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

Refer to NMFS No:
2010/00159

May 11, 2011

Deborah Henderson-Norton
Prineville District Manager
Bureau of Land Management
3050 NE 3rd Street
Prineville, Oregon 97754-0550

Re: Endangered Species Act Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Conservation Recommendations for the Bureau of Land Management 2011 - 2015 Upper John Day River Basin Grazing for Squaw Creek, Johnson Creek, Dixie Creek, Murderers Creek, Franks Creek, Johnny Cake Mountain, Big Baldy, Rockpile, Little Wall Creek, Two County, Kinzua, and Creek Allotments (HUCs: 1707020401, 1707020402, 1707020105, 1707020110, 1707020112, 1707020115, 1707020210), Grant and Wheeler Counties,

Dear Ms. Henderson-Norton:

Following the Bureau of Land Management's (BLM's) request for review of the draft biological opinion of this consultation and the comments submitted on November 29, 2010, the National Marine Fisheries Service (NMFS) prepared a biological opinion (opinion) pursuant to section 7(a)(2) of the Endangered Species Act (ESA) on the effects of the Bureau of Land Management (BLM) Prineville District's authorization of 12 annual grazing permits under section 402 of the Federal Land Policy and Management Act (FLPMA) of 1976 on the Upper John Day River Basin from 2011 to 2015.

In this opinion, NMFS concludes that the proposed action is not likely to jeopardize the continued existence of Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) or result in the destruction or adverse modification of designated critical habitat for MCR steelhead.

As required by section 7 of the ESA, NMFS is providing an incidental take statement with the opinion. The incidental take statement describes reasonable and prudent measures NMFS considers necessary or appropriate to minimize the impact of incidental take associated with this action. The take statement sets forth nondiscretionary terms and conditions, including reporting requirements, that the BLM must comply with to carry out the reasonable and prudent measures. Incidental take from actions that meet these terms and conditions will be exempt from the ESA's prohibition against the take of listed species.

This document also includes NMFS' analysis of the action's likely effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act, and includes one conservation recommendation to avoid, minimize, or otherwise offset potential adverse effects on EFH. The conservation recommendation is a subset of the ESA take statement's Terms and Conditions.

If you have questions regarding this consultation, please contact Renée Coxen, in the Eastern Oregon Habitat Branch of the Oregon State Habitat Office, at 541.975.1835, ext. 234.

Sincerely,

for William W. Stelle, Jr.
Regional Administrator

cc: Matt Carter
John Coombs
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Gary Miller
Rudio Mountain Limited Partnership

Endangered Species Act
Biological Opinion

and

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

for the

Bureau of Land Management 2011 - 2015 Upper John Day River Basin Grazing Authorizations
Squaw Creek, Johnson Creek, Dixie Creek, Murderers Creek, Franks Creek, Johnny Cake Mountain, Big Baldy, Rockpile, Little Wall Creek, Two County, Kinzua, and Creek Allotments
(HUCs: 1707020401, 1707020402, 1707020105, 1707020110, 1707020112, 1707020115, 1707020210),
Grant and Wheeler Counties, Oregon

Lead Action Agency:	Bureau of Land Management
Consultation Conducted By:	National Marine Fisheries Service Northwest Region
Date Issued:	May 11, 2011
Issued by:	for William W. Stelle, Jr. Regional Administrator
NMFS No.:	**2010/00159**

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INTRODUCTION

This document contains a biological opinion (opinion) that was prepared by National Marine Fisheries Service (NMFS) in accordance with section 7(b) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq*.), and implementing regulations at 50 CFR 402.[1] It also contains essential fish habitat (EFH) conservation recommendations prepared by NMFS in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801, *et seq*.) and implementing regulations at 50 CFR 600. The opinion and EFH conservation recommendations are both in compliance with section 515 of the Treasury and General Government Appropriations Act of 2001 (Data Quality Act) (44 U.S.C. 3504 (d)(1) and 3516), and underwent pre-dissemination review. The docket for this consultation is on file at the Eastern Oregon Habitat Branch of the Oregon State Habitat Office in La Grande, Oregon.

