402, as amended.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). A complete record of this consultation is on file at the Snake Basin Office in Boise, Idaho.

Updates to the regulations governing interagency consultation (50 CFR part 402) were effective on October 28, 2019 [84 FR 44976]. This consultation was pending at this time, and we are applying the updated regulations to the consultation. As the preamble to the final rule adopting the regulations noted, "[t]his final rule does not lower or raise the bar on section 7 consultations, and it does not alter what is required or analyzed during a consultation. Instead, it improves clarity and consistency, streamlines consultations, and codifies existing practice." We have reviewed the information and analyses relied upon to complete this Opinion in light of the updated regulations and conclude the Opinion is fully consistent with the updated regulations.

1.2 Consultation History

The Wallowa-Whitman National Forest (WWNF) proposes to authorize livestock grazing on the Cold Springs and Teepee Elk Allotments (Allotments) from 2020 through 2029. Livestock grazing on these Allotments is ongoing. NMFS previously consulted with the WWNF on livestock grazing in these watersheds in 1999 (documents on file at the Snake Basin Boise office). The WWNF introduced the project to the WWNF Level 1 Team (Level 1 Team) in March 2018 and provided a draft biological assessment (BA) to the Level 1 team in May 2019. The Level 1 Team discussed the draft BA in August 2019, and NMFS also submitted written comments to the WWNF in August 2019. The WWNF addressed NMFS comments and submitted a final BA on September 17, 2019 (WWNF 2019).

NMFS drafted an Opinion and shared the Proposed Action and Terms and Conditions sections of the Opinion with the WWNF on October 16, 2019. The WWNF subsequently shared the draft Proposed Action and Terms and Conditions with the grazing permittees, who had requested and received applicant status from the WWNF. The WWNF did not provide comments to NMFS on the draft Proposed Action or Terms and Conditions.

Because this action has the potential to affect tribal trust resources, NMFS provided copies of the proposed action and terms and conditions from our draft Opinion to the Nez Perce Tribe on October 16, 2019. The Nez Perce Tribe did not respond.

1.3 Proposed Action

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies (50 CFR 402.02). The Wallowa Mountains Office of the WWNF proposes to authorize livestock grazing on the Cold Springs Allotment and the Teepee Elk Allotment from 2020 through 2029. These Allotments are both north of Enterprise, Oregon. The Cold Springs Allotment falls in the Lower Joseph Creek, Snake River-Cherry Creek, and Chesnimnus Creek watersheds. The Teepee Elk Allotment falls in the Chesnimnus Creek and Lower Joseph Creek watersheds (Figure 1)[1]. Both of the Allotments have streams which provide designated critical habitat for Snake River Basin steelhead (see Appendix A, Figure A-1).

The proposed action consists of the following components: (1) Livestock numbers and season of use by pastures; (2) conservation measures aimed at minimizing the impacts of livestock on riparian areas; (3) forage utilization standards and monitoring; and (4) adaptive management procedures to adjust grazing practices if necessary to protect ESA-listed fish and their habitat.

[1] The WWNF is not consulting with NMFS on management of the Lost Cow Allotment because that allotment has no overlap with anadromous fish.

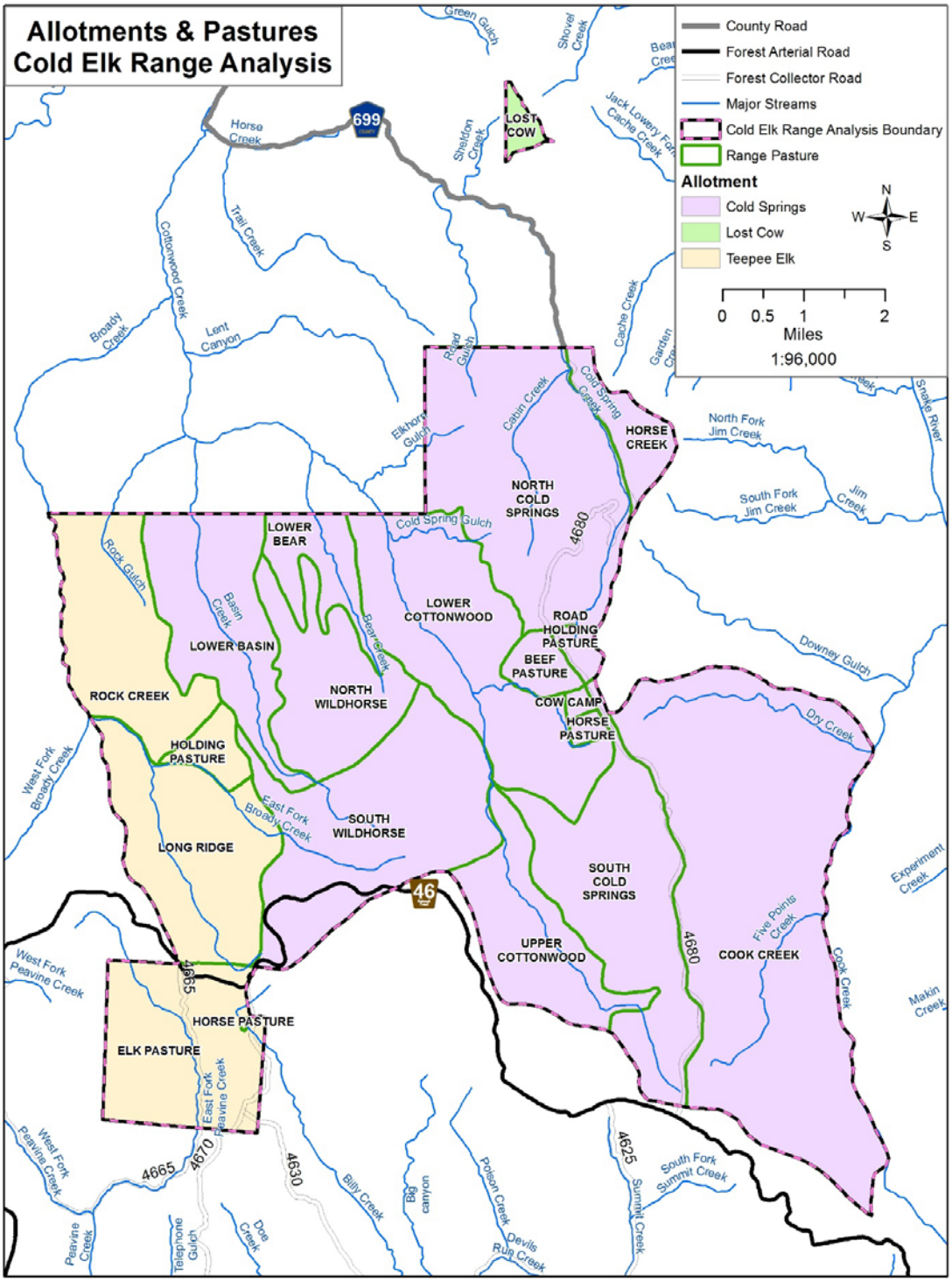

Figure 1. **Map of the Cold Springs and Teepee Elk Allotments and their pastures.**

1.3.1 Livestock Numbers, Period of Use, and Pastures

The WWNF proposes to authorize approximately 535 cow/calf pairs and 8 horses from June 1 to October 31 across the two Allotments (Table 1). The Cold Springs Allotment consists of 14 pastures and the Teepee Elk pasture consists of 4 pastures. Pastures are separated by either topography or fence. The permittees generally rotate livestock through the different pastures during the grazing season. However, for all but three pastures, the period of use for each pasture is unrestricted between June 1 and October 31. For the three pastures with steelhead spawning habitat accessible to livestock, grazing will not begin until after July 1, after steelhead fry have emerged from the gravel. Tables 2 and 3 list the pastures for each Allotment, timing restrictions, and proposed new fences.

Table 1. Livestock Numbers and Season of Use for the Cold Springs and Teepee Elk Allotments.

Allotment	Acres (National Forest)	Number of Pastures	Estimated Number of Animals	Grazing Season	Permitted Head Months
Cold Springs	30,405	14	360 cow/calves 4 horses	June 1 to October 31	2,165 cattle 24 horse
Teepee Elk	7,600	4	175 cow/calves 4 horses	June 1 to October 31	880 cattle 24 horse

Table 2. Pastures in the Cold Springs Allotment and their overlap with steelhead spawning habitat.

Pasture	Stream	Steelhead Spawning Habitat Present	Restrictions within the Grazing Season of June 1–Oct 31	Comments and Proposed New Fences
Lower Cottonwood	Cottonwood Creek	Yes	After July 1	Limited ridgetop grazing area present in the southeastern corner of pasture. The rest of the pasture is hillside and valley bottom.
Upper Cottonwood	Cottonwood Creek	Yes	After July 1	Majority of grazeable area in the pasture is adjacent to Cottonwood Creek.
Horse Creek	Horse Creek	No	No restrictions	Spawning habitat not present.
North Cold Springs	Horse Creek	No	No restrictions	Spawning habitat not present.
Lower Bear	Bear Creek	No	No restrictions	Spawning habitat not present.
Lower Basin	Basin Creek	No	No restrictions	Spawning habitat not present.
North Wildhorse	Bear Creek	No	No restrictions	Spawning habitat not present.
South Wildhorse	Cottonwood Creek	Yes	No restrictions	Limited accessibility to spawning habitat. Impacts to steelhead spawning and habitat are limited due to very steep topography.
	East Fork Broady Creek	No	No restrictions	Spawning habitat not present.
South Cold Springs	None	No	No restrictions	Spawning habitat not present. Construct fencing to prevent cattle

Pasture	Stream	Steelhead Spawning Habitat Present	Restrictions within the Grazing Season of June 1–Oct 31	Comments and Proposed New Fences
				from accessing Cottonwood Creek from the Howard Cutoff Trail and down East Fork Cottonwood Creek.
Cook Creek	Cook Creek	No	No restrictions	Spawning habitat not present.
Beef Pasture	Deadhorse Creek	No	No restrictions	Spawning habitat not present. Construct fence to keep cattle from using the Deadhorse Trail to access Cottonwood Creek.
Cow Camp	None	No	No restrictions	Spawning habitat not present. Construct fence to keep cattle from using the Deadhorse Trail to access Cottonwood Creek.
Horse Pasture	None	No	No restrictions	Spawning habitat not present. Construct fence to keep cattle from using the Deadhorse Trail to access Cottonwood Creek.
Road Holding Pasture	None	No	No restrictions	Spawning habitat not present.

