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 97232-1274

NMFS No.: WCRO-2024-00834

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August 6, 2024

Mary D'Aversa
District Manager
Idaho Falls District
Bureau of Land Management
1405 Hollipark Drive
Idaho Falls, ID 83401

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the South Carmen Creek Grazing Allotment Permit Renewal; Freeman Creek - 170602030502; Lower Carmen Creek - 170602030503; Fenster Creek-Salmon River - 170602030404; Lower Lemhi Valley-Lemhi River - 170602040809; and Kirtley Creek - 170602040808. Lemhi County, Idaho

Dear Ms. D'Aversa:

Thank you for your letter of April 12, 2024, 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 South Carmen Creek Grazing Allotment Permit Renewal.

Thank you also for your request for essential fish habitat (EFH) consultation. NMFS reviewed the proposed action for potential effects on EFH pursuant to Section 305(b) of the Magnuson–Stevens Fishery Conservation and Management Act (MSA), implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete the EFH consultation. However, we concluded that there are no adverse effects on EFH. Therefore, we are hereby concluding EFH consultation.

In this biological opinion (opinion), NMFS concludes that the action, as proposed, is not likely to jeopardize the continued existence of Snake River Basin (SRB) steelhead. NMFS also concurs with the Bureau of Land Management Salmon Field Office determination that the proposed action may affect, but is not likely to adversely affect

(NLAA), designated critical habitats (DCH) for SRB steelhead and Snake River (SR) spring/summer Chinook salmon. 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 (RPM) that NMFS considers necessary or appropriate to minimize the impact of incidental take associated with this action. The ITS sets forth terms and conditions, including reporting requirements, with which the BLM, including any permittee who performs any portion of the action, must comply in order to be exempt from the ESA take prohibition.

You may contact Kimberly Murphy**,** consulting biologist**,** in the Southern Snake Branch of the Snake Basin Office at (208) 768-7714 or kimberly.murphy@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

Nancy L Munn

Nancy L. Munn, Ph.D.
Acting Assistant Regional Administrator
Interior Columbia Basin Office

Enclosure

cc: L. Price – BLM
V. Guyer – BLM
Z. Salada – BLM
E. Traher – FWS
C. Colter – SBT

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion, Concurrence Letter, and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response

South Carmen Creek Grazing Allotment Permit Renewal

NMFS Consultation Number: WCRO-2024-00834

Action Agency: USDI, Bureau of Land Management

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely to Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely to Destroy or Adversely Modify Critical Habitat?
Snake River spring/summer Chinook salmon (*Oncorhynchus tshawytscha)*	Threatened	NA	NA	No	NA
Snake River Basin steelhead (*O. mykiss*)	Threatened	Yes	No	No	NA

Fishery Management Plan That Identifies EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	No	No

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

Issued By: Nancy L Munn

Nancy L. Munn, Ph.D.
Acting Assistant Regional Administrator
Interior Columbia Basin Office
National Marine Fisheries Service

Date: August 6, 2024

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GLOSSARY OF ACRONYMS

AUM	Animal Unit Month(s)
BA	Biological Assessment
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
DCH	Designated Critical Habitat
DMA	Designated Monitoring Area
DPS	Distinct Population Segment
DQA	Data Quality Act
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FR	Federal Register
GGW	Greenline-to-Greenline Width
IDFG	Idaho Department of Fish and Game
MIM	Multiple Indicator Monitoring
NLAA	Not Likely to Adversely Affect
MPG	Major Population Group
MSA	Magnuson–Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
opinion	Biological Opinion
PBF	Physical or Biological Feature
PCE	Primary Constituent Element
PFC	Proper Functioning Condition
PNC	Potential Natural Community
RMO	Resource Management Objective
SR	Snake River
SRB	Snake River Basin
RPM	Reasonable and Prudent Measure
U.S.C.	United States Code
USGCRP	U.S. Global Change Research Program
VSP	Viable Salmonid Population

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

The 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.), as amended, and implementing regulations at 50 CFR 402.

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). The document will be available within 2 weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. A complete record of this consultation is on file at NMFS' Snake Basin Office, Boise, Idaho.

1.2. Consultation History

The draft biological assessment (BA) for the South Carmen Grazing Allotment (Allotment) was submitted to the Level 1 Team for review at the February 23, 2022. Follow up conversations occurred on July 27, 2022, and August 3, 2022. On September 28, 2022, a revised draft BA was submitted to NMFS and a follow up meeting was conducted on September 29, 2022. Additional information was request by NMFS on October 14, 2022, at which time the Bureau of Land Management (BLM) responded on October 26, 2022, to inform NMFS that the BLM was pausing the consultation while the BLM awaited the resolution of a Level 2 elevation. The Level 2 response letter was delivered back to the Level 1 representatives May 23, 2023. On November 29, 2023, the BLM submitted a revised draft BA to NMFS, and on December 7, 2023, a field visit occurred between BLM and NMFS representatives. Comments from NMFS were received on February 7, 2024, with the BLM responses being returned to NMFS on March 18, 2024. An additional clarification was requested by NMFS on April 5, 2024, with a final conversation taking place on April 8, 2024. The final BA and request for consultation was received by NMFS on April 12, 2024, and consultation was initiated at that time.

NMFS shared the draft proposed action and proposed conservation measures with the BLM on July 18, 2024. The BLM provided comments and/or suggested revisions to the draft opinion on August 1, 2024.

The BLM's proposed authorization of cattle grazing on the Allotment will likely affect tribal trust resources. Because the action is likely to affect tribal trust resources, NMFS contacted the Shoshone–Bannock Tribes pursuant to the Secretarial Order (June 5, 1997). A copy of the draft proposed action and conservation recommendations were sent to the Shoshone–Bannock Tribes on July 19, 2024, with a request for comments. NMFS did not receive any response.

Updates to the regulations governing interagency consultation (50 CFR part 402) were effective on May 6, 2024 (89 FR 24268). We are applying the updated regulations to this consultation. The 2024 regulatory changes, like those from 2019, were intended to improve and clarify the consultation process, and, with one exception from 2024 (offsetting RPMs), were not intended to result in changes to the Services' existing practice in implementing Section 7(a)(2) of the ESA (89 FR 24268; 84 FR 45015). We have considered the prior rules and affirm that the substantive analysis and conclusions articulated in this opinion and ITS would not have been any different under the 2019 regulations or pre-2019 regulations.

1.3. Proposed Federal Action

Under the ESA, "action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (see 50 CFR 402.02). The BLM proposes the continued authorization of grazing on the South Carmen Creek Allotment for a period of 20 years after the permit is issued. This Allotment consists of approximately 14,715 acres of land in eight pastures (Figure 1 and 2). The anticipated timeframe is for the 2024 through 2044 grazing seasons.

The proposed action will include specifics regarding all grazing permit information, including Mandatory Terms and Conditions described in 43 CFR 4130.3: Maximum Number/Kind; Maximum Grazing Period; percent Public Land; Active Animal Unit Months (AUMs); Suspended AUMs; and Permitted Use. Definitions of each follows:

- Permittee: Last name, or company name, of permittee.
- Number/Kind: The kind of livestock allowed on the Allotment and the maximum number of animals.
- Period: The maximum time period that livestock can be on the Allotment.
- Percent Public Land: The percentage of forage available on public lands within the Allotment compared to the total amount available from both public lands and those owned by the permittee.
- AUM: Federal Regulations, 43 CFR 4130.8-1 defines AUMs as "a month's use and occupancy of range by one cow, bull, steer, heifer, horse, burro, mule, five sheep, or five goats, over the age of 6 months at the time of entering the public lands or other lands administered by the BLM".
- Active AUMs: The current authorized use, including livestock grazing and conservation use. Active use may constitute a portion, or all, of permitted use. Active use does not include temporary non-use or suspended use of forage within all or a portion of an Allotment.
- Suspended AUMs: The temporary withholding from active use, through a decision issued by the authorized officer or by agreement, of part or all of the permitted use in a grazing permit or lease.

- Permitted Use: The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease and is expressed in AUMs.

Federal Regulations, 43 CFR 4130.3–1 describe Mandatory [Permit] Terms and Conditions as follows:

"The authorized officer shall specify the kind and number of livestock, the period(s) of use, the allotment(s) to be used, and the amount of use, in AUMs, for every grazing permit or lease. The authorized livestock grazing use shall not exceed the livestock carrying capacity of the allotment." In addition to Mandatory Terms and Conditions, Other Terms and Conditions may be added to permits. The proposed action will stock the South Carmen Allotment at a moderate stocking density of 9 acres per AUM (Table 1).

Table 1. Permitted Use of the South Carmen Creek Allotment.

Permit	Maximum Number/Kind	Maximum Grazing Period	Percent Public Land	Active AUMs	Suspended AUMs	Permitted Use
Permittee 1	200 Cattle	5/15–1/15	100	266	195	461
Permittee 2	130 Cattle	5/15–1/15	100	133	95	228
Permittee 3	41 Cattle	5/15–1/15	100	107	82	189
Permittee 4	100 Cattle	5/15–1/15	100	115	79	194
Permittee 5	205 Cattle	5/15–1/15	100	540	388	928
Permittee 6	135 Cattle	5/15–1/15	100	352	0	352
Permittee 7	65 Cattle	5/15–1/15	100	170	120	290
Permittee 8	130 Cattle	5/15–1/15	100	36	23	59

Other [Permit] Terms and Conditions:

1. Livestock numbers, grazing period, and active AUMs shown under Mandatory [Permit] Terms and Conditions reflect the maximum number that can be used in any given year. The number of livestock may be reduced within the season indicated, or the season of use may be shortened, in order to not exceed the maximum number of Active AUMs indicated.
2. You [the Permittee] will coordinate with the BLM prior to turnout and develop a tentative plan for the year, including livestock numbers, on/off dates, and pasture rotation. The BLM will review the plan and ensure it meets the Terms and Conditions of the permit. To adjust the plan during the season, you will coordinate with the BLM to ensure the adjustments will continue to meet the Terms and Conditions of the permit.
3. The Seeding, North Shearing Pen, and Shearing Pen Pastures, will not be utilized between May 15 and June 15 in more than two consecutive years.
4. The Broad Gulch Pasture will not be utilized between May 15 and May 30 in more than two consecutive years.
5. The North Shearing Pen Pasture will not be utilized between July 15 and September 15.