Background and Consultation History

On January 21, 2010, NMFS received a letter from the Prineville District Bureau of Land Management (BLM) requesting ESA section 7 and EFH consultation on the Prineville District's authorization of annual grazing permits on 12 BLM-administered allotments in the Upper John Day River (UJDR), North Fork John Day River (NFJDR), and Lower John Day River (LJDR) subbasins. The accompanying biological assessment (BA) described proposed cattle grazing actions, the environmental baseline conditions of the allotments (dates varying from calendar years 2001 to 2009), and potential effects of those actions on Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) and their designated critical habitat within BLM-administered allotments in the UJDR, NFJDR and LJDR subbasins. BLM determined that the proposed action area has Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) presence, designated critical habitat for MCR steelhead, and EFH for Chinook salmon (*O. tshawytscha*). The BLM concluded that the proposed action "may affect, and is likely to adversely affect" MCR steelhead and their critical habitat. The BLM also determined that the proposed action "would not adversely affect" Chinook salmon EFH.

There is a history of prior consultations for the John Day allotments. A letter of concurrence was issued on June 28, 2000, for those allotments which may affect, but are "not likely to adversely affect" (NLAA) MCR steelhead (refer to NMFS No.: 2000/00721). A biological opinion (opinion) was completed on January 17, 2001, for calendar years 2000 and 2001 for allotments which may affect, and are "likely to adversely affect" (LAA) MCR steelhead (refer to NMFS No.: 2000/00944). An amendment clarifying the Terms and Conditions was issued March 15, 2001 for the January 17, 2001 opinion.

NMFS issued an opinion on October 21, 2002, to the BLM for the 2002 and 2003 grazing seasons for the allotments determined to be LAA MCR steelhead by the BLM (refer to NMFS No.: 2002/00200). The 2001 monitoring report accompanied the request for consultation and provided pertinent information regarding 2001 grazing. The monitoring report contained some of

[1] With respect to designated critical habitat, the following analysis relied only on the statutory provisions of the ESA, and not on the regulatory definition of "destruction or adverse modification" at 50 CFR 402.02.

the information required by the 2001 opinion, but did not include actual management information on seven allotments, review of management and compliance successes and failures on three allotments, and information on compliance with all terms and conditions on 12 allotments. Terms and Conditions 1. a., b., c., d., and e., for assessing MCR steelhead designated critical habitat use and timing, were not completed due to a lack of water in the streams in 2001. The monitoring report did not address compliance with terms and conditions 2. e., f., g., and h., however, BLM was in the process of implementing each of those terms and conditions.[2]

Before 2004, the BLM consulted on grazing in the Upper John Day River and Lower John Day subbasins collectively.

On July 27, 2004, NMFS issued an opinion to BLM on the effects of authorizing annual grazing permits from 2004 - 2008 on BLM-administered allotments in the Upper, North Fork, and Lower John Day River subbasins for those allotments that were analyzed by BLM as may affect, and were LAA MCR steelhead (refer to NMFS No.: 2004/00383). An LOC was also issued on July 27, 2004, for those allotments that were analyzed as may affect and were NLAA MCR steelhead by BLM (refer to NMFS No.: 2004/00659).

The Terms and Conditions required in the 2004 - 2008 opinion included an end-of-year monitoring report from BLM be received by NMFS by December 1 of each year. It was to include the following information for each allotment: (1) Overview of proposed action and actual management (livestock numbers, on-off dates for each pasture, and strategy); (2) specific BLM implementation monitoring data, date, and location collected (stubble height, woody use, bank damage, unauthorized use, and fence maintenance); (3) specific permittee monitoring data; (4) review of management and compliance successes and failures and any transmittals/letters/actions addressed to/from permittees; (5) new habitat trend or MCR steelhead population data; (6) compliance with each pertinent term and condition contained in the opinion; and (7) management recommendations for subsequent years.