Table 3. Pastures in the Teepee Elk Allotment and overlap with steelhead spawning habitat.

Pasture	Stream	Steelhead Spawning Habitat Present	Restrictions within the Grazing Season of June 1 – Oct 31	Comments and Proposed New Fences
Elk	East Fork Peavine Creek	Yes	No restrictions (Prior to construction of the proposed new exclosure, grazing restricted to after July 1)	Spawning habitat is accessible. WWNF proposes to construct an exclosure to protect spawning habitat and allow early-season grazing in this pasture.
Rock Creek	Broady Creek	Yes	No restrictions	Spawning habitat generally not accessible.
Long Ridge	Bro ady Creek	Yes	No restrictions	Spawning habitat generally not accessible.
Holding Pasture	East Fork Broady Creek	No	No restrictions	Spawning habitat not present.

1.3.2 Conservation Measures

The WWNF proposes to use the following conservation measures to minimize the impacts of livestock grazing on riparian areas, stream channels, and listed fish species:

- The WWNF will restrict grazing in Lower Cottonwood and Upper Cottonwood pastures (Cold Springs Allotment) and Elk pasture (Teepee Elk Allotment) until after July 1 in order to protect steelhead redds from livestock trampling. Once the WWNF has constructed a new

exclosure fence on 1.5 miles of East Fork Peavine Creek in Elk pasture, this early-season restriction will be lifted for Elk pasture.

- The WWNF will rest the Lower Cottonwood pasture of the Cold Spring Allotment for the first 5 years of the 10-year period covered by this consultation to allow for riparian and stream habitat recovery from the 2017 debris flow that affected the section of Cottonwood Creek in this pasture. Grazing in this pasture may resume after 5 years or after riparian and stream habitat reaches satisfactory conditions as described in the current Blue Mountains Forest Plan (WWNF 1990). The WWNF will rest Upper Cottonwood pasture of the Cold Springs Allotment every other year.

- The WWNF will construct three new fences to protect steelhead streams. Two new drift fences on the Cold Springs Allotment will block two trails which livestock use to access Cottonwood Creek. The new drift fences are the Deadhorse Creek Fence, to reduce livestock access to Lower Cottonwood Creek, and the Howard Cutoff Trail/East Fork Cottonwood Fence, to reduce livestock access to Upper Cottonwood Creek. On the Teepee Elk Allotment, the WWNF will construct an exclosure fence on both sides of 1.5 miles of East Fork Peavine Creek in Elk Pasture. The exclosure fence will have a water gap every half-mile. The WWNF anticipates completing these fences within the next 2 years.

- The WWNF will maintain offsite water sources, which are generally located at small springs disconnected from perennial streams. At six existing off-site water sources on the Allotments, the WWNF will install a new trough and build an exclosure fence around the spring source.

- The WWNF will ensure terms and conditions of grazing permits are met regarding maintenance of fences and offsite water developments, and authorized use periods.

1.3.3 Monitoring

The WWNF proposes riparian monitoring on the Allotments to provide WWNF managers and permittees with information necessary to adaptively manage riparian resources with respect to livestock grazing. The riparian monitoring consists of trigger and end-of-season monitoring (implementation) and long-term monitoring (effectiveness). The WWNF proposes to use the Multiple Indicator Monitoring (MIM) protocol (Burton et al. 2011) for stream and riparian monitoring, or an updated version of this protocol if one becomes available. Data derived from both types of monitoring will be used to identify if adaptive management changes are required (as explained below in Section 1.3.4).

Riparian Utilization Standards. To limit the impact of livestock on accessible, unfenced riparian areas, the WWNF has set end-of-season riparian utilization standards for each pasture with accessible steelhead habitat, shown in Table 4. The riparian utilization metrics are percent shrub browse, percent streambank alteration, and greenline stubble height, all measured at the end of the grazing season using the MIM protocol (Burton et al. 2011). For all pastures, the end of season riparian objective is 35 percent shrub use or less and 20 percent streambank alteration or less. The end of season stubble height objective depends on the pasture's riparian rating. If the WWNF determined that the pasture's riparian areas were functioning at risk, then the

WWNF set an end-of-season stubble height objective of 6 inches or greater. If the WWNF determined that the pasture's riparian areas were in properly functioning condition, then the WWNF set an end-of-season stubble height objective of 4 inches or greater. To determine the riparian rating for each stream, the WWNF used a Properly Functioning Condition (PFC) assessment, a qualitative method developed by the Bureau of Land Management for determining the condition of riparian areas and stream channels. Appendix A of the BA gives a detailed description of the WWNF's methods for the PFC assessments (WWNF 2019).

Table 4. Maximum Riparian Utilization Standards for the Cold Springs and Teepee Elk Allotments for Pastures with Accessible Steelhead Habitat.

Allotment	Pasture	Stream	Riparian Rating*	Indicators	End of Season Objective
Cold Springs	Lower Cottonwood	Cottonwood Creek	FAR	Greenline Stubble Height	≥6 inches
				Streambank Alteration	≤20%
				Riparian Shrub Utilization	≤35%
	Upper Cottonwood	Cottonwood Creek	PFC	Greenline Stubble Height	≥4 inches
				Streambank Alteration	≤20%
				Riparian Shrub Utilization	≤35%
	South Wildhorse	Cottonwood Creek	FAR	Greenline Stubble Height	≥6 inches
				Streambank Alteration	≤20%
				Riparian Shrub Utilization	≤35%
Teepee Elk	Elk	East Fork Peavine Creek	FAR	Greenline Stubble Height	≥6 inches
				Streambank Alteration	≤20%
				Riparian Shrub Utilization	≤35%
	Rock Creek	Broady Creek	PFC	Greenline Stubble Height	≥4 inches
				Streambank Alteration	≤20%
				Riparian Shrub Utilization	≤35%
	Long Ridge	Broady Creek	PFC	Greenline Stubble Height	≥4 inches
				Streambank Alteration	≤20%
				Riparian Shrub Utilization	≤35%

*FAR = functioning at risk; PFC = properly functioning condition.

Trigger Monitoring. In order to meet and not exceed objectives for end-of-season indicators in pastures with steelhead or steelhead critical habitat, permittees will conduct trigger monitoring midway during the grazing season in each pasture. Permittees will notify their WWNF range management specialist when they think livestock should be moved to the next pasture or off the WWNF. Trigger monitoring could be numerical measurements of stubble height, streambank alteration and/or riparian shrub utilization. Trigger monitoring could alternatively consist of more qualitative indicators that permittees have developed to inform them of when to begin moving livestock from a pasture in order to avoid exceeding end-of-season objectives. It is acceptable for permittee ocular monitoring to be a stubble height estimate for all grass and grass-like species along the greenline, and not specific to hydric species. If end-of-season objectives are not met on an Allotment (i.e., non-compliance), the WWNF will conduct the mid-season trigger monitoring the following year and collect data in lieu of permittee observations.

End-of-Season Implementation Monitoring. The WWNF will measure end-of-season riparian utilization at key areas. The utilization standards described in Table 4 will apply to key monitoring areas in all pastures of the Allotments. Key areas have been established at representative locations within each pasture. The WWNF may move a key area if they determine that the existing key area location is not representative of livestock riparian utilization within the pasture. Small areas within the Allotments that have unavoidable livestock concentrations—such as salt licks, water developments, gateways, or corrals—are not designated as key areas.

The WWNF monitoring strategy focuses on areas where known ESA-listed fish spawning overlaps with livestock grazing. The WWNF range and fisheries personnel will work together to determine when and where annual implementation monitoring will occur. Implementation monitoring will include:

- For pastures with steelhead spawning, trained personnel will complete end-of-season streambank alteration monitoring using MIM protocol within one week or as soon as possible after livestock being moved out of the pasture. Results will be summarized along with ocular/qualitative utilization observations shared by permittees into a year-end annual monitoring report to be shared with NMFS.

- Lessons learned from the combined results of move triggers and from end-of-season streambank alteration and residual stubble height monitoring will be the driver of adaptive management changes in grazing prescriptions.

- For pastures without ESA-listed fish spawning, but which do have designated critical habitat, the WWNF will conduct at a minimum ocular monitoring mid-season once every 3–5 years on a rotating basis.

Effectiveness Monitoring. Effectiveness monitoring is monitoring that verifies that grazing management prescriptions are meeting riparian and stream resource objectives (e.g., verifies that riparian vegetation conditions are improving). The WWNF proposes to conduct effectiveness monitoring at designated monitoring areas (DMAs) every 3 to 5 years to determine if restoration and maintenance of streambank integrity and late seral riparian vegetation is occurring. A DMA is a permanently marked segment of a stream at least 110 meters long established by an interdisciplinary team of highly experienced personnel with knowledge of the management area.