6. All range improvements will be maintained prior to turn-out, and all water developments and associated pipelines will be drained and winterized at the end of the grazing season.
7. Your [the Permittee] certified actual use report is due within 15 days of completing your authorized annual grazing use.
8. Supplemental feeding is authorized and is limited to salt, mineral, and/or energy/protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile away from any stream and 500 feet away from any spring.
9. Exclosures in the Allotment cannot be grazed by livestock at any time.

Range Improvements:

- Lemhi County Recreation and Public purposes Act Lease Area: The existing public purpose lease area in the southwest corner of the Allotment within the Broad Gulch Pasture would be excluded from grazing use. The area is already fenced.
- Raindrop Spring Water Development: Raindrop Spring would be extended with the addition of approximately 3,500 feet of flexible poly pipe and three water troughs. One trough would be located on the road junction below the Raindrop Spring exclosure along an existing two-track road in the South Cottonwood Pasture. The second and third troughs would be located approximately 2,500 feet below along the division fence between the North and South Cottonwood Pastures. The troughs would be equipped with float valves to control water capacity.
- Cottonwood Gulch Exclosure: Construct the Cottonwood Gulch Exclosure Range Improvement Project. Approximately 2,000 feet of fence would be built to exclude approximately 4 acres from livestock use. The fence would be constructed of jack and poles, either wood or metal. Construction would not occur during sage-grouse nesting, May 1 to June 30, during winter, nor between 6 pm to 9 am during the lekking season, to prevent disturbance to wintering sage-grouse.
- Cottonwood Fence Removal: The Cottonwood Fence Range Improvement Project would be removed, and the North and South Cottonwood Pastures would become the Cottonwood Pasture. The fence removal would not occur during sage-grouse nesting, May 1 to June 30, during winter, nor between 6 pm to 9 am during the lekking season, to prevent disturbance to wintering sage-grouse.

Riparian Management Objectives and Monitoring:

Grazing focus indicators are discussed in detail in Appendix 3 of the BA (BLM 2024). The BLM established a designated monitoring area (DMA) within the South Carmen Creek Allotment along Freeman Creek in 2011 (Table 2). Cattle have access to 0.15 miles of Freeman Creek, in the North Shearing Pen Pasture, but not in the Barrel Spring Pasture. The 0.07 miles of Freeman Creek in the Barrel Springs pasture exists in a sharp, narrow crag that precludes cattle access. The BLM will conduct a pre-grazing season meeting with the permittees to record their intended grazing plan for that grazing year. This information will be used to schedule the implementation monitoring to occur approximately halfway through the scheduled grazing use period(s). Should

grazing occur longer than 30 days during the timeframe outlined in [permit] term and conditions; the DMA will be revisited on an approximate 30-day interval. While cattle are in the Allotment, use supervision ensures that the permittees comply with the permitted season of use. Annual use indicators are established on this Allotment to limit the extent of grazing impacts on riparian habitat. Past use levels and season of use/duration (spring grazing) have resulted in a visually observed improvement in conditions (BLM 2024). Information on existing condition can be found in the Environmental Baseline Section 2.4 of this document.

If grazing use in the North Shearing Pen pasture occurs from September 15 through the end of the permitted season of use, woody species use will be collected at the DMA approximately halfway through the grazing use period(s). Should grazing during this timeframe occur for longer than 30 days, the DMA will be revisited on an approximate 30-day interval. The in-season use indicator will not surpass a light to moderate level of use (45 percent) for the average use of all woody species (Burton et al. 2011). If the percentage of woody species use is above the 45 percent mark, cattle will be removed from the pasture. The Salmon Field Office collects long-term multiple indicator monitoring (MIM) data on a three- to five-year interval; every five years if the DMA meets Resource Management Objectives (RMO) such as 80 percent or 90 percent streambank stability and late seral status. If the DMA falls below either of these RMOs the DMA is re-read every three years. Woody species was collected at DMA-06106-07-R001 most recently in 2020, indicating a 13.1 percent use level for all woody species, which is considered "slight use" since available current year leaders show little to no use (Burton et al. 2011).

Annual use indicators and RMOs will be recorded as outlined in the terms and conditions of the permit. Alteration, stubble height, and woody species use will be used on this Allotment to monitor the impacts of grazing on bank stability and other riparian conditions. Freeman Creek is not a PACFISH priority watershed but is occupied by Snake River Basin (SRB) steelhead, thus the RMO for the stream is 90 percent bank stability. Annual grazing monitoring reports will be submitted to the Services (NMFS and the U.S. Fish and Wildlife Service) for Level 1 review. Appendix 2, Figures 5 through 8 in the BA, show the current 2020 DMA monitoring photos (BLM 2024).

Table 2. Implementation Monitoring Objectives for the South Carmen Creek Allotment.

Stream	Pasture	DMA	RMO	Grazing Use Indicator In-Season	Grazing Use Indicator End-of-Season
Freeman Creek	North Shearing Pen	06106-07-R001	90 percent bank stability	<15% bank alteration	<15% bank alteration
				<45% Woody species use*	<45% Woody species use*
			Late seral greenline successional status	6" key hydric species Greenline stubble	6" key hydric species Greenline stubble
				<45% Woody species use*	<45% Woody species use*

*Woody species use will be used for implementation monitoring only from September 15 through the end of permitted grazing season.

We considered, under the ESA, whether or not the proposed action would cause any other activities and determined that it would not.

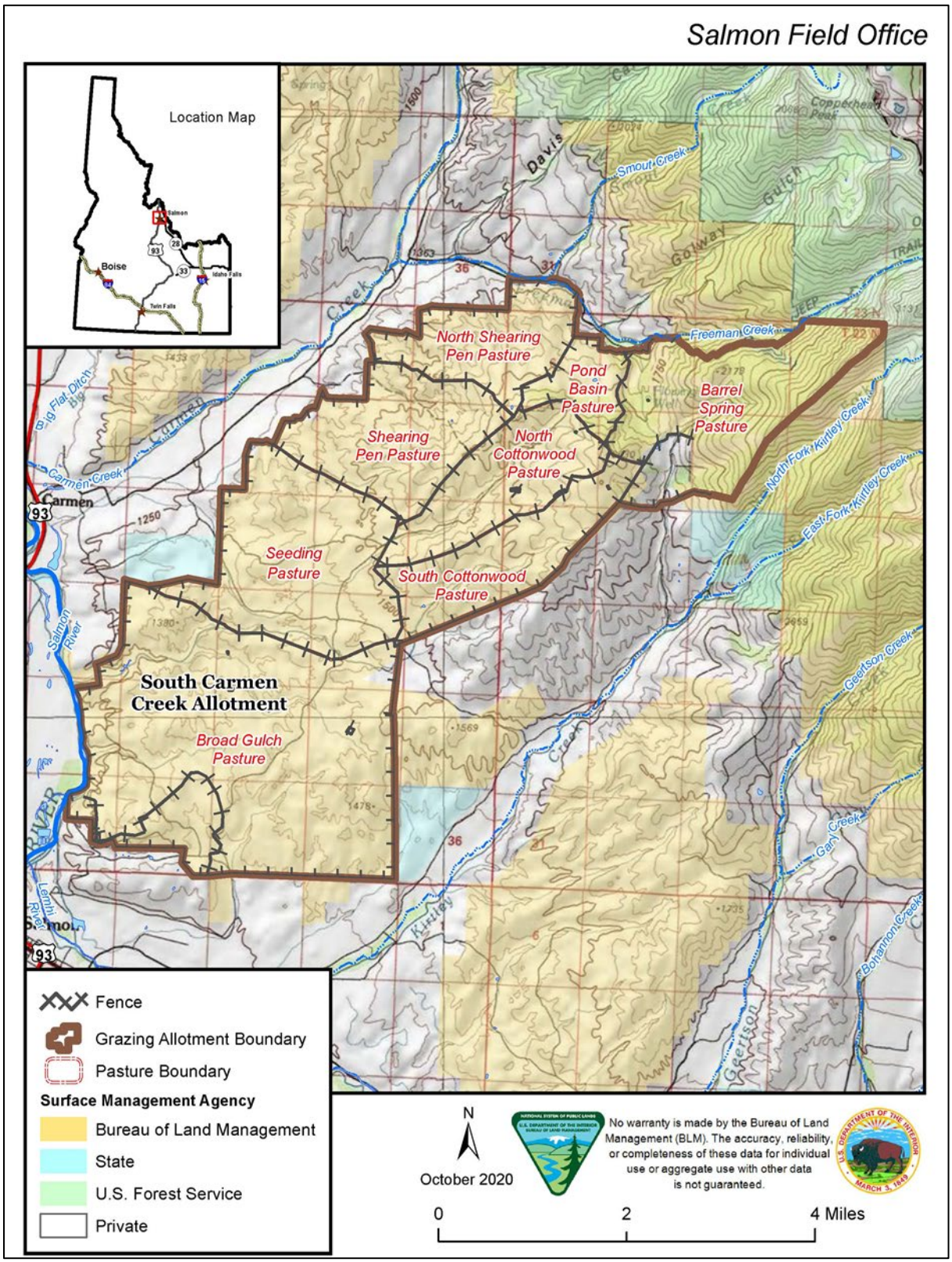

Figure 1. South Carmen Creek Allotment.