End-of-year monitoring reports for 2004, 2007 and 2008 were received by NMFS, however, the BLM stated in their reports that the implementation monitoring data was not collected. Additionally, the reports state spawning surveys were completed, however, no spawning survey data was submitted in the reports, nor was any monitoring data from the proposed action submitted. NMFS has asked BLM for the missing report and monitoring data for those years; to date they have not been provided.

Over the course of 2009, there were meetings, site visits and several BA draft reviews by NMFS. A draft BA was submitted to NMFS in April 2009. Subsequently, additional information was requested by NMFS, which lead to multiple discussions between NMFS and the BLM regarding what information was pertinent to completing a formal consultation for their proposed grazing action. Ultimately, BLM submitted available information and initiated formal consultation with NMFS for this opinion.

[2] Telephone conversation between Brent Ralston, BLM, and Brett Farman, NMFS, (2002) (discussing BLM implementing the Terms and Conditions from 2001 opinion).

No monitoring report was provided by BLM for 2009. NMFS received information in the current BA stating that implementation monitoring using MIMs protocol occurred September 23, 2009 on two of the allotments.

On October 6, 2010, NMFS sent BLM a draft copy of this opinion per their request. Following their review of the draft opinion, numerous discussions took place between BLM Prineville District's and NMFS' staff biologists regarding the monitoring needed as part of the proposed action. NMFS specifically discussed with BLM their past failure to comply with monitoring requirements and the need for assurance monitoring would be carried out as proposed for this consultation. In response to NMFS's concerns, BLM provided a monitoring table that specifies the actual monitoring BLM is committed to carry out on the 12 allotments for each of the five grazing seasons. BLM also committed to providing end of year reports summarizing monitoring results. BLM further indicated it has allocated adequate resources to ensure monitoring and reporting as proposed will be carried out for the term of this opinion. Based on these assurances as well as the yearly check-ins required of BLM, NMFS has obtained the assurance it requires to rely upon BLM's proposed grazing, monitoring, and reporting.

Description of the Proposed Action

NMFS had concerns with the action as originally proposed. On May 26, 2010, NMFS requested an amendment to the BA with a proposed riparian management objective (RMO) of <20% bank alteration. The Regional Technical Team (RTT) Report (2009) stated that scientific literature supports the connection between streambank alteration and biological effects that result in take of listed species. The BLM's proposed <40% greatly exceeded the recommended maximum bank alteration for steams supporting ESA-listed anadromous species. On June 21, 2010, NMFS received a BA amendment from BLM with a proposed RMO of <20% bank alteration, along with a proposed monitoring table, indicating by allotment, what type of monitoring would be performed and how often.

The BLM proposes to authorize annual grazing permits under Section 402 of the Federal Land Policy and Management Act (FLPMA) of 1976 on the Upper John Day River Basin for calendar years 2011 – 2015 on 12 allotments containing 14 pastures, within the following watersheds: Squaw Creek (1707020401), Johnson Creek (1707020401, 1707020402, 1707020115), Dixie Creek (1707020110), Murderers Creek (1707020105, 1707020112), Franks Creek (1707020112), Johnny Cake Mountain (1707020210), Big Baldy (1707020105, 1707020112), Rockpile (1707020105, 1707020112), Little Wall Creek (1707020210), Two County (1707020401, 1707020115), Kinzua (1707020112, 1707020115, 1707020210, 1707020401), Creek (1707020115) all within the Upper John Day, North Fork John Day, and Lower John Day subbasins. This consultation will cover the BLM Central Oregon Resource Area (CORA) grazing for the UJDR, NFJDR, and LJDR for the 2011 through 2015 grazing seasons. The BA provided information for each allotment by pasture (Table 1).