The WWNF has established DMAs on East Fork Peavine Creek and Broady Creek (Teepee Elk Allotment), and on lower and upper Cottonwood Creek (Cold Springs Allotment)—in order to develop baseline conditions for riparian and stream conditions, and to then monitor changes in riparian conditions as a result of the proposed changes in grazing under the proposed action (e.g. new fences). At each DMA, the WWNF will assess channel morphology and vegetation characteristics over time. Measurements may include channel cross-sections, vegetation composition, effective ground cover, and streambank stability. Trend in riparian vegetation/habitat by pasture is also monitored through permanent photo points and vegetation plots that are designed to be repeated every 3 to 5 years using the MIM protocol. These records are on file at the WWNF Wallowa Mountains Office.

Table 5 shows the effectiveness monitoring indicators and objectives that will be incorporated into the Allotment management plans.

Table 5. Effectiveness monitoring indicators and objectives.

Indicator*	Perennial Stream DMA Objective	Intermittent Stream DMA Objective
Streambank Stability (%)	≥90	≥90
Streambank Cover (%)	≥90	≥90
Fine Sediment (%)	<20	<20
Greenline Ecological Status Rating	>61 (Late Seral)	>52 (Upper Mid Seral)
Site Wetland Rating	≥67 (FACW+)	≥58 (FAC+)
Winward Greenline Stability Rating	>6 (High)	>5.5 (Mid)
Shade Index	≥3 (High)	≥3 (High)

Note: These objectives may be adjusted in the future as needed to meet PACFISH Standard RM-1.
*Appendix B of the BA describes WWNF methods and protocols for effectiveness monitoring and gives more detail on the indicators and objectives in this table (WWNF 2019).

1.3.4 Adaptive Management

The WWNF will use the following adaptive management steps to adjust grazing management for specific pastures if needed to minimize the impact of livestock on streams. The annual adaptive management strategy describes how the WWNF will adjust grazing management annually, if needed, to ensure annual riparian use indicators are met. The long-term strategy describes how the WWNF will use effectiveness monitoring results to adjust grazing management to meet aquatic and riparian desired conditions.

Annual Adaptive Management Strategy

a. Monitor annual use indicators as required by the BA and Opinion.

b. Were the annual use indicators met?

- Yes: Continue current management and monitoring (short- and long-term) to continue to determine if desired condition is being achieved.

- No: Determine why the annual use indicator was not met. Was the failure due to causes outside the permittee's control (e.g., a grazing design problem, a changed condition outside the control of the permittee, or annual use indicator was not appropriate)? [An inappropriate annual use indicator is an indicator that is not the first attribute that might show excessive livestock impacts. In this situation, changing to a more appropriate indicator will help achieve or maintain desired conditions.]

- Yes: Were there any effects to riparian and stream conditions? Develop a plan with permittee, fisheries biologist, and rangeland management specialist for the next year's grazing to respond to the cause (e.g., bad design, inappropriate use indicator, etc.) and/or effects to the resource.

- No: Determine if any effects occurred to the stream conditions. Discuss with the permittee why the annual use indicator standard was not met and develop a plan (adaptive management) to be implemented the following year to correct grazing management in order to meet the annual use indicator standard. Change grazing management as needed if long-term effects to riparian and aquatic conditions occurred.

c. Contact the Line officer with a recommendation for change(s) to occur for the next grazing season. Line officer will work with biologist and rangeland management specialist in making an assessment if effects to riparian and stream conditions are outside what was described and anticipated in this consultation.

d. Line Officer contacts NMFS and the U.S. Fish and Wildlife Service (USFWS).

Long-Term Adaptive Management Strategy

a. Determine current aquatic and riparian conditions using MIM trend data and local knowledge of results captured in the annual monitoring reports.

b. Compare current aquatic and riparian conditions to desired conditions as described in the Forest Plan.

c. Are Forest Plan aquatic and riparian desired conditions met on the Allotment?

- Yes: Continue management as prescribed allowing for annual changes as needed to ensure annual use indicators described in the BA and this Opinion are met.

- No: Are livestock the limiting factor (annual use indicators are not being met and/or are ineffective) and is the trend in habitat conditions downward or static?

  - No: Provide information to the appropriate Line Officer who then contacts NMFS and the USFWS. Continue monitoring.

  - Yes: Provide information to the Line Officer who then works with the resource specialists in making an assessment of effects of grazing on aquatic and riparian conditions. Develop changes to the grazing strategy to reduce livestock use and effects to riparian areas in the pasture.

d. The Line Officer contacts the NMFS and the USFWS to inform them of changes to grazing management on the Allotment and to determine if consultation reinitiation is required.

1.3.5 Interrelated and Interdependent Actions

"Interrelated actions" are those that are part of a larger action and depend on the larger action for their justification. "Interdependent actions" are those that have no independent utility apart from the action under consideration (50 CFR 402.02). Permittees for the Allotments also graze livestock on adjacent private land, where grazing may cause adverse effects to ESA-listed species. Additionally, permittees divert water from streams for agricultural purposes on adjacent private land and on National Forest land. However, grazing on private land adjacent to WWNF pastures, and associated water diversions, would continue to occur regardless of whether or not the permittees are able to the use the WWNF pastures. Therefore, adjacent private land grazing is not interrelated to or interdependent on the proposed action. NMFS does not know of any other potential interrelated or interdependent actions associated with the proposed action.

2. ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, each federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provides an Opinion stating how the agency's actions would affect listed species and their critical habitat. If incidental take is reasonably certain to occur, section 7(b)(4) requires NMFS to provide an ITS that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

2.1 Analytical Approach

This Opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "to jeopardize the continued existence of" a listed species, which is "to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

This Opinion relies on the definition of "destruction or adverse modification," which "means a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features (PBFs) essential to the conservation of a species or that preclude or significantly delay development of such features" (81 FR 7214).

The designations of critical habitat for ESA-listed species use the term primary constituent element (PCE) or essential features. The new critical habitat regulations (81 FR 7414) replace

this term with PBFs. The shift in terminology does not change the approach used in conducting a "destruction or adverse modification" analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this Opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat. We use the following approach to determine whether a proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- Identify the rangewide status of the species and critical habitat likely to be adversely affected by the proposed action.

- Describe the environmental baseline in the action area.

- Analyze the effects of the proposed action on both species and their habitat using an "exposure-response-risk" approach.

- Describe any cumulative effects in the action area.

- Integrate and synthesize the above factors by: (1) Reviewing the status of the species and critical habitat; and (2) adding the effects of the action, the environmental baseline, and cumulative effects to assess the risk that the proposed action poses to species and critical habitat.

- Reach a conclusion about whether species are jeopardized or critical habitat is adversely modified.

- If necessary, suggest a reasonable and prudent alternative to the proposed action.

2.2 Rangewide Status of the Species and Critical Habitat

This Opinion considers the status of each species that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps inform the description of the species' current "reproduction, numbers, or distribution" as described in 59 CFR 402.02. The Opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds that make up the designated area, and discusses the current function of PBFs that help to form that conservation value.

The one species considered in this Opinion is Snake River Basin steelhead. The distinct population segment (DPS) for this species is composed of multiple populations which spawn and rear in different watersheds across the Snake River basin. Having multiple viable populations makes a DPS less likely to become extinct from a single catastrophic event (ICBTRT 2007). NMFS expresses the status of a DPS in terms of the status and extinction risk of its individual populations, relying on McElhaney et al.'s (2000) description of a viable salmonid population (VSP). The four parameters of a VSP are abundance, productivity, spatial structure, and

diversity. Final recovery plans for the species describe these four parameters in detail and the parameter values needed for persistence of individual populations and for recovery of the DPS (NMFS 2017).

We summarize the status and available information on the species based on the detailed information on the status of individual populations and the species as a whole provided by the *ESA Recovery Plan for Snake River Spring/Summer Chinook Salmon & Snake River Basin Steelhead* (NMFS 2017) and *Status review update for Pacific salmon and steelhead listed under the Endangered Species Act: Pacific Northwest* (NWFSC 2015) (Table 6). These two documents are incorporated by reference here. We also identify the major threats or limiting factors for the DPS. Many individual populations are not meeting recovery plan abundance and productivity targets, such that the species remains threatened with extinction.

The Cold Springs and Teepee Elk Allotments both overlap with the Joseph Creek steelhead population in the Grande Ronde River Major Population Group (MPG). The Cold Springs Allotment also overlaps with the headwaters of Cook Creek, which is a tributary to the Snake River and part of the Hells Canyon steelhead population. However, Cook Creek is in a steep canyon and the Cold Springs Allotment boundary is three miles upstream from steelhead habitat. Grazing on the Allotments therefore does not overlap with the steelhead in the Hells Canyon population.

The Northwest Fisheries Science Center rated the Joseph Creek population as highly viable because its 10-year abundance and productivity at that time were well above minimum viability targets (NWFSC 2015). The minimum mean abundance for viability for the Joseph Creek population is 500 spawners. Abundance for the Joseph Creek population remained relatively high (compared to other Snake River populations), with an estimated 3,023 spawners in 2015 and 1,930 spawners in 2016 (Stark et al. 2017; Stark et al. 2018; NPT 2018). However, wild steelhead returns to the Joseph Creek population dropped precipitously in recent years, as they did in most Snake River steelhead populations. The Nez Perce Tribe estimated that only 585 adults returned to Joseph Creek in 2017, and 703 adults returned in 2018 (NPT 2018; NPT 2019). If these lower abundance numbers continue, the population's risk of extinction may increase what was estimated in NWFSC (2015).

Table 6. Listing classification and date, status summary (including recovery plan reference and most recent status review), and limiting factors for species considered in this Opinion.