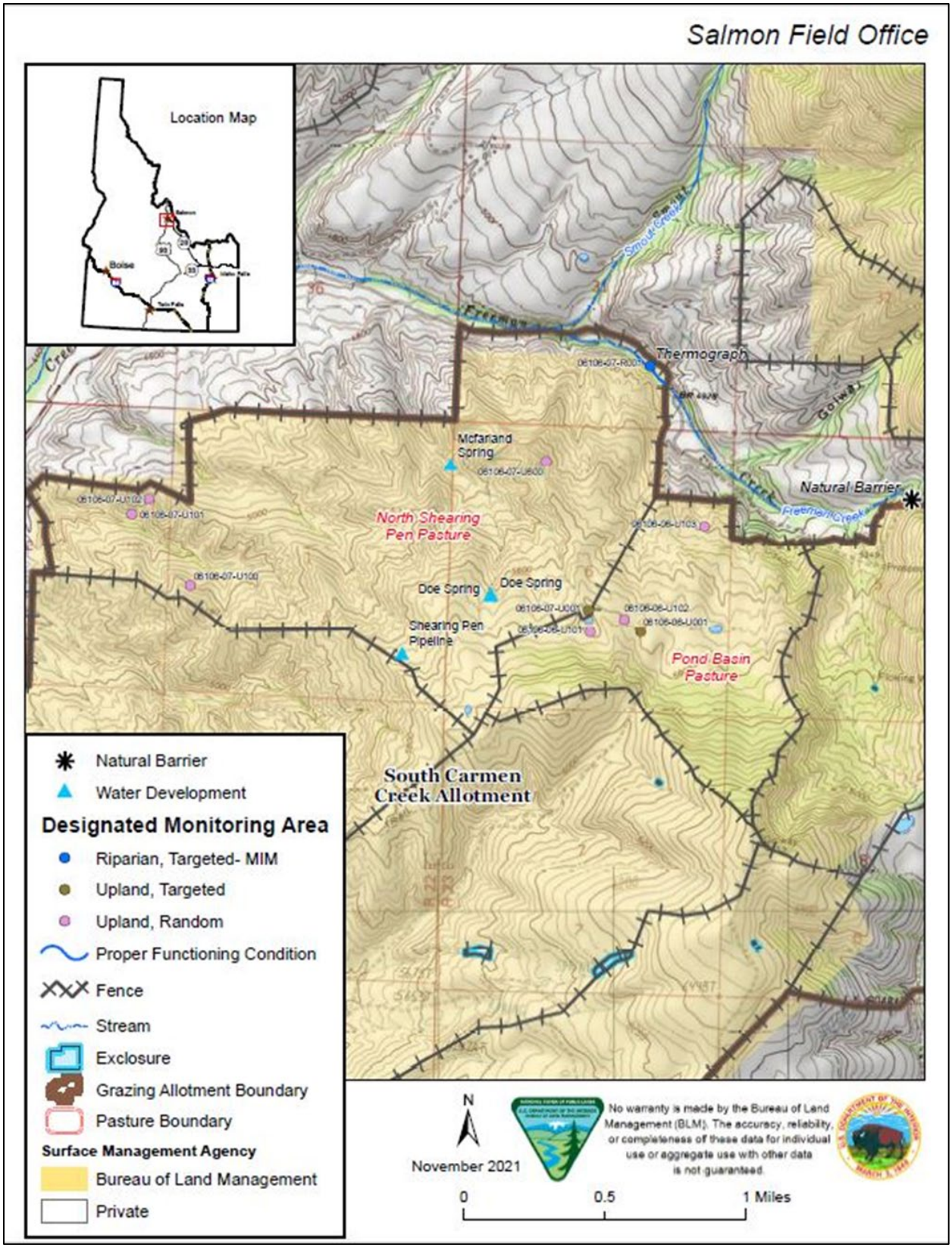

Figure 2. North Shearing Pen and Pond Basin Pastures.

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 (DCH). 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 provide an opinion stating how the agency's actions would affect listed species and their critical habitats. 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 RPMs and terms and conditions to minimize such impacts.

The BLM determined the proposed action is likely to adversely affect (LAA) SRB steelhead. The BLM also determined the proposed action may affect, but not likely to adversely affect (NLAA) DCH for SRB steelhead and Snake River (SR) spring/summer Chinook salmon. Our concurrence with the NLAA determination for steelhead and Chinook salmon DCH is documented in the NLAA Determinations section (Section 2.12). Table 3, below, provides the ESA listing status for the species and habitats.

Table 3. Listing status, status of critical habitat designations, protective regulations, and relevant Federal Register (FR) decision notices for Endangered Species Act (ESA) listed species considered in this opinion.

Species	Listing Status	Critical Habitat	Protective Regulations
Steelhead (*Oncorhynchus mykiss*)			
Snake River Basin	T 8/18/97; 62 FR 43937	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160

2.1. Analytical Approach

This opinion includes a jeopardy analysis. The jeopardy analysis relies upon the regulatory definition of "jeopardize the continued existence of" a listed species, which is "to engage in an action that reasonably 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.

The ESA Section 7 implementing regulations define effects of the action using the term "consequences" (50 CFR 402.02). As explained in the preamble to the final rule revising the definition and adding this term (84 FR 44976, 44977; August 27, 2019), that revision does not change the scope of our analysis, and in this opinion we use the terms "effects" and "consequences" interchangeably.

We use the following approach to determine whether a proposed action is likely to jeopardize listed species:

- Evaluate the rangewide status of the species expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species.
- Evaluate the effects of the proposed action on species using an exposure–response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species, analyze whether the proposed action is likely to directly or indirectly 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.
- If necessary, suggest a reasonable and prudent alternative to the proposed action.

2.2. Rangewide Status of the Species

This opinion examines the status of the SRB steelhead distinct population segment (DPS) that is likely to 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 to inform the description of the species' "reproduction, numbers, or distribution" for the jeopardy analysis. This DPS is composed of multiple populations, which spawn and rear in different watersheds across the SR basin. NMFS expresses the status of a DPS in terms of likelihood of persistence over 100 years (or risk of extinction over 100 years). NMFS uses McElhany et al.'s (2000) description of a viable salmonid population (VSP) that defines "viable" as less than a 5 percent risk of extinction within 100 years and "highly viable" as less than a 1 percent risk of extinction within 100 years. A third category, "maintained," represents a less than 25 percent risk within 100 years (moderate risk of extinction). To be considered viable, a DPS should have multiple viable populations so that a single catastrophic event is less likely to cause the DPS to become extinct, and so that the DPS may function as a metapopulation that can sustain population-level extinction and recolonization processes (ICTRT 2007). The risk level of the DPS is built up from the aggregate risk levels of the individual populations and major population groups (MPGs) that make up the DPS.

Attributes associated with a VSP are: (1) abundance (number of adult spawners in natural production areas); (2) productivity (adult progeny per parent); (3) spatial structure; and (4) diversity. A VSP needs sufficient levels of these four population attributes in order to: safeguard the genetic diversity of the listed Evolutionarily Significant Unit (ESU) or DPS; enhance its capacity to adapt to various environmental conditions; and allow it to become self-sustaining in the natural environment (ICTRT 2007). These viability attributes are influenced by survival, behavior, and experiences throughout the entire salmonid life cycle, characteristics that

are influenced in turn by habitat and other environmental and anthropogenic conditions. The present risk faced by the DPS informs NMFS' determination of whether additional risk will appreciably reduce the likelihood that the DPS will survive or recover in the wild.

NMFS maintains online status of the species discussions, which incorporate information from the species' recovery plans, the most recent 5-year reviews, the Biological Viability Assessment Update for Pacific Salmon and Steelhead (Ford 2022), and other best available information pertinent to the VSP parameters. NMFS strives to update the status of the species material annually and considers it the best available information. For this document, we have incorporated that discussion by reference below and a printed copy of the information has been retained in our project file in the event the material becomes unavailable in the future.

To view the most recent 5-year review for SRB steelhead (NMFS 2022), the reader is directed to the following web address: https://doi.org/10.25923/pxax-h320. A summary of the current status of the SRB steelhead DPS can be found on NMFS' publicly available intranet site (https://www.fisheries.noaa.gov/s3/2023-02/feb-2023-status-snake-r-steelhead.pdf), and is incorporated by reference here (NMFS 2023). Overall, available information suggests that SRB steelhead continue to be at a moderate risk of extinction within the next 100 years and this DPS continues to face threats from tributary and mainstem habitat loss, degradation, or modification; predation; harvest; hatcheries; and climate change. The proposed action may affect the Lemhi River population, which is in the Salmon River Major Population Group (MPG). Ten of the 11 populations within this MPG, including the Lemhi River population, have a VSP risk rating[1] of moderate for abundance/productivity and low for spatial structure/diversity, and were considered to be maintaining viability in the 2022 assessment (Ford 2022).

2.2.1. Climate Change Implications for ESA-listed Species

One factor affecting the rangewide status of SR salmon and steelhead, and aquatic habitat at large is climate change. As observed by Siegel and Crozier in 2019, long-term trends in warming have continued at global, national, and regional scales. The five warmest years in the 1880 to 2019 record have all occurred since 2015, while 9 of the 10 warmest years have occurred since 2005 (Lindsey and Dahlman 2020). The year 2020 was another hot year in national and global temperatures; it was the second hottest year in the 141-year record of global land and sea measurements and capped off the warmest decade on record (https://www.ncei.noaa.gov/access/monitoring/monthly-report/global/202013).

Events such as the 2014–2016 marine heatwave (Jacox et al. 2018) are likely exacerbated by anthropogenic warming, as noted in the annual special issue of Bulletin of the American Meteorological Society on extreme events (Herring et al. 2018). The U.S. Global Change Research Program (USGCRP) reports average warming in the Pacific Northwest of about 1.3ºF from 1895 to 2011, and projects an increase in average annual temperature of 3.3ºF to 9.7ºF by 2070 to 2099 (compared to the period 1970 to 1999), depending largely on total global emissions

[1] Risk ratings are defined based on the risk of extinction within 100 years: High = greater than or equal to 25 percent; Moderate = less than 25 percent; Low = less than 5 percent; and Very Low = less than 1 percent.

of heat-trapping gases (predictions based on a variety of emission scenarios including B1, RCP4.5, A1B, A2, A1FI, and RCP8.5 scenarios). The increases are projected to be largest in summer (USGCRP 2018).

Climate change generally exacerbates threats and limiting factors, including those currently impairing salmon and steelhead survival and productivity. The growing frequency and magnitude of climate change related environmental downturns will increasingly imperil many ESA-listed stocks in the Columbia River basin and amplify their extinction risk (Crozier et al. 2019, 2020, 2021). This climate change context means that opportunities to rebuild these stocks will likely diminish over time. As such, management actions that increase resilience and adaptation to these changes should be prioritized and expedited. For example, the importance of improving the condition of and access and survival to and from the remaining functional, high-elevation spawning and nursery habitats is accentuated because these habitats are the most likely to retain remnant snowpacks under predicted climate change (Tonina et al. 2022).