The proposed action under consultation is a batched consultation of separate annual BLM authorizations that are made for each allotment. An annual authorization is issued through the billing process which states what dates, how many AUMs, and what pastures are authorized for use that year. To gain efficiencies of scale and a broader look at the impact of BLM's annual

grazing authorizations in the John Day basin, BLM and NMFS agreed to batch all 12 LAA allotments together and to analyze each annual authorization for a period of five years from 2011-2015, consistent with 50 CFR 402.14(c). The batched 5-year consultation makes sense from a biological steelhead perspective in that it includes the entire life cycle of steelhead plus 1 additional year, thereby the effects analysis extends to cover any effects from the 5 years worth of annual authorizations.

Information Common to All Allotments

Grazing use on the Prineville District has been marked by several major changes in management over time. Prior to 1934, BLM lands were part of the public domain owned by the federal government and administered by the GLO (General Land Office). In 1934 ,the Taylor Grazing Act gave management authority to the GLO for grazing interests. Grazing districts were delineated under Section 3 of the Act and all other lands were available to be leased to ranchers with contiguous property under Section 15. The allotments described in this assessment are included under Section 15 and were not part of a grazing district. From this time until around 1976, these Section 15 lands were leased on a per acre basis – no carrying capacity or season of use was assigned to the lease. In 1976, the Federal Land Management and Policy Act gave the BLM a mission and further authority to manage the public lands. On the Prineville District in 1974-1975, an ocular reconnaissance was completed to quantify animal unit month (AUM) capacity for the John Day lands. These AUM figures became the managed carrying capacity for the allotments. In 1985, the Two Rivers Resource Management Plan (RMP) reinforced the AUM designation for each allotment and took the further step of defining a season of use for allotment areas. Prior to this time, season of use was typically season long (year round). When the RMP was prepared the season of use dates were designated to coincide with the use timeframes the private lessees were already using for their operation, with a focus on limiting hot season (summer) use. Beginning in 1992-94, all I category allotments (I for improve – these are typically allotments with stream or riparian areas or high percentages of public lands within the allotment) went under review specifically for the purpose of adjusting the grazing management to mid-Columbia steelhead 'friendly' grazing management. The focus was to graze riparian areas in the spring instead of the summer to limit grazing on woody riparian species, such as willow. These species were seen as the glue which holds riparian areas intact through environmental conditions and which also aide in protecting the habitat utilized by salmonid species. The goal was to manage the riparian areas in such a way as to promote riparian vegetation recovery and influence stream morphological and habitat characteristics.

AUMs are determined by estimating the amount of forage in pounds that a pasture can produce and divided by the amount that a 1,000 lb female with calf would consume which is about 790 lbs. Since the amount of forage can change from year to year due to temperature and precipitation, the final calculated number of AUMs is conservative. Trend and utilization monitoring is used to validate the AUM calculation. Adjustments are made as needed.

For the Squaw Creek and Kinzua Allotments discussed in the proposed action, the permittee on these two allotments remove cattle from the allotment before move triggers are reached. For the rest of the allotments in this opinion, the permittees turn cattle in and out on specific dates. With regard to the latter, these on/off dates and AUMs are calculated as described above and are

intended to ensure grazing does not exceed targeted standards of no less than 4 inch residual stubble height, less than 20% bank alteration, and less than 50% woody browse for each pasture. The upward trends on these allotments under this ongoing management system provides BLM the confidence that the conservative AUM calculation in relation to the season of use, allows for turning cattle in and out on specific dates without reaching move triggers.

Table 1. Allotment information for BLM's 2011 to 2015 grazing seasons. All streams with steelhead habitat are used by MCR steelhead for spawning, rearing or migration from March through October.