Species	Listing Classification and Date	Status Summary	Limiting Factors
Snake River Basin steelhead	Threatened 1/5/06	This DPS comprises 24 populations organized into five MPGs. Currently, five populations are tentatively rated at high risk of extinction, 17 populations are rated as maintained (moderate risk of extinction), one population is viable, and one population is highly viable. Although abundance has increased since the time of listing, four out of the five MPGs are not meeting the population viability goals laid out in the recovery plan (NMFS 2017). In order for the species to recover, more populations will need to reach viable status through increases in abundance and productivity. Additionally, the relative proportion of hatchery fish spawning in natural spawning areas near major hatchery release sites remains uncertain and may need to be reduced (NWFSC 2015).	• Adverse effects related to the mainstem Columbia and Snake River hydropower system and modifications to the species' migration corridor. • Genetic diversity effects from out-of-population hatchery releases. Potential effects from high proportion of hatchery fish on natural spawning grounds. • Degraded freshwater habitat. • Harvest-related effects, particularly for B-run steelhead • Predation in the migration corridor.

2.2.1 Status of Critical Habitat

In evaluating the condition of designated critical habitat, NMFS examines the condition and trends of PBFs that are essential to the conservation of the ESA-listed species because they support one or more life stages of the species. Proper function of these PBFs is necessary to support successful adult and juvenile migration, adult holding, spawning, incubation, rearing, and the growth and development of juvenile fish. Modification of PBFs may affect freshwater spawning, rearing or migration in the action area. Generally speaking, sites required to support one or more life stages of the ESA-listed species (i.e., sites for spawning, rearing, migration, and foraging) contain PBF essential to the conservation of the listed species (e.g., spawning gravels, water quality and quantity, side channels, or food) (Table 7). Critical habitat includes the stream channel and water column with the lateral extent defined by the ordinary high-water line, or the bankfull elevation where the ordinary high-water line is not defined.

Table 7. Types of sites, physical and biological features, and the species life stage each physical and biological feature supports.

Site	Physical and Biological Features (PBFs)	Species Life Stage
Snake River Basin 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	Juvenile development
	Natural cover	Juvenile mobility and survival
Freshwater migration	Free of artificial obstructions, water quality and quantity, and natural cover[c]	Juvenile and adult mobility and survival

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

Table 8 summarizes designated critical habitat for Snake River Basin steelhead, based on the detailed information on the status of critical habitat throughout the designation area provided in the recovery plan for the species (NMFS 2017), which are incorporated by reference here. Across the designation, the current ability of PBFs to support the species varies from excellent in wilderness areas to poor in areas of intensive human land use.

Table 8. Critical habitat, designation date, Federal Register citation, and status summary for critical habitat considered in this Opinion.

Species	Designation Date and Federal Register Citation	Critical Habitat Status Summary
Snake River Basin steelhead	9/02/05 70 FR 52630	Critical habitat encompasses 25 subbasins in Oregon, Washington, and Idaho. Habitat quality in tributary streams varies from excellent in wilderness and roadless areas, to poor in areas subject to heavy agricultural and urban development (NMFS 2017). Reduced summer stream flows, impaired water quality, and reduced habitat complexity are common problems. The construction and operation of water storage and hydropower projects in the Columbia River basin, including the run-of-river dams on the mainstem lower Snake and lower Columbia Rivers, have altered biological and physical attributes of the mainstem migration corridor for juveniles and adults. However, several actions taken since 1995 have reduced the negative effects of the hydrosystem on juvenile and adult migrants. Examples include providing spill at each of the mainstem dams for smolts, steelhead kelts, and adults that fall back over the projects; and maintaining and improving adult fishway facilities to improve migration passage for adult salmon and steelhead.

2.2.2 Climate Change Implications for ESA-listed Species and their Critical Habitat

One factor affecting the status of the species and its critical habitat considered in this Opinion is climate change. Likely changes in temperature, precipitation, wind patterns, and sea-level height have implications for survival of Snake River Basin steelhead species in both its freshwater and

marine habitats. During the next century average temperatures in the Pacific Northwest are projected to increase 3 to 10°F, with the largest increases predicted to occur in the summer (Mote et al. 2014). Decreases in summer precipitation of as much as 30 percent by the end of the century are consistently predicted across climate models (Mote et al. 2014). Precipitation is more likely to occur during October through March, less during summer months, and more winter precipitation will be rain than snow (ISAB 2007; Mote et al. 2014). Earlier snowmelt will cause lower stream flows in late spring, summer, and fall, and water temperatures will be warmer (ISAB 2007; Mote et al. 2014). Models consistently predict increases in the frequency of severe winter precipitation events (i.e., 20-year and 50-year events) in the western United States (Dominguez et al. 2012). The largest increases in winter flood frequency and magnitude are predicted in mixed rain-snow watersheds (Mote et al. 2014). In general, these changes in air temperatures, river temperatures, and river flows are expected to cause changes in salmon and steelhead distribution, behavior, growth, and survival, although the magnitude of these changes remains unclear.

Climate change could affect Snake River Basin steelhead in the following ways (NMFS 2017):

- Reduced summer and fall flows may reduce the quality and quantity of juvenile rearing habitat, strand fish, or make fish more susceptible to predation and disease.
- Overwintering survival may be reduced if increased flooding reduces suitable habitat.
- Timing of smolt migration may be altered due to a modified timing of the spring freshet, such that there is a mismatch with ocean conditions and predators.
- Higher temperatures while adults are holding in tributaries and migrating to spawning grounds may lead to increased prespawning mortality or reduced spawning success as a result of delay or increased susceptibility to disease and pathogens.
- Increases in water temperatures in Snake and Columbia River reservoirs could increase consumption rates and growth rates of predators and, hence, predation-related mortality on juvenile spring/summer Chinook salmon and steelhead.

Both freshwater and marine productivity tend to be lower in warmer years for Snake River Basin steelhead populations. Climate factors will likely make it more challenging to increase abundance and recover the species by reducing the suitable rearing areas and leading to a more limited run-timing under the warmer future conditions. This possibility reinforces the importance of achieving survival improvements throughout the species' entire life cycle, and across different populations since neighboring populations with different habitat may respond differently to climate change. Existing well-connected, high-elevation habitats on public lands will be important to supporting salmon and steelhead survival and recovery as the climate continues to warm (Martin and Glick 2008).

2.3 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). The action area consists of streams and riparian areas within the Allotment boundaries, which fall within the Lower Joseph

Creek, Chesnimnus Creek, and Snake River-Cherry Creek watersheds of northeastern Oregon. The action area overlaps with the Joseph Creek steelhead population. There are four streams within the Allotments that support steelhead: Cottonwood Creek (Cold Springs Allotment), East Fork Peavine Creek (Teepee Elk Allotment), and Broady Creek and East Fork Broady Creek (Teepee Elk Allotment), all shown in Figure A-1 of Appendix A.

The action area is used by all freshwater life history stages of Snake River Basin steelhead and encompasses designated critical habitat. The specific stream reaches designated as critical habitat for Snake River Basin steelhead were published in the Federal Register (70 FR 52630).

2.4 Environmental Baseline

The "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).

Cottonwood Creek. Cottonwood Creek has not been impacted by road construction or logging activities on National Forest lands. Livestock grazing is the primary past and current land use. The Teepee Butte Fire burned at high severity along the majority of Cottonwood Creek in 1998, and riparian vegetation in the watershed has not yet fully recovered. In 2017 a debris flow affected the lower half of the channel length on the Allotment. The channel incised about 4 feet in many places, large wood was flushed from the reach, and riparian vegetation was scoured away. By 2018, riparian vegetation was recovering, and the channel was reorganizing into distinct channel units. However, much of the pool habitat and large wood present prior to the debris flow is absent. Streambanks are also prone to erosion due to the loss of streambank stabilizing vegetation. Fine sediment levels are likely to increase in the near future as bank erosion occurs. Recovery of aquatic habitat features (e.g., pools, spawning gravels, large wood) will likely take decades although riparian vegetation may recover at a much faster rate (WWNF 2019).

Baseline conditions for salmonid habitat parameters in Cottonwood Creek include:

- The WWNF found shade to be very low at the DMAs in both upper and lower Cottonwood Creek in 2016.

- Summer stream temperature exceeded Oregon Department of Environmental Quality (ODEQ) objectives in 2017 and 2018 in lower Cottonwood Creek (following the debris flow, which ripped out riparian vegetation in this reach). Summer temperature in upper Cottonwood Creek, on the other hand, met ODEQ objectives.

- The WWNF rated riparian vegetation and stream channels as functioning-at-risk for lower Cottonwood Creek and properly functioning for upper Cottonwood Creek in 2017.

- Monitoring under the PACFISH/INFISH Biological Opinion (PIBO) effectiveness program (one site on lower Cottonwood Creek) in 2004, 2009, and 2014 suggested that Cottonwood Creek was meeting PACFISH resource management objectives (RMOs) for streambank stability, percent fines, and large wood in all years, but not meeting the RMO for pool frequency in any of those years.

East Fork Peavine Creek. East Fork Peavine Creek has been impacted by past road-building, timber harvest, and livestock grazing. East Fork Peavine Creek is located on flatter terrain than the other steelhead streams on the Allotments. A road parallels the stream, and the stream is highly accessible to livestock. WWNF staff observed a high level of livestock presence in the riparian area of this stream during a site visit in fall 2018.
Baseline conditions for salmonid habitat parameters in East Fork Peavine Creek include:

- Based on data collected at DMAs and during stream surveys, and based on WWNF staff observations during a site visit in 2018, East Fork Peavine Creek is not meeting objectives for aquatic or riparian habitat (WWNF 2019). Livestock grazing in late summer in the riparian area appears to be preventing a recovery of riparian vegetation and stream conditions (WWNF 2019).