Climate change is already evident. It will continue to affect air temperatures, precipitation, and wind patterns in the Pacific Northwest (ISAB 2007; Philip et al. 2021), resulting in increased droughts and wildfires and variation in river flow patterns. These conditions differ from those under which native anadromous and resident fishes evolved and will likely increase risks posed by invasive species and altered food webs. The frequency, magnitude, and duration of elevated water temperature events have increased with climate change and are exacerbated by the Columbia River hydrosystem (EPA 2021a; 2021b; Scott 2020). Thermal gradients (i.e., rapid change to elevated water temperatures) encountered while passing dams via fish ladders can slow, reduce, or altogether stop the upstream movements of migrating salmon and steelhead (e.g., Caudill et al. 2013). Additional thermal loading occurs when mainstem reservoirs act as a heat trap due to upstream inputs and solar irradiation over their increased water surface area (EPA 2021a, 2021b, 2021c). Consider the example of adult sockeye salmon in 2015, when high summer water temperatures contributed to extremely high losses of Columbia River and SR stocks during passage through the mainstem Columbia and SR (Crozier et al. 2020), and through tributaries such as the Salmon and Okanogan rivers, below their spawning areas. Some stocks are already experiencing lethal thermal barriers during a portion of their adult migration. The effects of longer or more severe thermal barriers in the future could be catastrophic. For example, Bowerman et al. (2021) concluded that climate change will likely increase the factors contributing to prespawn mortality of Chinook salmon across the entire Columbia River basin.

Columbia River basin salmon and steelhead spend a significant portion of their life cycle in the ocean, and as such the ocean is a critically important habitat influencing their abundance and productivity. Climate change is also altering marine environments used by Columbia River basin salmon and steelhead. This includes increased frequency and magnitude of marine heatwaves, changes to the intensity and timing of coastal upwelling, increased frequency of hypoxia (low oxygen) events, and ocean acidification. These factors are already reducing, and are expected to continue reducing, ocean productivity for salmon and steelhead. This does not mean the ocean is getting worse every year, or that there will not be periods of good ocean conditions for salmon and steelhead. In fact, near-shore conditions off the Oregon and Washington coasts were considered good in 2023 (NOAA 2024). However, the magnitude, frequency, and duration of downturns in marine conditions are expected to increase over time due to climate change. Any

long-term effects of the stressors that fish experience during freshwater stages that do not manifest until the marine environment will be amplified by the less hospitable conditions there due to climate change. Together with increased variation in freshwater conditions, these downturns will further impair the abundance, productivity, spatial structure, and diversity of the region's native salmon and steelhead stocks (ISAB 2007; Isaak et al. 2018). As such, these climate dynamics will reduce fish survival through direct and indirect impacts at all life stages (NOAA 2022).

All habitats used by Pacific salmon and steelhead will be affected by climate dynamics. However, the impacts and certainty of the changes will likely vary by habitat type. Some changes affect salmon at all life stages in all habitats (e.g., increasing temperature), while others are habitat-specific (e.g., stream-flow variation in freshwater, sea-level rise in estuaries, upwelling in the ocean). How climate change will affect each individual salmon or steelhead stock also varies widely, depending on the extent and rate of change and the unique life history characteristics of different natural populations (Crozier et al. 2008; Crozier and Siegel 2023). The continued persistence of salmon and steelhead in the Columbia basin relies on restoration actions that enhance climate resilience (Jorgensen et al. 2021) in freshwater spawning, rearing, and migratory habitats, including access to high elevation, high quality cold-water habitats, and the reconnection of floodplain habitats across the interior Columbia River basin.

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 for this analysis is the lands within the South Carmen Creek Allotment managed by the BLM, covering approximately 14,715 acres (see Figure 1 and 2). The current activities are located on BLM-managed lands in Lemhi County, Idaho, within Township 22 North and Range 22 East, Sections 1, 2, 10, 11, 12, 13, 14, 15, 16, 20, 21, 22, 23, 24, 26, 27, 28, 29, 32, 33, 34, 35; and Township 22 North and Range 23 East, Sections 3, 4, 5, 6, 7, 8, 9, 10, 17, 18, 19; and Township 21 North and Range 22 East, Section 3, 4; and Township 23 North and Range 23 East, Section 31; and Boise Meridian. The Allotment is located at 45.231714, -113.819592 in the sixth field Hydrologic Units named Freeman Creek, Hydrologic Unit Code (HUC) number (#) 170602030502; Lower Carmen Creek, HUC # 170602030503; Fenster Creek–Salmon River, HUC # 170602030404; Lower Lemhi Valley–Lemhi River, HUC # 170602040809; and Kirtley Creek, HUC # 170602040808. The Allotment is approximately 1.5 miles northeast of Salmon, Idaho.

Priority Watersheds are those watersheds that have been identified per direction in NMFS 1995 PACFISH Opinion (NMFS 1995), that require a special management strategy because of their importance to listed fish. Freeman Creek is not a PACFISH priority watershed.

Freeman Creek occurs within the boundaries of DCH for SR Chinook salmon and SRB steelhead. As stated above, our analysis for effects to DCH is located in the NLAA Determinations section of this opinion (Section 2.12).

2.4. Environmental Baseline

The "environmental baseline" refers to the condition of the listed species or its DCH in the action area, without the consequences to the listed species or DCH caused by the proposed action. 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 consultations, and the impact of State or private actions, which are contemporaneous with the consultation in process. The consequences to listed species or DCH from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

The action area is used by all freshwater life history stages of threatened SRB steelhead. As detailed below, habitat conditions have been influenced by several activities occurring within the action area, including but not necessarily limited to: road development, mining, livestock grazing, and recreation (e.g., hunting, fishing, hiking, trail riding, etc.)

2.4.1. Background

Freeman Creek provides spawning and rearing habitat for steelhead. However, no steelhead redds have been observed in Freeman Creek or within the Allotment (BLM 2024). Despite the lack of redd observations, the presence of *O. mykiss* species less than 100 millimeters indicates that spawning is successfully occurring somewhere within the Freeman Creek watershed. In the North Shearing Pen Pasture, 0.02 miles out of the 0.15 miles of Freeman Creek in the North Shearing Pen Pasture is rated as low for steelhead spawning intrinsic potential while the remaining 0.13 miles is rated as having no intrinsic potential for steelhead spawning (Cooney 2006).

According to the BLM (2024), the remains of an adult steelhead were observed in Carmen Creek, downstream of the confluence with Freeman Creek, 2.6 miles below the Allotment boundary, in 2006. In Allotment streams, Idaho Department of Fish and Game (IDFG) electrofishing surveys have found juvenile *O. mykiss* in Freeman Creek above and below BLM-managed lands. The highest densities of *O. mykiss* were detected at survey location SCCFC-02 with 14.2 fish/100m^2 and 19.8 fish/100m^2 in 2006 and 2014, respectively. SCCFC-02 is 0.33 miles downstream of the BLM North Shearing Pen Pasture managed lands on Freeman Creek (BLM 2024).

Data developed by the Upper Salmon Basin Watershed Program (USBWP) Technical Team identifies a general spawning periodicity for steelhead in the Lemhi watershed, ranging from the third week of March through the second week of June, with egg incubation through the first week of July (USBWP Technical Team, 2005). Grazing can occur in the Allotment within these time periods.

2.4.2. General Habitat Conditions

The Salmon River runs along the west edge of the Broad Gulch Pasture for approximately 1.3 miles (Figure 1). Livestock do not have access to this reach due to fencing and sheer cliffs

that provide a natural barrier. Based on information provided in the BA, Freeman Creek is the only stream within the Allotment that has steelhead presence and is accessible to livestock. Cattle have access to 0.15 miles of Freeman Creek, in the North Shearing Pen Pasture (Figure 2). The 0.07 miles of Freeman Creek in the Barrel Springs pasture exists in a sharp narrow crag that precludes cattle access. On private land downstream of the Barrel Springs Pasture Allotment there is a waterfall on Freeman Creek that is believed to be a barrier to upstream fish movement (BLM 2024). A 2006 Idaho Department of Fish and Game (IDFG) electrofishing survey above the waterfall did not detect any fish presence (BLM 2024).

The Rosgen Stream Classification system is a method for classifying rivers and streams based on their channel morphology. This system groups variations in stream processes into distinct types through field measurements. Freeman Creek within the Allotment is Rosgen B3a and A3a plus channel types with thick riparian vegetation and are in apparent functioning appropriately conditions (BLM 2024). Freeman Creek has a mean annual flow of 14 cubic feet per second and is currently connected to Carmen Creek year round (BLM 2024).

In 2011, the BLM assessed Freeman Creek in the South Carmen Creek at proper functioning condition (PFC) with an upward trend. Freeman Creek, within the North Shearing Pen Pasture, has a gradient of 4 percent with the upper 0.08 of a mile of Freeman Creek in the Barrel Springs Pasture having a gradient of 13 percent (BLM 2024). Freeman Creek within the Allotment has heavily armored banks, predominantly large cobble substrate, and good mature riparian woody vegetation with adequate regeneration. Additionally in 2011, the upstream-most mile of an unnamed tributary of Kirtley Creek was assessed and found to be functioning at risk with an apparent upward trend. The BA indicated this was due to impacts from BLM route 146 that was contributing to increased runoff and lateral constraint of the stream in the reach (BLM 2024).

2.4.2.1. Freeman Creek Multiple Indicator Monitoring

MIM data was collected in 2011, 2016, and 2020 at the Freeman Creek DMA 06106-07-R001 within the North Shearing Pen Pasture. A description of the results are as follows:

Streambank Stability: MIM monitoring documented 100 percent bank stability in 2011, 68 percent in 2016, and 93 percent in 2020 at DMA 06106-07-R001, and is functioning appropriately (BLM 2024). The 68 percent recorded in 2016 is not an accurate reading as the monitoring crew conducting the monitoring that day misinterpreted the MIM protocol that affected the placement of where they called the first bench or bankfull height when making the bank stability call. Freeman Creek within the Allotment meets PACFISH riparian management objectives for Chinook salmon and steelhead migration, rearing, and spawning (PACFISH 1998).

Substrate: MIM substrate monitoring data on DMA 06106-07-R001 shows 1 percent surface fines in 2011, 0 percent in 2016, and 5 percent in 2020 (BLM 2024). Substrate is maintaining a low percent of surface fines under current management and is functioning appropriately (BLM 2024).

Greenline Ecological Status: The stream and associated floodplain are covered and protected with multi-age riparian trees and shrubs. MIM greenline vegetation trend data shows a baseline

starting point of late seral in 2011 and at potential natural community (PNC) in 2016 and 2020 (BLM 2024). Greenline ecological status is functioning appropriately (BLM 2024).