Allotment	Pastures	Streams	Steelhead Habitat (mi)	Season of use	Proposed Use Dates	AUMs	Subwatershed
2558 Squaw Creek	No Name	Squaw Creek, Frank Creek, Buckhorn Creek	2.1	Rotational	4/1 -11/30	301	1707020401
2662 Johnson Creek	No Name	Johnson Creek	1.6	Spring to hot	4/15 – 7/15	436	1707020401 1707020402 1707020115
4016 Dixie	Standard, Bear Creek	Dixie Creek, Standard Creek, West Fork Standard Creek, Comer Creek	4.6	Spring, hot and fall	6/1 – 7/15 first pasture, 7/16 – 10/15 second pasture	319	1707020110
4020 Murderers Creek	Cougar Gulch, River	South Fork John Day River, Cabin Creek and Cougar Gulch	5.9	Spring	5/1 – 6/30 Pastures are used for approximately 20 days 2 out of three years	860	1707020105 1707020112
4041 Franks Creek	South Pasture	Franks Creek and Ferris Creek	0.9	Spring	4/1 – 5/31	223	1707020112 1707020115
4042 Johnny Cake Mountain	Creek	Cabin Creek, North Fork John Day River	1.8	Spring	4/15 – 5/31	30	1707020210
4052 Big Baldy	North	Deer Creek, South Fork John Day River	4.4	Every other spring	4/15 – 5/31 every other year (odd number years)	600	1707020105, 1707020112
4103 Rockpile	No Name	South Fork John Day River, Cougar Gulch, Frazier Creek	7.6	Spring	4/1 – 5/30	928	1707020105 1707020112

Allotment	Pastures	Streams	Steelhead Habitat (mi)	Season of use	Proposed Use Dates	AUMs	Subwatershed
4108 Little Wall Creek	No Name	Little Wall Creek, Bacon Creek	0.7	Spring	4/1 -5/30	53	1707020210
4145 Two County	No Name	Burnt Corral Creek, Holmes Creek	3.1	Spring	4/15 – 6/30	1105	1707020401 1707020115
4151 Kinzua	Creek	Squaw Creek	2.7	Rotational	5/1 – 10/31	1170	1707020112 1707020115 1707020210 1707020401
4163 Creek	No Name	Cottonwood Creek	0.7	Spring or fall	4/15-5/15 or 10/15-10/30	63	1707020115

Proposed Monitoring

The following list of definitions relates to the proposed monitoring actions:

- Utilization: Estimates the amount of the plant that has been removed. Generally done by species.
- Redd Counts: Counts the number of steelhead redds within the pasture.
- Photo Points: A designated point(s) in a pasture where photos of the same scene are taken over time to visually document changes.
- Residual Stubble Height: Measures the height of key plant species at the end of the growing cycle. Information collected is compared to trend over time.
- Compliance: A visual observation to determine if livestock are grazing only during authorized use periods and are not present in the pasture during unauthorized use periods.
- Implementation Monitoring: Uses the Multiple Indicator Monitoring protocol to measure bank alteration, residual stubble height, and woody browse.
- Effectiveness Monitoring (EM): Measures botanical, temperature, and channel characteristics. This is part of a long term study across multiple states to assess effects of management across the landscape.
- Upland Trend Study Plots: Monitors changes in plant compositions to determine trend of ecological status.
- Water Temperature Monitoring: Monitors water temperature.
- Peak Flow Monitoring: Records the highest water surface elevation over given period of time.

The 10 monitoring categories listed above are a combination of overlapping long and short-term monitoring techniques. No allowable levels have been set for the proposed monitoring actions. Data collected is compared to trend over time to determine whether use levels are appropriate for

each pasture. It is BLM's position that these techniques are adequate to monitor for and identify impacts of the proposed action and ensure that effects to MCR steelhead and their critical habitat are minimized as described in the BA. According to the BA, if impacts to MCR steelhead or their critical habitat are greater than described in the BA, the BLM will reinitiate consultation.

The BLM will follow the monitoring requirements for the PACFISH biological opinion for all grazing allotment pastures in the proposed action. The BLM will also monitor using the three annual indicators in multiple indicator monitoring (MIMs) (bank alteration, stubble height, woody browse), in 20% of category 1 pastures a year.[3] There are three PIBO effectiveness monitoring sites[4] found in the following locations: Deer Creek in the Big Baldy allotment, Dixie Creek in the Dixie allotment and Cabin Creek in the Johnny Cake Mountain allotment. There is a fourth site being created in Cottonwood Creek located in the Creek allotment. For the effectiveness monitoring sites the BLM will collect bank alteration, residual stubble height, and at times woody browse at the end of the growing season the year before and the year scheduled to be monitored by the effectiveness monitoring team. In addition to the above proposed monitoring, the BLM will also be collecting these annual indicators on all pastures in this consultation on a 5-year rotation. Specific monitoring actions for each allotment are discussed in further detail below.