- At the East Fork Peavine Creek DMA in 2016, the WWNF found that greenline stability was lower than desired, shade was very low, and fine sediment levels were elevated.

Broady Creek and East Fork Broady Creek. Broady Creek provides spawning habitat for steelhead, whereas East Fork Broady Creek may primarily provide rearing habitat for steelhead (WWNF 2019). Broady Creek has primarily been impacted by past road-building and timber harvest. Livestock grazing is ongoing in the drainage. Broady Creek is located in a steep canyon, relatively inaccessible to the livestock that graze in the adjacent uplands (WWNF 2019). The ODEQ designated Broady Creek as the only core cold water habitat in the entire Joseph Creek watershed.

Baseline conditions for salmonid habitat parameters in Broady and East Broady Creeks include:

- Between 2011 and 2018, summer water temperatures in Broady Creek consistently met the ODEQ standard for core cold water habitat (<60.8° F). In 2016 and 2017, summer water temperatures in East Fork Broady Creek also met the ODEQ standard for core cold water habitat.

- Broady Creek has low levels of shade, low levels of pool habitat and large wood, and elevated fine sediment (WWNF 2019).

- The WWNF determined that riparian vegetation and stream conditions were properly functioning during an assessment in 2009.

Summary. Table 9 summarizes baseline conditions across the action area for the stream and riparian habitat components in the NMFS Matrix of Pathways and Indicators (NMFS 1996). Table 9 shows whether a habitat component is properly functioning, functioning at risk, or not

properly functioning. Temperature, sediment, refugia, and riparian habitat conservation areas—all of which can be influenced by livestock grazing—are functioning at risk.

Table 9. Matrix for pathways and indicators showing baseline condition for the action area (Lower Cottonwood Creek, Broady Creek, Peavine Creek, and Middle Chesnimnus Creek subwatersheds) (WWNF 2019).

Diagnostic or Pathway	Properly Functioning/ Functioning Appropriately	Functioning At Risk	Not Properly Functioning/ Functioning At Unacceptable Risk
Water Quality:			
Temperature - Chinook, Steelhead		**X**	
Sediment/Turbidity Substrate Embeddness.		**X**	
Chemical Contamination/ Nutrients	**X**		
Habitat Access:			
Physical Barriers	**X**		
Habitat Elements:			
Large Woody Material	**X**		
Pool Frequency		**X**	
Pool Quality/Large Pools		**X**	
Off-channel Habitat		**X**	
Refugia		**X**	
Channel Condition and Dynamics:			
Width/Depth Ratio	**X**		
Streambank Condition	**X**		
Floodplain Connectivity		**X**	
Watershed Conditions:			
Road, Density, Location, Drainage		**X**	
Disturbance History Peak Base Flows		**X**	
Riparian Habitat Conservation Areas		**X**	
Disturbance Regime		**X**	
Integration Species & Habitat Conditions		**X**	

Compliance with Riparian Utilization. Periodic implementation monitoring results between 2004 and 2016 include two instances of non-compliance. In 2010, the WWNF found streambank alteration to be 33 percent on East Fork Cottonwood Creek (Cold Springs Allotment) and 52 percent on East Fork Broady Creek (Teepee Elk Allotment), exceeding the 20 percent maximum. Implementation monitoring results from 2004, 2006, 2007, 2008, 2009, and 2016 did not show any non-compliance. During a site visit in 2018 to East Fork Peavine Creek, WWNF staff observed high levels of livestock activity in the riparian area and potential impacts to the stream, but staff did not measure riparian utilization metrics during the visit.

2.5 Effects of the Action

Under the ESA, "effects of the action" means the direct and indirect effects of an action on the 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). Indirect effects are those that are caused by the proposed action and are later in time,

but still are reasonably certain to occur. This section will evaluate the effects of the action starting from the time of the issuance of this Opinion through the term of the permit.

2.5.1 Effects on Critical Habitat

Numerous publications have documented the detrimental effects of livestock grazing on stream and riparian habitats (Johnson et al. 1985; Menke 1977; Meehan and Platts 1978; Cope 1979; American Fisheries Society 1980; Platts 1981; Peek and Dalke 1982; Ohmart and Anderson 1982; Kauffman and Krueger 1984; Clary and Webster 1989; Gresswell et al. 1989; Kinch 1989; Chaney et al. 1990; Belsky et al. 1997). These publications describe a series of synergistic effects that can occur when cattle over-graze riparian areas, including: (1) Woody and hydric herbaceous vegetation along a stream can be reduced or eliminated; (2) streambanks can collapse due to livestock trampling; (3) streambanks can erode without vegetation to slow water velocities, hold the soil, and retain moisture; (4) the stream can become wider and shallower, and in some cases downcut; (5) the water table can drop; and (6) hydric, deeply rooted herbaceous vegetation can die out and be replaced by upland species with shallower roots and less ability to bind the soil. These effects have the potential to adversely affect steelhead critical habitat in the action area through reductions in riparian vegetation and natural cover, increased summer water temperature, loss of pools and habitat adjacent to and connected to streambanks, and increased substrate fine sediment and cobble-embeddedness.

The WWNF proposes to use several conservation measures and grazing management techniques to minimize the impacts of livestock grazing on steelhead critical habitat in the Cold Springs and Teepee Elk Allotments. The WWNF will reduce the time that cows spend in or near streams through: off-site water sources; new drift fences and a riparian exclosure fence; resting pastures in which riparian vegetation is recovering from wildfire and debris flow; and riparian utilization standards. Monitoring riparian utilization will allow WWNF and the permittees to move cows to a new pasture or off the Allotments if the animals are negatively impacting streams or riparian areas. The adaptive management procedures which are part of the Proposed Action will help the WWNF to adjust grazing management as needed to minimize the impact of livestock on streams.

The WWNF will use a combination of stubble height, streambank alteration, and shrub browse to monitor the mid-season and annual impacts of livestock on riparian areas. Of the three indicators, Goss (2013) found that stubble height and stream alteration were most effective at measuring grazing intensity. The WWNF protocols for monitoring the three indicators include:

- The WWNF will assess shrub browse by measuring percent removed of annual leader production for riparian shrubs. Maximum shrub use is 35 percent for all streams in Table 4.

- The WWNF will measure streambank alteration at the end of the grazing season. The endpoint objective for the Allotments is for streambank alteration to remain below 20 percent.

- For stubble height along the streambank, the end of season stubble height objective depends on the pasture's riparian vegetation rating, shown in Table 4. If the WWNF

determined that the pasture's riparian areas were functioning at risk, then the WWNF set an end-of-season stubble height objective of 6 inches or greater (East Fork Peavine Creek and lower Cottonwood Creek). If the WWNF determined that the pasture's riparian areas were in properly functioning condition, then the WWNF set an end-of-season stubble height objective of 4 inches or greater (Broady Creek and upper Cottonwood Creek).

Permittees will conduct trigger monitoring midway through the grazing season in each pasture to see if riparian utilization is nearing the endpoint objectives in Table 4, and will move livestock to the next pasture or off the Allotments based on move-trigger values. If end-of-season objectives are not met on an Allotment (i.e., non-compliance), WWNF staff will conduct the mid-season trigger monitoring the following year. The WWNF will conduct end-of-season monitoring. If end-of-season measurements of any of the three indicators exceed the endpoint objectives, then WWNF range staff will work with the permittees to adjust grazing management practices for that particular pasture for the following year to ensure that there is no long-term damage to riparian conditions.

Stubble Height. Stubble height has a direct relationship to the health of herbaceous riparian plants and the ability of the vegetation to provide streambank protection; to filter out and trap sediment from overbank flows; and in small streams to provide overhead cover (University of Idaho Stubble Height Review Team 2004; Roper 2016; Saunders and Fausch 2007). On monitoring sites across 17 National Forest and four Bureau of Land Management units in the Interior Columbia River basin, Goss (2013) found a linear relationship between increasing stubble height and multiple components of high quality salmonid habitat, including: increasing residual pool depth; increasing streambank stability; increasing percent undercut banks; and decreasing streambank angle. This suggests that across stream and riparian conditions evaluated within the Interior Columbia River basin, the higher the stubble height the greater the likelihood that stream conditions favored by salmonids will be present (Goss 2013).

Multiple studies have evaluated minimum stubble heights necessary to protect stream habitat from the impacts of livestock grazing. Using the PIBO monitoring data from federal lands in the Columbia basin, Goss (2013) found that stubble height was related to streambank disturbance, and streambank disturbance began to increase substantially when stubble heights fell below 10 inches. Bengeyfield (2006) found that a 4-inch stubble height did not initiate an upward trend in stream channel morphology at sites on the Beaverhead-Deerlodge National Forest in Montana, based on 7 to 9 years of monitoring. Clary (1999) found that while 5-inch stubble height at the end of the growing season resulted in improvements in most measured aquatic and riparian conditions in an Idaho meadow after 10 years, 6.5-inch stubble height was needed to improve all measured habitat metrics. Pelster et al. (2004) found that during summer and fall grazing, more than 40 percent of cattle diets were willow when stubble heights were less than 8 inches; and consequently suggested that stubble heights greater than 8 inches were needed to reduce willow consumption during these critical periods. Willows enhance salmonid habitat by providing fish with cover, modulating stream temperatures, and contributing leaf detritus and terrestrial insects that expand food sources (Bryant et al. 2006; Clary and Leininger 2000; Murphy and Meehan 1991). These studies reinforce the observation that higher stubble heights are positively correlated with improving stream conditions for fish habitat.