Greenline-to-Greenline Width: In 2011, MIM monitoring documented a greenline-to-greenline width (GGW) of 5.66 meters. In 2016, the GGW widened to 6.65 m, but then in 2020 was documented at 6.58 (BLM 2024). The stream channel at the DMA is well armored with rock, large woody debris, and riparian vegetation.

Temperature: Three years of temperature data is available for Freeman Creek at the North Shearing Pen Pasture DMA 06106-07-R001. The temperature logger location is 0.38 miles downstream of the confluence with Golway Gulch. PACFISH identifies water temperature criteria for salmon and steelhead species of less than 64°F (17.8°C) for rearing, and less than 60°F (15.6°C) for spawning and incubation. The 7-day maximum temperature in Freeman Creek within the Allotment meets PACFISH riparian management objectives for migration, rearing, and spawning PACFISH (U.S. Department of Agriculture (USDA) and U.S. Department of Interior (USDI) 1994).

2.4.3. Major Limiting Factors

NMFS generally describes the reasons for a species' decline in terms of limiting factors and threats. Major limiting factors and threats within the action area include streamflow alterations, agricultural practices, road construction and maintenance, fish passage barriers (e.g. diversions and road culverts that block fish migration), and climate change (discussed above in Section 2.2.1).

Grazing impacts are minimal and concentrated in the lower part of the watershed within the private landownership, with the majority of the watershed being rated in excellent riparian condition (BLM 2024). Since 2016 , cattle usage in the North Shearing Pen Pasture has followed a consistent use pattern. On average over the last 5 years, the North Shearing Pen Pasture receives approximately 30 days of grazing use with an average of 161 cattle utilizing an average 146 AUMs per season. Pasture entry dates have alternated yearly between the middle of May and the middle of June. The latest the cattle have been in the pasture over the past 5 years is July 14 (BLM 2024). Livestock enter the Allotment from non-Federal property adjacent to the Allotment or are trailed on county roads to access the Allotment. The Freeman Creek Road could be used by the permittees to access the Allotment. There are fences on either side of the Freeman Creek Road and there are culverts or bridges where the road crosses Freeman Creek. The permittees have not proposed to the BLM exactly how they will move to and from the South Carmen Creek Allotment. The non-Federal trailing routes may vary in the future based on independent decisions of the permittees and other non-Federal property owners. The BLM does not have the authority to condition what happens on non-BLM managed land.

Prior to screening and reconnection efforts in the late 2000s, Carmen Creek and its tributaries were frequently dewatered from irrigation withdrawal. Freeman Creek is the only stream within the Allotment that maintains year-round flow with none of the points of diversions seasonally dewatering them, nor do they appear to be fish passage barriers (BLM 2024). Low flows and high water temperatures are a primary concern within the Carmen Creek watershed, specifically within mainstem Carmen Creek during the irrigation season. The lower watershed is moderately

entrenched with a width-to-depth ratio (W:D) of 12, with substrate predominantly comprised of boulders or cobble (BLM 2024). Currently, Carmen Creek becomes completely dewatered at various times below diversions in the lower watershed, with limited flow returned through the S-09 fish screen bypass discharge, Freeman Creek, and natural recharge as it nears the Salmon River (BLM 2024). Temperatures approaching 17ºC were recorded in 2006 in the lower reaches of Carmen Creek, which impact habitat quality (BLM 2024).

Roads occur on all ownerships throughout the basin, with primary routes typically following water courses. Within the South Carmen Creek Allotment there are an approximate total of 52 miles of roads, primitive roads, and trails. Freeman Creek is paralleled by a maintained gravel road for 0.15 miles in the North Shearing Pen Pasture and for 0.1 miles in the Barrel Spring Pasture. The BLM actively manages the roads within the watershed to reduce sediment impacts to streams with actions that include travel management planning, annual maintenance, relocation, and surfacing. Some roads contain culverts, which may act as a barrier or partial barrier to fish migration. The BLM conducted an inventory of culverts associated with public lands in 2003/2004. Only one known culvert exists in the Allotment at the upstream Allotment boundary on Freeman Creek. The analysis concluded that the culvert was a barrier to fish passage (BLM 2024).

2.5. Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action (see 50 CFR 402.02). A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.02).

2.5.1. Effects to SRB Steelhead Juveniles and Adults

Livestock grazing has the potential to affect SRB steelhead by disturbing adults and rearing juveniles as cows wade through or cross instream habitats in the Allotment. In the North Shearing Pen Pasture, livestock grazing could occur along Freeman Creek during steelhead spawning and incubation for approximately three to seven weeks every year (BLM 2024).

For adult and 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 that adults and 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 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, and not rise to the level of harm, because habitat conditions in the action area should provide suitable escape cover and because of the proposed livestock management detailed below.

To further reduce the effects grazing to adults and juveniles, the BLM and permittees will employ the following measures to reduce the amount of time cows spend in riparian areas:

maintaining off-stream water sources; placing salt at least a quarter mile from streams; maintaining fencing, and adhering to riparian utilization standards. The natural inaccessibility of many of the action area streams, due to steep topography and dense riparian vegetation, further limits the potential for these effects to occur.

2.5.2. Effects to Redds and Adult Equivalents

The proposed off-channel salt placements, preferred upland grazing and water usage in the early season, and conservative move-triggers/annual use standards, as well as inaccessible reaches of the stream for livestock, all help reduce the likelihood of SRB steelhead redd trampling, but the potential for redds to be trampled by livestock still exists. There is potential for SRB steelhead redds to be exposed to grazing cattle in the following situations and locations:

- Locations where trampling is likely to occur is Freeman Creek (approximately 0.15 miles of stream access) in the North Shearing Pen Pasture. This overlap occurs for up to 7 weeks not to exceed two consecutive years and for approximately 3 weeks every third year of the rotation (BLM 2024).
- Trampling is not likely to occur in other locations because of lack of fish presence, unsuitable spawning habitat; inaccessible reaches due to topography or fencing; or timing of redds and cow presence do not overlap.

If steelhead redds are present, and eggs are still incubating when crossings occur, steelhead embryos are likely to be killed. This could occur anytime livestock are wading or crossing streams from arrival on the Allotment up until July 7 (estimated time for completion of incubation).

There is currently no record of steelhead redd data for Freeman Creek. Therefore, steelhead spawning (redd) survey information compiled by the IDFG from 1990 to 1998 for steelhead in other portions of the Upper Salmon River basin was used to estimate steelhead redd densities for streams within the Allotment. Considering these redd densities, NMFS estimated an average density of 1.3 redds per mile for streams with the highest quality steelhead spawning habitat, and 0.65 redds per mile for streams with lesser quality habitat. In a recent conversation with IDFG staff, they indicated that the higher redd density estimate (i.e., 1.3 redds per mile) would be more applicable to this reach of Freeman Creek as lower Carmen Creek weir data has detected high numbers of adult steelhead returns in previous years. (P. Murphy, Idaho Department of Fish and Game, pers. comm. with K. Murphy, NMFS consulting biologist on July 15, 2024). Using the higher habitat estimate, the potential density of redds within the 0.15 mile reach of Freeman Creek, where redds may be exposed to grazing cattle, ranges from 0.097 to 0.195 redds (0.65 redds x 0.15 mile reach equal 0.097 and 1.3 redds x 0.15 mile reach equal 0.195 redds).

Gregory and Gamett (2009) reported that cattle trampled 12 percent to 78 percent of simulated bull trout redds while grazing the Federal pastures they evaluated. It is not known if the evaluated pastures were grazed to the same annual use indicators proposed for this Allotment. They did note that stocking intensity (number pairs/capable[2] grazing area [acres]/grazing days)

[2] Gregory and Gamett (2009) used the term "suitable area" but as defined in their paper (i.e., areas less than 30 percent slope, less than 1,600 meters from water, and producing at least 225 kg/ha of useable forage) the current and

significantly influenced redd trampling rates with the highest stocking intensity generating the highest observed trampling levels and vice versa. The North Shearing Pen Pasture has a moderate stocking intensity.

Cattle typically use the high forage areas located on hillside meadows and ridge tops well above the streams during steelhead incubation. Because permittees and the BLM intend to reduce livestock use of riparian areas as much as possible via use supervision and other management techniques, NMFS assumed a potential trampling rate of 33 percent for the moderate stocking intensity index of pastures evaluated (0.08) based on Gregory and Gamett's (2009) study. For steelhead, this estimate may still be high, as bull trout are fall spawners, and cattle use of riparian areas is higher in late summer/fall than late spring and early summer (McInnis and McIver 2009; Parsons et al. 2003) when steelhead eggs are incubating. Additionally, a rate reduction was warranted given the assumed effectiveness of upland water and prescribed herd management efforts to minimize livestock use of riparian zones (Ehrhart and Hansen 1997; Kinch 1989; Leonard et al. 1997; McInnis and McIver 2009; Parsons et al. 2003; Wyman et al. 2006).

When we apply the 33 percent redd trampling rate to the estimated number of SRB steelhead redds that could be present in Freeman Creek (0.195 redds), we calculate up to one redd potentially being trampled by livestock every year (0.195 × 0.33 equal 0.06, rounded up to 1) when the North Shearing Pen Pasture is grazed.

NMFS has considered and displayed this entire range but cautions that these numbers should not be viewed as absolute numbers that are likely to be achieved. Rather, these numbers can be used to gauge the relative magnitude of the potential impact. NMFS believes these numbers may overestimate likely redd trampling for two reasons. First, the relatively high stream flows typical of early season grazing (mid-May through early July) discourage cattle from entering streams in most instances. More typically, the high stream flows limit cattle entry to drinking at the stream edges but not crossing the stream. McInnis and McIver (2009) reported cattle presence (hoof prints) along the green line was 59 percent higher in late summer pastures (90 percent) than early summer pastures (53 percent). Second, the redd density estimates were applied equally across all miles of stream within the Allotment, despite redds more typically being concentrated in only the highest quality habitat. Within the Allotment, much of the highest quality habitat is protected by the fencing along Freeman Creek.