After reviewing the available scientific literature, including all of the studies mentioned above, Roper (2016) strongly recommended 6 inches as a starting point for a stubble height objective, measured at the end of the growing season, for small to medium sized cold water streams inhabited by salmon and trout. This is consistent with Clary and Webster (1990), who suggested a 6-inch starting point for stubble height objectives in the presence of ESA-listed or sensitive fish. Roper (2016) acknowledges that 4 inches or 8 inches could be appropriate stubble height objectives for some stream sites, but that site-specific data would be necessary to support these more liberal or conservative objectives. Furthermore, a 4-inch stubble height could suffice as a move trigger on spring pastures if there is sufficient time for the graminoid and herbaceous vegetation to grow to meet end-of-growing-season objectives (Roper 2016).

The scientific literature discussed above suggests that WWNF's proposed stubble height endpoint objective of 6 inches for East Fork Peavine Creek and for lower Cottonwood Creek will protect these streams from livestock damage. The WWNF has proposed a 4-inch minimum stubble height for Broady Creek and upper Cottonwood Creek, based on the WWNF's determination that riparian vegetation and stream conditions are in properly functioning condition for both streams (WWNF 2019). The WWNF suggests that continuing the ongoing practice of grazing these pastures with a minimum greenline stubble height of 4 inches will maintain the current riparian conditions. NMFS believes that continuing ongoing grazing practices with a minimum stubble height of 4 inches for these streams for the next 10 years could have small negative impacts to critical habitat, for the following reasons:

- Broady Creek is meeting some key RMOs, such as stream temperature. Between 2011 and 2018, summer water temperatures in Broady Creek consistently met the ODEQ standard for core cold water habitat (<60.8° F). On the other hand, Broady Creek has low levels of shade, low levels of pool habitat and large woody debris, and fine sediment levels above desired conditions (WWNF 2019). Broady Creek is located in a steep canyon, relatively inaccessible to the livestock that graze in the adjacent uplands (WWNF 2019). Using Geographic Information System (GIS) mapping, the WWNF conducted a livestock accessibility analysis for streams in the Allotments. The analysis suggests a low risk that cattle would access the portions of Broady Creek with steelhead spawning habitat (WWNF 2019, Appendix E). Based on this site-specific information and the scientific literature discussed above, we expect: (1) A minimum stubble height of 4 inches for streams will not allow for improvements in some stream habitat parameters, causing negative impacts to critical habitat; but (2) negative impacts to critical habitat will be small because Broady Creek is relatively inaccessible to cows and will not have a high level of grazing in riparian areas.

- Upper Cottonwood Creek is meeting most RMOs, such as temperature and streambank stability. Shade is still very low and riparian vegetation continues to recover from the wildfire in 1998. The WWNF will rest the pasture every other year, and is building a drift fence in the next two years, which will deter livestock from entering the riparian area of upper Cottonwood Creek. Based on this site-specific information and the scientific literature discussed above, we expect: (1) A minimum stubble height of 4 inches for streams will not allow for improvements in some stream habitat parameters, causing negative impacts to critical habitat; but (2) negative impacts to critical habitat

will be small because the WWNF is reducing grazing pressure on this pasture by resting it every other year and building a drift fence to minimize livestock access to the riparian area.

Streambank Alteration. Streambank alteration provides an indicator of the amount of livestock activity in riparian zones, increasing with both the number of cows present and the time spent by those cows in riparian areas. The streambank alteration standard measures the amount of annual bank disturbance caused by livestock grazing, the levels of which can then be related to streambank stability and riparian vegetation conditions within the greenline (Cowley and Burton 2005). Excessive bank trampling can lead to increased channel widths, decreased depths, and slower water velocity. These channel changes can cause mid-channel sediment deposition, which can further erode and reduce water storage in streambanks, resulting in vegetation transitioning from willows and sedges to species preferring drier habitats. These impacts all reduce the quality of fish habitat. Of indicators evaluated by Bengeyfield (2006), bank alteration level was the most sensitive.

Cowley (2002) suggested that the maximum allowable streambank alteration that maintains streambank stability is 30 percent, and that applying a 20 percent streambank alteration standard should allow streambanks to recover. Cowley (2002) cited additional studies to support a recommendation that "Ten percent or less alteration would seem to allow for near optimal recovery and should not retard or prevent attainment of resource management objectives." WWNF proposes a 20 percent maximum streambank alteration standard. Based on Cowley (2002), we expect this standard to: (1) Prevent negative impacts to streambanks from grazing; (2) maintain properly functioning conditions where they currently occur on the Allotments; and (3) allow for stream habitat recovery and an upward trend where habitat indicators are not currently properly functioning. However, where habitat indicators are not properly functioning, continued grazing has the potential to retard the rate of habitat recovery compared to no grazing. A more protracted recovery period could result in greater sediment delivery, wider stream channels, reduced vegetative vigor, and higher water temperatures in the action area for a longer period of time than would occur absent grazing.

Shrub Browse. Burton et al. (2011) consider 40 percent shrub utilization to be light use. Research has shown that heavy to extreme use by grazing animals every year is detrimental to plant health, while light to moderate use maintains overall plant health (Thorne et al. 2005). In general, there is a reduction in seed production when livestock shrub browse is above 55 percent (Winward 2000). There can be a reduction in the overall health of plants, including size and root strength, when heavy and severe utilization levels are sustained over time. Because WWNF is requiring 35 percent maximum shrub use for riparian areas on these Allotments, this endpoint objective should protect most streams from livestock damage.

2.5.1.1 Impacts to Physical and Biological Features

As described above, the WWNF will minimize the impacts of ongoing livestock grazing on critical habitat by building new fences, resting pastures where riparian conditions are recovering from natural disturbance, and applying riparian utilization standards. These measures will reduce but not eliminate the potential for small adverse impacts to some of the essential PBFs in

the action area. The PBFs that could be affected are water quality, forage, natural cover, riparian vegetation, substrate, and floodplain connectivity. Because impacts to riparian areas on the Allotments would be localized and dispersed, we expect localized delays in improving trends for PBFs. When scaled up to the critical habitat designation scale, these localized impacts will not preclude or more than minimally delay development of PBFs.

Water Quality and Forage. Continued grazing could affect water quality through impacts to temperature. Summer stream temperatures on the Allotments are high in lower Cottonwood Creek and shade is very low in many locations on the Allotments. Shade provided by vegetation can be important in keeping stream temperatures cool for salmonids (Zoellick 2004). Shade from vegetation will continue to be important in the future, as stream temperatures rise across the Pacific Northwest. Slight changes in environmental conditions during the 10-year permit term, due to climate change, could therefore amplify the proposed action's effects on water quality. Livestock grazing can directly increase water temperature if riparian vegetation removal results in increased solar exposure. Additionally, reduced riparian vegetation and bank trampling can result in increased streambank instability, which in turn can lead to over-widened streams. Over-widened streams with high width-to-depth ratios expose a greater surface area of shallower water to the sun, which can further increase water temperatures. The proposed conservation measures will reduce but not eliminate the time that livestock spend in riparian areas on the Allotments. Small, localized impacts to shade and stream temperature are therefore possible, resulting in a small impact to the water quality PBF.

Salmonids rely on terrestrial and aquatic invertebrates as a food source. Terrestrial invertebrates fall into stream from riparian vegetation and aquatic invertebrates feed on dead leaves from riparian vegetation (Saunders and Fausch 2009). Livestock grazing could therefore affect forage for salmonids by altering riparian vegetation. However, Saunders and Fausch (2009) observed no difference in invertebrate biomass entering streams between sites managed for rotation grazing and ungrazed sites. Based on the cited literature, we therefore anticipate only very small impacts to the forage PBF.

Substrate. Grazing can negatively impact substrate by increasing substrate fine sediment and cobble-embeddedness when livestock trample streambanks. Subwatersheds in the action area are functioning at risk for sediment. However, streambank condition is generally in good shape and functioning appropriately. Because streambank stability is properly functioning, continued grazing with a maximum of 20 percent streambank alteration will have only a small effect on critical habitat by slowing the recovery of substrate conditions in localized and dispersed stream reaches. The proposed action will not likely result in a degradation in this PBF, just a slowing of recovery toward properly functioning conditions.

Natural Cover and Riparian Vegetation. Riparian vegetation provides cover for salmonids in the form of overhanging vegetation and undercut banks. Salmonids appear to prefer spawning in close proximity of overhead cover (Bjornn and Reiser 1991), and overhead cover protects juvenile salmonids from predation. Riparian vegetation also stabilizes streambanks, and thick riparian vegetation can reduce livestock access to streams, reducing trampling (Gregory and Gamett 2009). Grazing can negatively impact natural cover by consuming or trampling riparian vegetation. Riparian areas are functioning at risk in some streams on the Allotments. Resting

pastures and building new fences will allow for recovery of riparian vegetation in these streams. In the seasons before the new fences are constructed, some short-term adverse impacts to the riparian vegetation and natural cover PBFs may continue. Due to the anticipated effectiveness of the proposed conservation measures, these effects should be localized and short term.

Water Quantity and Floodplain Connectivity. In some cases, riparian grazing and associated removal of riparian vegetation and bank instability can lead to stream down-cutting and a drop in the water table. This could lead to a reduction in floodplain connectivity. Because we expect only small impacts to riparian vegetation and bank stability from the proposed action, we expect that continued grazing on the Allotments would contribute only minimally to any decreases in floodplain connectivity. Off-site water developments across the Allotments divert flow from small springs into stock troughs. The springs are not connected to streams via surface flow but likely contribute to streamflow in streams that support steelhead through ground water contributions. A small quantity of the diverted water may evaporate from the stock troughs and therefore not contribute to streamflow via groundwater subsurface flow. However, based on the small size of the troughs and limited number of troughs, any impact to ground water is likely to be very small. Therefore any decrease in critical habitat water quantity is also likely to be extremely small.

2.5.1.2 Impacts to Critical Habitat from Permittee Non-compliance

When endpoint indicators are not met, the severity of the effects described above (e.g., small impacts to riparian vegetation, reduction of shade, etc.) will increase. Between 2004 and 2018, the WWNF measured at least two instances of permittees exceeding riparian utilization standards on the Allotments and observed one instance of possible non-compliance (based on professional judgement). We assume that periodic non-compliance with riparian utilization standards will continue on the Allotments at a similar rate during the 10-year timeframe of the action. However, we expect that WWNF's proposed adaptive management strategy will minimize the long-term impacts of any exceedances that occur.

2.5.2 Effects on ESA-listed Species

Cattle grazing has the potential to affect ESA-listed fishes by disturbing individual fish; by trampling incubating redds as cows wade through or cross instream habitats; and through impacts to habitat (described above in Section 2.5.1 and summarized below in Section 2.5.2.3). Steelhead redds and rearing juveniles are likely to be present on the Allotments during the grazing season. Adult steelhead will not be present in the action area during the grazing season.

2.5.2.1 Disturbance

Cattle grazing adjacent to streams, or when crossing, drinking or loafing near streams, are reasonably certain to startle or disturb juvenile steelhead in the action area. The WWNF will employ the following measures to reduce the amount of time cows spend in riparian areas: maintaining off-stream water sources and salt; building drift fences and one riparian exclosure; and adhering to riparian utilization standards. Despite these measures, cows are likely to spend

time adjacent to unfenced, accessible streams reaches on the Allotments, particularly in late summer.

For juvenile steelhead, disturbance can lead to behavioral changes that can result in indirect effects through alteration in feeding success, increased exposure to predators, or displacement into less suitable habitat. Although these effects can result in injury or death, we expect the juveniles affected by this action to be able to access nearby cover and avoid injury or death (behavioral effect only). Within the action area bank stability is generally high, indicating that sufficient escape cover to protect fish in the short term is likely available from overhanging banks. NMFS expects behavioral modifications will be infrequent and minor because habitat conditions in the action area should provide suitable escape cover.

2.5.2.2 Steelhead Redd Trampling

Steelhead spawning habitat on the Allotments occurs on Cottonwood Creek, East Fork Peavine Creek, and Broady Creek. Livestock grazing is not permitted on Cottonwood Creek until after July 1, which will prevent any livestock trampling of incubating steelhead eggs or embryos. Livestock grazing will not be permitted on East Fork Peavine Creek before July 1 until the proposed riparian exclosure fence is constructed. Once constructed, the riparian exclosure fence will prevent livestock from accessing steelhead spawning reaches on East Fork Peavine Creek.

Steelhead spawning also occurs on Broady Creek on the Teepee Elk Allotment. Both the Rock Creek and Long Ridge pastures contain portions of Broady Creek which provides steelhead spawning habitat. The permittee may move livestock into these pastures on June 1. The majority of the grazing areas in the two pastures are located on adjacent hillsides or ridgetop flats, and this is where the livestock are first released. Broady Creek is located in a steep narrow canyon below the grazing areas. We do not expect any steelhead redds to be trampled on Broady Creek because:

- We expect cows to spend most of their time in the uplands in the four weeks between turn-out and July 1. Telemetry research on the WWNF (on the Starkey Experimental Forest) suggests that cows spend most of their time in the uplands in the early season (i.e. June). Of a total of 20,371 cattle locations logged over 3 years during this 2-week period, only 36 locations included the stream channel (0.2 percent) (WWNF 2017); and,

- Using GIS, the WWNF conducted a livestock accessibility analysis for streams in the Allotments. The analysis, coupled with a WWNF site visit in 2018, suggest a low risk that cattle would access the portions of Broady Creek with steelhead spawning habitat (WWNF 2019, Appendix E).

2.5.2.3 Habitat-related Effects

Livestock grazing will adversely affect steelhead through the impacts to spawning, rearing, and migration habitat described in Section 2.5.1. The habitat effects which will impact the species include increased summer water temperature, loss of pools and habitat adjacent to and connected to streambanks, increased substrate fine sediment and cobble-embeddedness, and reductions in

riparian vegetation and natural cover. These types of impacts to habitat could have the following effects on individual fish: reductions in natural cover increases exposure of juveniles to predators; reductions in pools and habitat connected to streambanks decreases the availability of habitat to rest from the current, which can lead to increased energy demands on fish; increased water temperature leads to increased metabolic demands for fish (Myrold and Kennedy 2015); and increased sediment deposition can reduce forage (i.e., aquatic invertebrates) (Gleason et al. 2003). All of these effects can lead to harm, harassment, or mortality of rearing salmon and steelhead.

The WWNF proposes to use several conservation measures and grazing management techniques to reduce the time livestock spend in riparian areas and thereby reduce the impacts of livestock grazing on stream habitat. These measures include off-site watering facilities, fencing, resting pastures, and riparian utilization standards. Although cattle will consume and trample some riparian vegetation, the proposed conservation measures and annual utilization standards should limit potential riparian and stream habitat impacts to a few dispersed locations across the Allotments. The scientific literature suggests that the combination of WWNF's stubble height, streambank alteration, and shrub browse endpoint objectives (6-inch or 4-inch stubble height minimum, 20 percent maximum streambank alteration, 35 percent shrub browse) will protect many streams from livestock damage, but will not eliminate livestock damage. As described in Section 2.5.1, we expect localized, dispersed areas of adverse impacts to temperature, riparian vegetation, natural cover, fine sediment, substrate, water quantity, and floodplain connectivity. Although it is not possible to estimate how many, we expect that a small number of juvenile steelhead will experience harm or harassment in these dispersed locations of adverse impacts to habitat on the Allotments over the course of the 10-year permit.

2.6 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 and 402.17(a)). Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Ongoing livestock grazing occurs on private land directly adjacent to pastures on the Allotments and could cause effects in the action area. Livestock grazing on private land adjacent to the action area is likely to continue at its current rate, continuing the effects to stream habitat described in Section 2.4. NMFS is not aware of any other specific private, state, local, or tribal actions that are reasonably certain to occur in the future that will affect the action area.

Some continuing non-Federal activities are reasonably certain to contribute to climate effects within the action area. However, it is difficult if not impossible to distinguish between the action area's future environmental conditions caused by global climate change that are properly part of the environmental baseline vs. cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described in the environmental baseline (Section 2.4).

2.7 Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's Opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

Critical Habitat. Critical habitat is present in the action area for Snake River Basin steelhead. The condition of spawning and rearing habitat across the range of the species varies from excellent in wilderness and roadless areas to poor in areas subject to intensive human land uses. Within the action area, some PBFs are degraded, such as water quality. Streambanks are generally stable but summer stream temperatures are high and fine sediment levels are elevated in some streams. Stream temperatures across the Pacific Northwest are likely to rise in the future due to climate change, such that slight changes in environmental conditions during the 10-year permit term due to climate change could amplify the proposed action's effects on water quality to some small degree.

The WWNF has incorporated several conservation measures (e.g., fencing, off-stream water sources, resting pastures, and riparian utilization standards) into grazing management on the Allotments in order to limit the impacts of livestock on designated critical habitat. Based on available scientific literature, NMFS expects that these measures will reduce but not eliminate the potential for small adverse impacts to some of the essential PBFs in the action area. The PBFs that could be affected are water quality, forage, natural cover, riparian vegetation, substrate, water quantity, and floodplain connectivity. These impacts will not preclude or significantly delay development of the critical habitat features in the watersheds affected by the proposed action because: (1) Impacts to riparian areas on these Allotments would be localized and dispersed; and (2) we expect the proposed adaptive management strategy for the Allotments to identify trends in stream habitat conditions over the term of the permit, and for the WWNF to adjust grazing practices where habitat conditions and trends are not meeting resource objectives. The proposed action will therefore not appreciably diminish the conservation value of designated critical habitat in the watersheds affected by grazing on these Allotments. Because the conservation value of critical habitat will not be appreciably diminished in these watersheds, the conservation value of critical habitat at the designation scale will not be appreciably diminished.

Species. Snake River Basin steelhead are threatened with extinction. The Joseph Creek population, which occupies the action area, was rated as highly viable in 2015 (NWFSC 2015) but has seen a precipitous drop in adult returns in the past three years. Future deterioration of water quality, water quantity, or physical habitat due to climate change is expected to cause a reduction in the number of naturally-produced adults returning to populations across the DPS (NMFS 2017).

The proposed action has the potential to affect ESA-listed fish by disturbing juveniles and by impacts to stream habitat from riparian grazing. Conservation measures to reduce the time livestock spend in riparian areas will reduce the amount of potential disturbance to individual fish as will the proposed adaptive management strategy, as described in Section 1.3.4. We expect that behavioral modifications of individual fish disturbed by livestock will be minor because habitat conditions in the action area should provide suitable escape cover.

We expect that a small number of juvenile steelhead will experience harm or harassment in dispersed locations because of adverse impacts to habitat on the Allotments over the course of the 10-year grazing term, as described in Section 2.5.1. Because the number of individual steelhead affected will be small, this loss would not be great enough to impact the population abundance of the Joseph Creek steelhead population. Because the proposed action would only minimally affect the attributes of a VSP for the Joseph Creek population, the proposed action will not reduce appreciably the likelihood of the survival and recovery of the species.