To determine the population level effects of potential redd trampling, NMFS converted these numbers to adult equivalents. Average steelhead egg-fry survival is approximately 29.3 percent (Quinn 2005) under natural conditions. Assuming each steelhead redd contains roughly 5,000 eggs (Quinn 2005), egg–fry survival per adult female is estimated at 1,465 fry. If trampling kills at least 43 percent of the eggs in a redd (Roberts and White 1992), each trampling could result in roughly 630 fewer fry. Quinn (2005) estimates steelhead fry to smolt survival at 13.5 percent, which would result in approximately 85 fewer smolts per trampled redd. Applying a 0.8 percent smolt-to-adult survival rate for steelhead (USFWS 1998), results in approximately 0.68 fewer adult steelhead equivalents per trampled redd. This considered, trampling of redds could result in approximately zero to one fewer adult SRB steelhead (0.68 x 0.06 = 0.04 adults), from the Lemhi

correct Term of "capable area" (Personal Communication, M. Helm, Salmon Challis National Forest GIS Specialist on September 9, 2014).

River population, returning 4 years after each time the North Shearing Pasture is grazed. Over the 20-year course of the proposed action, this is likely a maximum of 20 adults.

One redd trampled, and the resultant loss of one SRB adult steelhead, every year for up to 20 years is likely an overestimate of the impact for several reasons: (1) substrate within the 0.15 mile reach of Freeman Creek is predominantly large cobble; (2) redd density estimates were calculated as though redd distribution occurs equally across all stream miles despite redds typically being concentrated only in the highest quality habitat; (3) trampling rates observed for a fall spawning species were used to estimate the potential for redd trampling of a spring spawning species, at a time when livestock are not expected to concentrate time in riparian areas; (4) stream discharge during spring grazing is often high and discourages livestock from entering streams beyond the margins; and (5) annual use standards.

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). 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.

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 (discussed in Section 2.2.1) versus cumulative effects.

The vast majority of the action area is Federally managed; however, there are small pieces of land that are State and privately owned. Activities on these lands include potential continued residential development, private lands grazing, additional authorization of water rights for surface water withdrawals on private land, road maintenance, fuel wood cutting, motorized and non-motorized recreation use. Recreational activities such as hunting, fishing, camping, and off-road vehicle use are also likely to occur. NMFS assumes that future private and State actions will continue within the action area, at roughly the same level as identified.

All of these activities could affect ESA-listed fish and their DCH. Future impacts from other private or State activities are expected to continue at rates similar to today. This is because private land is limited within the action area and its current or historic use is representative of what would likely occur in the future.

2.7. Integration and Synthesis

The Integration and Synthesis section is the final step assessing the risk that the proposed action poses to species. 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), considering the status of the species (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution.

Overall, SRB steelhead abundance experienced population increases, relative to the time of ESA listing, through the mid-2000s. During the past seven years, abundance has dropped, with many populations nearing levels observed when the species was listed. Observed declines have been similar for all populations in the DPS and declines are believed to be tied to recent ocean conditions (Ford 2022). Action area conditions have not materially changed during this time and have likely had little influence on recent trends. In addition to abundance and productivity concerns for this species, climate factors will likely make it more challenging to increase abundance and recover the species (Crozier et. al. 2019; NMFS 2017). All individual populations, including the Lemhi River population that is affected by this proposed action, are still at high risk of extinction and remain far below recovery plan abundance and productivity targets. As a result, SRB steelhead remain threatened with extinction.

Furthermore, climate factors will likely make it more challenging to increase abundance and recover the species (NMFS 2017). Climate change is expected to alter aquatic habitat by impacting streamflow and temperature regimes. These effects, in combination with other baseline conditions within the action area, may lower juvenile salmonid survival rates by impacting spawning, rearing, and migration for steelhead. However, due to management techniques proposed for the action, livestock grazing in the action area is not expected to significantly contribute to the broader adverse effects of climate change to steelhead.

Application of conservative annual use indicators have proven effective at maintaining baseline habitat conditions within the action area. We expect these habitat conditions to be maintained or to improve.

Only SRB steelhead from the Lemhi River population inhabit the action area. SRB steelhead adults spawn within the action area and juveniles use the action area for rearing and migration. NMFS expect SRB steelhead in the action area could potentially experience effects associated with disturbance from livestock wading and crossing Freeman Creek and redd trampling over the next 20 years.

However, the effects of disturbance to adults and juveniles within the action area, and when scaled up to the reach, are expected to be infrequent and minor because of the proposed conservation measures, limited livestock accessibility to the stream, and ability of fish to find cover within the stream reach if disturbed. The effects of habitat-related impacts are also expected to be minor and/or very unlikely to occur at the reach scale to RMOs currently being met in the areas proposed to be grazed, as well as application of conservative annual use indicators, have proven effective at maintaining habitat conditions (see Section 2.12). The baseline conditions of habitat in the action area are expected to be maintained or to improve.

Grazing will overlap with spawning and incubation in Freeman Creek. NMFS expects the following adverse effects to SRB steelhead from redd trampling:

- Up to one SRB steelhead redd could be trampled every year in Freeman Creek in the North Shearing Pen Pasture for each year grazing occurs (up to 20 years).

- The estimated trampling of up to one SRB steelhead redd could result in up to one less adult returning to the action area for each year grazing occurs (up to 20 years) in the North Shearing Pen Pasture under the proposed action.

Effects to individual fish include effects to the VSP (i.e., abundance, productivity, spatial structure, and genetic diversity that support the species' ability to maintain itself naturally at a level to survive environmental stochasticity). However, the anticipated level of effects to individuals are not anticipated to result in any change to abundance or productivity at the Lemhi River population scale. Similarly, the effect at the scale of the MPG (Salmon River MPG) will not change. This is due to the low number of potential SRB steelhead redds present within the action area and low numbers of livestock being able to access areas of suitable spawning habitat given the wide annual variability in adult and juvenile returns and seasonal variations in habitat use. The proposed action also supports recovery of these populations (and consequently the MPG) because of efforts to improve riparian and instream function over time, which will support increased productivity.

The action area occurs primarily on Federal land, and all future activities in the action area will likely be implemented, permitted, or funded by the BLM and will require separate consultation pursuant to Section 7 of the ESA. Therefore, there will be no cumulative effects for the proposed action.

When considering the status of the species, environmental baseline, and cumulative effects, it is NMFS' opinion that implementation of the proposed action will not appreciably alter the abundance, productivity, spatial structure, or diversity of the Lemhi population. Because the VSP criteria for the Lemhi population will not be negatively influenced, the proposed action is not expected to affect the survival or the recovery potential of the Salmon River MPG and the Snake River DPS.

2.8. Conclusion

After reviewing and analyzing the current status of the listed species, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and cumulative effects, it is NMFS' opinion that the proposed action is not likely to jeopardize the continued existence of SRB steelhead in the wild.

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). "Harass" is further defined by interim guidance as to "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 SRB steelhead. NMFS is reasonably certain the incidental take described here will occur because livestock will graze alongside streams during the redd incubation periods for SRB steelhead. In the opinion, NMFS determined that incidental take is reasonably certain to occur from redd trampling.

2.9.1.1. Steelhead Redd Trampling

Through implementation of the proposed action, grazing is expected to occur in the same place as SRB steelhead egg/embryo incubation for approximately three to seven weeks every year. The proposed off-channel salt placements, preferred upland grazing and water usage in the early season, and conservative move-triggers/annual use standards, as well as inaccessible reaches of the stream for livestock, all help reduce the likelihood of SRB steelhead redd trampling, but the potential for redds to be trampled by livestock still exists.

Despite NMFS estimating the number of redds that could be trampled in the preceding opinion, the estimated number of trampled redds in Freeman Creek will not be used to establish the amount of take for steelhead in this opinion, as it cannot be readily monitored by field personnel. SRB steelhead redds are constructed in the early spring, and while some redds may be visible early in the season, access to these streams by BLM personnel is difficult at this time of year due to snow and ice. Peak flows occur approximately during the middle of the spawning period. Ice shelves along stream margins, high flows, and turbid water may potentially make redd inventory in the action area inaccurate and impractical to complete. In addition, substrate around and in any redds identified before peak flows are likely to be reorganized, or covered by substrate deposits following runoff, making redds essentially invisible after flows drop. Thus, it would be impractical to determine how many redds are present in the action area, let alone accurately determine how many of those redds are subsequently trampled by cattle each grazing season. Because circumstances causing take are likely to arise, but cannot be quantitatively measured in the field, NMFS will not identify the amount of take, but will identify a surrogate for incidental take, consistent with 50 CFR 402.14(i).

For the reasons stated above, it is difficult for NMFS to quantify the extent of take for SRB steelhead. There is no known forage utilization or channel measurement indicator that directly correlates to redd trampling rates. However, redd trampling is most likely to occur when cattle concentrate in riparian areas, with trampling occurring when cows cross or enter streams to water. Streambank alteration provides an indication of the amount of time cattle spend in riparian zones, increasing with both the number of livestock present and with the time spent by those livestock in riparian areas. Similarly, the likelihood of redd trampling increases with both the number of livestock present and with the time spent by those livestock in riparian areas. Streambank alteration is already proposed as both a move-trigger and annual use indicator. As

such, alteration levels will be measured during routine monitoring along green lines at the North Shearing Pen Pasture DMA and elsewhere in the Allotment. Therefore, NMFS will use percent streambank alteration as the surrogate for take for SRB steelhead redds in this opinion.

The BLM proposed bank alteration limits of 15 percent or less (Table 2). In this opinion, NMFS determined that the proposed annual use standards will help reduce cattle presence in streamside areas such that trampling will be limited to no more than one SRB steelhead redd every year of the grazing rotation for up to 20 years.

Therefore, NMFS has established the extent of incidental take limit as:

- In the North Shearing Pen Pasture, during periods of spawning and incubation and potential livestock overlap (May 15 to July 7), bank alteration shall not exceed 15 percent.

Bank alteration monitoring is co-extensive with the proposed action and typically conducted within two weeks of livestock having been moved from a pasture, which means regular monitoring for bank alteration occurs at the end of a pasture's grazing. A pasture's grazing could take place several weeks or months after the completion of SRB steelhead spawning and incubation. The above incidental take limit requires that real-time, early season bank alteration levels be monitored where grazing overlaps the steelhead spawning and incubation period to ensure exceedances do not occur. Therefore, bank alteration monitoring should occur no later than the July 7 conclusion of SRB steelhead redd incubation. This monitoring is in addition to bank alteration monitoring typically conducted within two weeks of livestock being removed from a pasture.