2.8 Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, any effects of interrelated and interdependent activities, and cumulative effects, it is NMFS' Opinion that the proposed action is not likely to jeopardize the continued existence of Snake River Basin steelhead or destroy or adversely modify designated critical habitat for the species.

2.9 Incidental Take Statement

Section 9 of the ESA and federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). On an interim basis, NMFS interprets "Harass" to mean "Create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." "Incidental take" is defined by regulation as 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(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

2.9.1 Amount or Extent of Take

The proposed action is reasonably certain to result in incidental take of ESA-listed steelhead. NMFS is reasonably certain the incidental take described here will occur because livestock will graze alongside streams occupied by steelhead. In the Opinion, NMFS determined that incidental take is reasonably certain to occur from habitat-related impacts on rearing juveniles.

NMFS expects that behavioral modifications of juvenile steelhead, due to cows grazing alongside streams, will be minor because habitat conditions in the action area should provide adequate escape cover to mitigate for localized disturbance. Effects due to disturbance of individual juvenile steelhead are therefore not reasonably certain to rise to the level of take.

Habitat-related Take. It is not possible to observe the number of fish subjected to habitat-related impacts from grazing because we cannot precisely predict where and when habitat impacts will occur across the Allotments and over the course of the 10-year grazing term. NMFS will therefore use the extent of streambank alteration as a surrogate for habitat-related take, pursuant to 50 CFR 402.14(i)(1)(i). Percent streambank alteration is the best extent of take indicator for the habitat pathways of incidental take. This is because: (1) The habitat effects of cattle grazing increase with the amount of time cattle spend in close proximity to streams; (2) all habitat pathways of take will vary in proportion to streambank alteration including shade, riparian conditions and natural cover, and fine sediment and substrate; (3) measured streambank alteration is a function of within-season grazing as opposed to other indicators that might require long-term monitoring; and (4) streambank alteration is measured by a standardized and repeatable methodology. It is important to point out here that NMFS is not saying that streambank alteration is, in itself, take. Nor does streambank alteration necessarily and directly cause take of steelhead in every case. Rather, NMFS is reasonably certain that the overall habitat effects of grazing cattle on the Allotments will cause take, and that measured streambank alteration is the best currently available single indicator that is proportional to all of those effects.

Extent of Take. We estimate that three exceedances of percent streambank alteration could occur during the 10-year grazing term based on the past non-compliance history on the Allotments and the proposed monitoring program. NMFS anticipated such exceedances in our analysis of effects. The extent of take will be exceeded if streambank alteration in a pasture occupied by ESA-listed fish exceeds 20 percent at the end of the grazing season more than three times during the permit term. Such an exceedance would be detected by the WWNF's proposed monitoring program, and reinitiation would be triggered after three instances.

2.9.2 Effect of the Take

In this Opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

2.9.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

The WWNF and its permittees shall:

1. Minimize incidental take from livestock grazing on the Cold Springs and Teepee Elk Allotments.

2. Ensure completion of a monitoring and reporting program to confirm that the terms and conditions in this ITS were effective in avoiding and minimizing incidental take from permitted activities and that the extent of take was not exceeded.

2.9.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and WWNF and its permittees must comply with them in order to implement the RPMs (50 CFR 402.14). The WWNF and its permittees have a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. The following terms and conditions implement RPM 1 (minimize take from livestock grazing):

    a. The WWNF shall monitor end-of-season riparian utilization (stubble height, streambank alteration, and shrub browse) every year in pastures in which livestock grazing overlaps with accessible spawning reaches for ESA-listed species.

    b. The WWNF shall ensure that appropriately trained WWNF staff monitor streambank alteration levels for each pasture with end-of-season objectives. If the take surrogate of 20 percent streambank alteration is exceeded more than three times during the 10-year grazing term, the WWNF shall contact the NMFS Snake Basin Office immediately.

2. The following terms and conditions implement RPM 2 (monitoring and reporting). The WWNF shall:

    a. Submit an annual monitoring report to NMFS by February 1 each year with the following:

        i. Did the permittees use the Allotments this year? Were there any differences in season of use, livestock numbers, or livestock management techniques from the Proposed Action?

        ii. Provide results from all implementation monitoring conducted in the past year. Identify any non-compliance with riparian utilization standards. What management responses did the WWNF take in response to the non-compliance?

        iii. Describe any unauthorized use (e.g., non-compliance with season of use for a pasture or allotment). Describe any maintenance problems related to fences or water developments. What management responses did the WWNF take in response to the unauthorized use or maintenance problems?

iv. Provide results from all effectiveness monitoring conducted in the past year. Based on the effectiveness monitoring results, does the WWNF propose any changes in grazing management for the Allotments? If so, what are the proposed changes?

v. Provide any new information regarding Snake River Basin steelhead or their habitat on the Allotments (e.g., steelhead distribution and abundance on the Allotments, stream habitat trends, location of spawning, etc.).

b. Submit the report to the WWNF Level 1 Team.

2.10 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. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

The following recommendation is a discretionary measure that NMFS believes is consistent with this obligation and therefore should be carried out by WWNF:

1. To mitigate the effects of climate change on ESA-listed salmonids, follow recommendations by the Independent Scientific Advisory Board (2007) to plan now for future climate conditions by implementing protective tributary habitat measures. Implement measures to protect or restore riparian buffers, wetlands, and floodplains; remove stream barriers; and ensure late summer and fall tributary streamflows.

2.11 Reinitiation of Consultation

This concludes formal consultation for the permitting of grazing activities on the Cold Springs and Teepee Elk Allotments.

As 50 CFR 402.16 states, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental taking specified in the ITS is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

3. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The 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.

3.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this Opinion are the WWNF and its permittees. Individual copies of this Opinion were provided to the WWNF. The format and naming adheres to conventional standards for style.

3.2 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.

3.3 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, and ESA regulations, 50 CFR 402.01 et seq.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this Opinion 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 implementation, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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APPENDIX A

MAPS

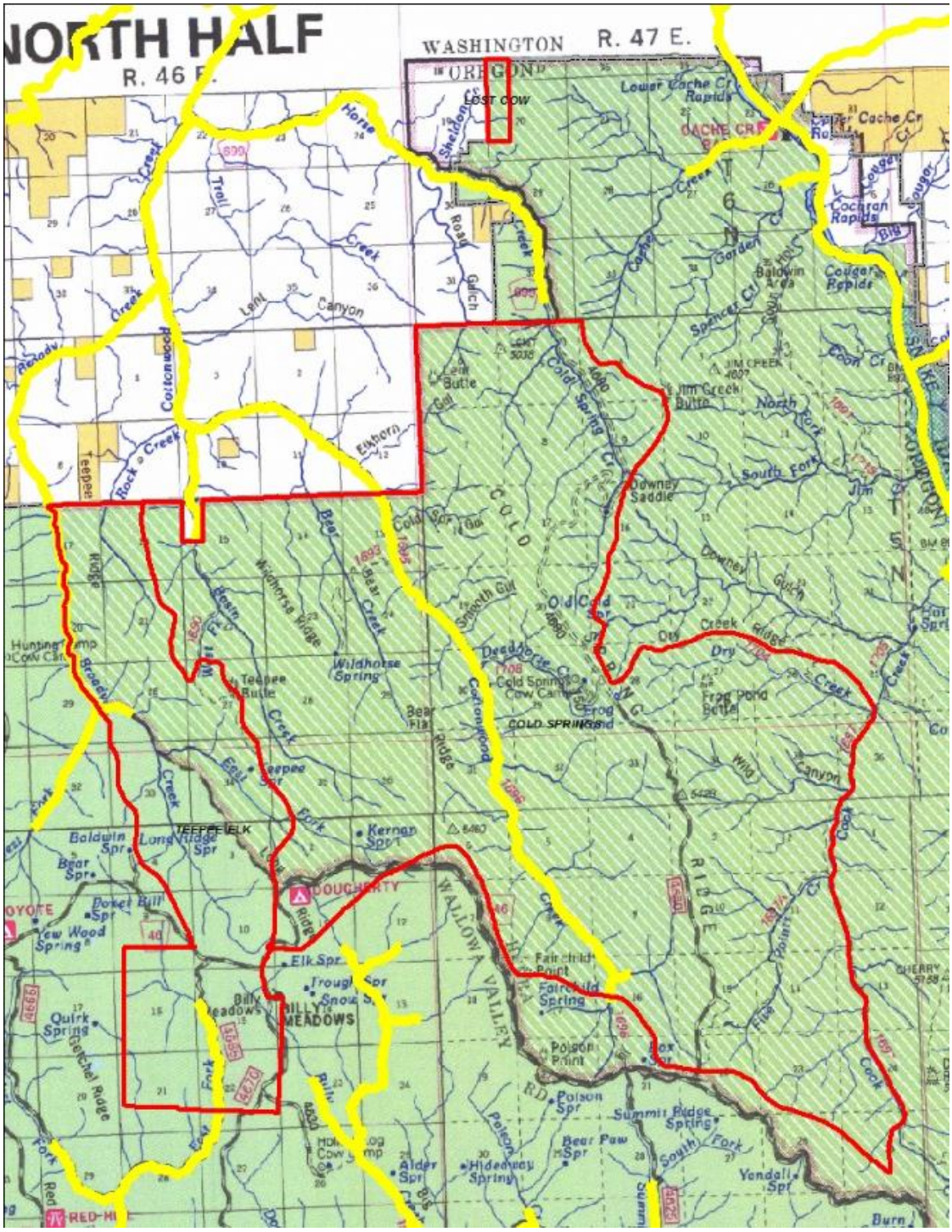

Figure A-1. Overlap between steelhead habitat and the Allotments. Red lines mark allotment boundaries. Yellow lines mark steelhead distribution.