2.9.2. Effect of the Take

In the 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 SRB steelhead.

2.9.3. Reasonable and Prudent Measures

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

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

The BLM shall:

1. Minimize the potential for incidental take resulting from trampling of SRB steelhead redds due to livestock grazing on the Allotment, in particular in the North Shearing Pen Pasture near Freeman Creek.

2. Ensure completion of a monitoring and reporting program to confirm that the terms and conditions in this ITS are 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

In order to be exempt from the prohibitions of Section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. The BLM or any applicant has 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:
    a. Appropriately trained BLM staff will monitor streambank alteration levels annually, using the same protocols identified in the proposed action, at the North Shearing Pen Pasture DMA. The streambank alteration monitoring shall occur at least twice at these DMAs, once before the conclusion of SRB steelhead spawning (i.e., before July 7), and secondarily within two weeks of moving cattle off this pasture.
    b. Annual meetings shall be conducted with the permittees to discuss specific actions necessary to protect spawning areas in stream reaches with the potential for cattle interaction with SRB steelhead spawning fish and/or redds.
    c. The BLM and their permittees shall ensure that all water developments that reduce cattle use adjacent to streams with ESA-listed fish species are properly maintained and functioning as intended.

2. The following terms and conditions implement RPM 2:
    a. North Shearing Pen Pasture DMA is annually monitored to determine compliance with all identified annual use indicators in the proposed action. The report shall also identify any annual adjustments made to ensure permittee continues to meet the terms and conditions of the permit.
    b. An end-of-year report is available to NMFS by March 1 of each year. The following shall be included in the report:
        i. Overview of proposed action and actual management (livestock numbers, on-off dates for each pasture, etc.)
        ii. Date and location of any specific BLM implementation monitoring data collected, including monitoring required under terms and conditions 1 above.
        iii. Results from all monitoring identified as part of the proposed action and this opinion, including required annual use indicator monitoring (e.g., stubble height, riparian shrub utilization, and streambank alteration), photo point monitoring, seral condition, streambank stability, water temperature, sediment, and GGW.

iv. Discussion of any unauthorized use and/or any maintenance issues related to fences or water developments as it pertains to Units with ESA-listed fish species or DCH.

v. Brief review of Allotment management and compliance successes and failures as it pertains to Units with ESA-listed fish species or DCH.

vi. Any relevant information that becomes available regarding SRB steelhead or SR spring/summer Chinook salmon habitat trends and/or spawning locations that would modify the assumptions made in this opinion or result in effects not considered.

vii. A clear description of compliance with the terms and conditions and any exceedances of the extent of take contained in this ITS.

viii. Any management recommendations for subsequent years.

c. The BLM shall submit the end-of-year report to nmfswcr.srbo@noaa.gov, and reference the consultation tracking number WCRO-2024-00834.

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 recommendations are discretionary measures that NMFS believes are consistent with this obligation and therefore should be carried out by the BLM:

- 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 stream flows.
- Continue to work with the permittees to adjust the timing and/or rotation of Allotment Units to better protect accessible stream reaches during steelhead spawning/incubation periods. Where feasible, give preference to grazing Units with inaccessible stream reaches (i.e., fenced, or less accessible because of steep topography or dense riparian vegetation) during these critical timeframes.
- Water quantity is a limiting factor for anadromous fish in the Upper Salmon River drainage. Both the overall production and productivity of ESA-listed fish and their habitat are affected by the number and length of streams, volume and quality of flow among stream reaches, and volume of the underlying aquifer. Changes in the consumptive use of water can affect ESA-listed salmonids and their habitat in downstream reaches. The BLM should continue to utilize their authorities to conserve

and recover aquatic habitats throughout the Upper Salmon River drainage to support species recovery.

- Water quality is also a limiting factor for anadromous fish in the Allotment watersheds. Both the overall production and productivity of ESA-listed fish and their habitat are affected by the number and length of streams, volume and quality of flow among stream reaches, and water quality. Changes in water quality can affect ESA-listed salmonids and their habitat in downstream reaches. The BLM should continue to utilize their authorities to conserve and recover aquatic habitats throughout the Allotment to support species recovery.
- The BLM should consider addressing fish passage limitations at BLM culverts on Freeman Creek and/or Carmen Creek where passage is currently limited.
- The BLM should consider modifying livestock management or installing a riparian exclosure fence along the 0.15 miles of Freeman Creek that is accessible to livestock.
- In annual meetings with permittee(s), NMFS recommends the BLM actively encourage permittee(s) to avoid trailing cattle across Freeman Creek on their way to and from BLM pastures, identifying roads and trails with established stream crossings where practicable.

Please notify NMFS if the BLM, or another entity, carries out these recommendations so that we will be kept informed of actions that minimize or avoid adverse effects and those that benefit listed species or their DCHs.

2.11. Reinitiation of Consultation

This concludes formal consultation for the South Carmen Creek Grazing Allotment permit renewal. Under 50 CFR 402.16(a): "Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and: (1) if the amount or extent of incidental taking specified in the ITS is exceeded; (2) if new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or (4) if a new species is listed or critical habitat designated that may be affected by the identified action."

2.12. "Not Likely to Adversely Affect" Determinations

NMFS received the BLM's request for written concurrence that the proposed action is NLAA SRB steelhead and SR spring/summer Chinook salmon DCH on April 12, 2024. NMFS prepared this response to the BLMs request pursuant to Section 7(a)(2) of the ESA, implementing regulations at 50 CFR 402, and agency guidance for the preparation of letters of concurrence.

2.12.1. Effects on Designated Critical Habitat for Snake River Basin Steelhead and Snake River Spring/summer Chinook

The BLM determined that the proposed action was NLAA SRB steelhead DCH or unoccupied SR spring/summer Chinook salmon DCH within the action area. The designations of critical habitat for SRB steelhead and SR spring/summer Chinook salmon use the term primary constituent elements (PCE) or essential features. The 2016 final rule (81 FR 7414; February 11, 2016) replaced this term with physical or biological feature (PBF). 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 section, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

Freeman Creek is considered SRB steelhead DCH for 0.15 miles in the North Shearing Pen Pasture and 0.07 miles in the Barrel Springs Pasture. The North Shearing Pen Pasture section of Freeman Creek is the only accessible reach to cattle. Downstream of the Barrel Springs Pasture, on private land, Freeman Creek has a waterfall that is believed to be a natural barrier to fish migration. SRB steelhead use Freeman Creek for migration, spawning and rearing.

Snake River spring/summer Chinook DCH is also present in Freeman Creek. However, Freeman Creek is currently unoccupied DCH for this species. Juvenile Chinook salmon have been documented in Carmen Creek approximately 4.7 miles downstream of the Allotment. Irrigation practices and downstream fish passage barriers are the potential reason as to why juveniles of this species do not currently occur in Freeman Creek.

The Salmon River runs along the west edge of the Broad Gulch Pasture for approximately 1.3 miles (Figure 1). This reach is considered SRB steelhead and SR spring/summer Chinook DCH. Livestock do not have access to this reach due to fencing and sheer cliffs that provide a natural barrier.

The action as proposed has the potential to affect the following PBFs: (1) water quality; (2) forage; (3) substrate/spawning gravel; (4) natural cover/shelter, and (5) riparian vegetation (Table 4). Proper function of these PBFs is necessary to support juvenile and adult life stages. All remaining PBFs would not be affected by the proposed action.

If not properly managed, grazing can adversely affect streams and riparian areas. Livestock can directly trample streambanks while trailing or feeding in streamside areas, and can over utilize riparian vegetation. Riparian vegetation influences stream shading, streambank stability, water retention, water temperatures, and primary production (i.e., food) in the adjacent streams. Improper grazing can lead to removal of shade-providing vegetation, streambank damage, widening of stream channels, introduction of fine sediment, channel incision, and reduced primary productivity.

The BLM has developed the proposed action described above to reduce the potential for adverse effects to occur on action area streams. NMFS anticipates that only insignificant effects to critical habitat are likely to occur under the proposed action. Primary reasons for this conclusion include: (1) habitat and riparian conditions, as described in the BA, are functioning

appropriately; (2) limited hot season grazing with focus on cool season grazing periods (as documented in historical use patterns); (3) use supervision; (4) meeting conservative and proven RMOs (90 percent bank stability and late seral status) and annual use indicators (6 inch stubble height and 15 percent bank alteration); and (5) the BLM has committed to effectively apply the proposed monitoring and management strategy to identify potential livestock overutilization and prescribe effective management responses. A summary of how the proposed action may affect PBF follows.

Table 4. Types of sites, essential physical and biological features (PBFs), and the species life stage each PBF supports.

Site	Essential Physical and Biological Features	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 and floodplain connectivity to form and maintain physical habitat conditions	Juvenile growth and mobility
	Water quality and forage[b]	Juvenile development
	Natural cover[c]	Juvenile mobility and survival
Freshwater migration	Free of artificial obstructions, water quality and quantity, and natural cover[c]	Juvenile and adult mobility and survival
Snake River spring/summer Chinook salmon, fall Chinook, and sockeye salmon		
Spawning and juvenile rearing	Spawning gravel, water quality and quantity, cover/shelter (Chinook only), food, riparian vegetation, space (Chinook only), water temperature, and access (sockeye only)	Juvenile and adult
Migration	Substrate, water quality and quantity, water temperature, water velocity, cover/shelter, food[d], riparian vegetation, space, safe passage	Juvenile and adult

[a] Additional PBFs pertaining to estuarine 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.
[b] Forage includes aquatic invertebrate and fish species that support growth and maturation.
[c] Natural cover includes shade, large wood, log jams, beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.
[d] Food applies to juvenile migration only.

2.12.1.1. PBFs: Freshwater Spawning, Rearing, and Migration Sites

Water Quality. Habitat impacts associated with this Allotment are likely to include a few areas of denuded streambank up to a few feet wide where cattle access streams to drink or cross. Early in the season, cattle do not typically loiter in riparian areas and they are expected to access streams to drink or cross in the same areas to avoid breaking new trail. Denuded areas associated with watering and crossing sites are likely to result in a slight increase in turbidity for a short distance downstream during rainstorms or runoff events. However, given background levels of turbidity during runoff events, it would be very difficult to distinguish between turbidity resulting from these minor grazing impacts and background turbidity. Cattle grazing is likely to lead to a slight increase in nutrients; however, impacts will be localized and immeasurable as a result of proposed measures designed to limit cattle use in riparian areas and the wide distribution of cattle across the Allotment over each year. In addition, riparian vegetation will function to trap and utilize nutrients deposited in riparian areas preventing the majority of waste from entering the water column.

Shade provided by vegetation can be important in keeping stream temperatures cool for salmonids (Zoellick 2004). Li et al. (1994) and Zoellick (2004) found that trout abundance decreased as solar input and water temperature increased. Water temperature is primarily affected by stream shade and channel geometry. Livestock grazing can directly increase water temperature if riparian vegetation removal results in increased solar exposure. Indirect effects could occur if livestock remove significant quantities of vegetation, either through foraging or trampling. Reduced riparian vegetation can result in increased streambank instability, which in turn, leads to over-widened streams. Over-widened streams, or high W:D, expose a greater surface area of shallower water to the sun. This can further increase water temperatures.

Within the Allotment, riparian conditions and W:D are within the natural range of variability. The BA states that observed water temperature regimes within the Allotment have fallen within PACFISH water temperature criteria. Temperature data on Freeman Creek is scheduled to be collected at least every five years. These data suggest recent livestock grazing within the Allotment has not resulted in detectable effects to water temperatures within the action area.

The proposed action includes measures, including salting and use supervision keep livestock away from critical stream reaches, which should result in livestock having even less potential to impact stream temperatures than has occurred in the past. Proposed annual use standards serve to reduce potential livestock impact on water temperatures by minimizing riparian vegetation use and livestock impact to streambanks to insignificant levels within the Allotment. Further, successful use of annual adjustments made to ensure permittee continues to meet the terms of the permit is expected to prevent site-specific impacts or a onetime annual use standard from leading to long-term habitat degradation. For these reasons, the proposed action is expected to have only insignificant effects on water quality in the action area.

Forage. More than half of some fish's food originates from terrestrial sources (Baxter et. al. 2005; Saunders and Fausch 2007). Their other food source is aquatic with many prey species feeding on terrestrial leaf litter. Aquatic invertebrates also depend heavily on terrestrial vegetation inputs. Therefore, riparian vegetation is very important to fish growth and survival in natal streams. Saunders and Fausch (2007) reported grazing management can influence terrestrial invertebrate inputs and demonstrated that short duration high-intensity grazing management resulted in large growth and abundance increases of fish when compared to season-long grazing management. Saunders and Fausch (2009) observed no difference in invertebrate biomass entering streams between sites managed for rotation grazing and ungrazed sites. The proposed action utilizes a rotational grazing scheme with moderate intensities over short durations. Since 2016, cattle usage in the North Shearing Pen Pasture has followed a consistent use pattern (BLM 2024). On average over the last five years the North Shearing Pen Pasture receives approximately 30 days of grazing use with an average of 161 cattle utilizing an average 146 AUMs per season. Pasture entry dates have alternated yearly between the middle of May and the middle of June. The latest the cattle have been in the pasture over the past five years is July 14. As a result, the action is expected to have effects consistent with the cited literature and thus impacts to this PBF will be insignificant.

Substrate/Spawning Gravel. Available data from grazed areas within the action area indicates sediment levels are meeting standards at the Freeman Creek DMA. Because the proposed action is similar to the grazing that has occurred during the recent past it is reasonable to anticipate similar effects in the future.

Review of the data associated with the RMOs most likely to affect the substrate PBF (i.e., green line successional status, woody species regeneration, and bank stability) are at the RMO or higher. The bank stability rating in 2020 was 93 percent. This site appears to have sufficient woody recruitment to develop and maintain a healthy woody plant population.

Cattle will water, cross, and graze along some stream reaches in the Allotment and there will undoubtedly be minor instances of sediment introduction at crossings, watering sites, or where foraging activities result in low levels of streambank alteration. These introductions are likely to cause minor and temporary increases in substrate fine sediment in low velocity areas immediately downstream. As the available monitoring data suggest, these increases are not expected to be measurable. In addition, mineral deployment, and the proposed conservative annual use indicators (i.e., 6-inch stubble height, 15 percent bank alteration, 45 percent woody browse use, etc.) are expected to prevent measurable degradation of streambank conditions, which would otherwise lead to elevated sediment levels. These measures should ensure that the existing properly functioning sediment conditions within grazed areas of the Allotment are retained. NMFS also anticipates a long-term reduction in sedimentation as riparian conditions and streambank stability continue improving over time. Any short-term effects would be insignificant.

Natural Cover/Shelter. Salmonids appear to prefer spawning in close proximity of overhead cover (Bjornn and Reiser 1991) and overhead cover protects juvenile salmonids from predation. Cover can also influence livestock access to streams, reducing trampling where cover is high or riparian vegetation is thick (Gregory and Gamett 2009). There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point and in individual riparian areas receiving actual grazing use. However, these effects are expected to be very localized, and not at a scale that would influence cover on a stream reach scale. Also, considering the prescribed riparian vegetation utilization standards, grazed riparian vegetation is expected to grow back prior to the start of the following grazing season. Available literature indicates the proposed utilization levels will allow maintenance of vegetation where currently meeting RMOs. Should riparian areas develop that are not meeting RMOs, the BLM will prescribe annual adjustments in coordination with the permittees, which should result in improvement of riparian conditions at near natural rates in these areas. Because riparian conditions have shown maintenance of appropriately functioning conditions in the action area under past grazing, it is reasonable to assume these patterns will continue and the action will have only insignificant effects on cover.

No information currently exists documenting the amount or locations of undercut banks available to fish as cover in the action area. However, current bank stability ratings are meeting RMOs in areas accessible to livestock use. This suggests that recent grazing activities have not reduced the available quantity of undercut banks providing cover for ESA-listed fish in the action area. NMFS anticipates this condition to persist for the term of the proposed action and any reduction

of undercut banks that does occur would be minor and insignificant at the stream reach or watershed scales.

Riparian Vegetation. Similar to those PBFs described above, riparian vegetation impacts from the proposed livestock grazing are expected to be insignificant. Although cattle will consume and trample some riparian vegetation, the proposed conservation measures and annual utilization standards should greatly limit potential disturbance. Riparian vegetation on the Allotment is currently meeting RMOs and at PNC at the North Shearing Pen Pasture DMA, and woody browse use will continue to be limited to 45 percent. A more restrictive percent browse would be applied if subsequent monitoring indicates that the RMO is no longer being met. Continued grazing at this level is expected to maintain PFCs of riparian vegetation on the Allotment as past use at these levels have demonstrated a stable trend at PNC.

Summary. The BLM has incorporated several conservation measures (e.g., fencing, off-stream water sources and salt placement, pasture rotations, and forage utilization standards and monitoring) into grazing management on the Allotment in order to limit the impacts of livestock on DCH. Based on available scientific literature, NMFS expects that the proposed 15 percent maximum streambank alteration standard and 6-inch minimum stubble height will maintain stream habitat conditions that are currently functioning appropriately.

The BLM's other conservation measures are also expected to help maintain PNC. The Seeding, North Shearing Pen, and Shearing Pen Pastures will not be utilized between May 15 and June 15 in more than two consecutive years. The North Shearing Pen Pasture will not be utilized between July 15 and September 15. Grazing timing and duration is modified to avoid grazing plants at the same time every year. For example, when a pasture is grazed first, browse on willows will be less (Hall and Bryant 1995; Kovalchik and Elmore 1991), and when the pasture is deferred the following season, upland and riparian herbaceous plants will be allowed to achieve maximum growth before grazing. Waiting for appropriate range conditions to turn livestock out (range readiness) will result in less potential impacts to soils and better distribution of livestock. For example, soil moistures will have decreased when range conditions are adequate resulting in less soil disturbance. At the same time, herbaceous plants in the uplands should still be fairly palatable, resulting in livestock spending less time in riparian areas. Salting at least one quarter mile away from creeks will tend to encourage cattle to utilize other areas of the Allotment besides riparian areas. These measures are expected to reduce negative impacts on riparian vegetation to insignificant levels while continuing to improve their seral status.

Information obtained from annual indicator monitoring will provide data and information to determine whether the current season's livestock grazing is meeting the intended criteria for livestock use in riparian areas. These data will provide information needed to refine and make annual changes to livestock grazing management practices necessary to continue to meet RMOs should they become degraded.

The impact of grazing on riparian habitat within the action area has the potential to accelerate stream temperature increases caused by climate change. Overgrazing of riparian vegetation and stream widening due to bank alteration from livestock could result in less shading and shallow stream reaches, therefore causing an increase in water temperature. Additionally, the proposed

action will occur while climate change-related effects are expected to become more evident within the range of the SRB steelhead DPS and the SR spring/summer Chinook salmon ESU. However, management techniques for the proposed action will either maintain or improve riparian habitat within the action area. Therefore, the proposed action is not expected to significantly contribute to the broader adverse effects of climate change to steelhead and Chinook DCH.

NMFS anticipates that only insignificant effects to critical habitat are likely to occur under the proposed action. Primary reasons for this conclusion include: (1) habitat and riparian conditions are functioning at or near potential in almost all BLM-managed reaches, which have been under less restrictive grazing practices in the recent past; (2) the BLM has demonstrated their ability to effectively apply the proposed monitoring and management strategy to identify potential livestock overutilization and prescribe effective management responses based on data provided in the BA; and (3) there is limited livestock access to sensitive stream reaches designated as critical habitat due to topography and existing fences. Limiting the action's impacts to the minor levels described will maintain habitat conditions where they currently meet objectives and allow continued improvement in the limited sites that are below objectives. As a result of successfully implementing the proposed action, including conservation measures and monitoring, as described in the BA and this opinion and based on the best available information, NMFS concurs with the BLMs findings that the proposed action is NLAA SRB steelhead and SR spring/summer Chinook salmon DCH.

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 BLM and the grazing permittee(s). Individual sections of this opinion were provided to the BLM and the Shoshone–Bannock Tribes. The document will be available within two weeks at the NOAA Library Institutional Repository (https://repository.library.noaa.gov/welcome). The format and naming adhere 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 the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the Magnuson–Stevens Fishery Conservation and Management Act (MSA) implementing regulations regarding Essential Fish Habitat (EFH), 50 CFR 600.

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, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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