Indicators to monitor for attainment of RMOs have been identified in the BA as no less than 4-inch residual stubble height, bank alteration of less than 20%, and woody browse of less than 50% for each pasture at the end of grazing season. The RTT Report (File Code 2200, dated December 11, 2009) identifies there is the potential for observer and over estimation error in the calculation for percent of bank alteration. The observer error could actually be higher or lower by a percentage and therefore, is discountable. A more reliable monitoring protocol is currently not available, this is conservative for fish and the best methodology we have. Published research is anticipated on the subject and will be implemented when available.

The management will be modified by pasture if the trend information collected from monitoring data demonstrates that the minimums are not working to achieve the RMOs. If objectives are not met, the BLM will analyze why they were not met and whether this is detrimental to the function of the riparian area, and if so, what changes to management should be made. This monitoring schedule started in the fall of 2009. The Prineville District BLM is committed to carrying out the proposed monitoring actions to ensure the desired conservation to ESA-listed species and their designated critical habitat is achieved.

[3] Category I pasture use areas are defined as all United States Forest Service/Bureau of Land Management (USFS/BLM) pasture/use areas with stream/riparian areas that lie entirely or partially within 6th –field Hydrologic Unit Code (HUCs)/sub-watersheds occupied by Endangered Species Act (ESA)-listed fish species (salmon, steelhead, or bull trout) or containing designated/proposed critical habitat.

[4] PIBO effectiveness monitoring project examines the long-term effectiveness of range management or restoring riparian and aquatic systems. Designated Monitoring Areas (DMAs) on stream reaches are the sites where the implementation monitoring is done and the sites are measured every five years for effectiveness monitoring by the PIBO team for the PIBO effectiveness monitoring project (BLM Instruction Memorandum No. OR-2010-052 dated July, 27, 2010).

The BLM will monitor to detect trampled redds during annual spawning surveys. In areas where cattle have access to redds, BLM will randomly select a minimum of two[5] index reaches that will be monitored bi-weekly, until cattle are removed from the area, to determine if a redd has been or is likely to be trampled. The reaches will be submitted to the Level 1 Team for approval.

Allotment Proposed Action Descriptions

1) Squaw Creek Allotment

The Squaw Creek Allotment (2558) has three streams within it, and three reaches. This allotment uses a rotational grazing strategy. Livestock are present on the pasture for 30 to 60 days depending on the year of rotation. The permittee will remove cattle from the allotment before move triggers are reached by monitoring the stubble height and woody browse indicators. The allotment contains 5,086 acres of BLM land, and provides 301 animal unit months (AUMs) of grazing forage for livestock. Squaw, Frank, and Buckhorn Creeks are within this allotment. There are 2.5 miles of perennial streams, 6.4 miles of intermittent streams, and 2.1 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches. The period of MCR steelhead use is March through October (spawning and rearing). The season of livestock use is from April 1 to November 30.

Proposed Monitoring for Squaw Creek Allotment
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), utilization (once every 5 years), residual stubble height (annually), redd counts (annually), and PACFISH implementation monitoring (bank alteration, stubble height, and woody browse will occur every 5 years). A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

2) Johnson Creek Allotment

The Johnson Creek Allotment (2662) has one stream within it, and two reaches. This allotment uses a spring and early hot-season grazing strategy that is managed by AUMS and on/off dates. This allotment contains 7,698 acres of BLM land, and provides 436 AUMs of grazing forage for livestock. Johnson Creek is within this allotment. There are 2 miles of perennial stream, 11.5 miles of intermittent stream, and 1.6 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches. MCR steelhead period of use is March through October (spawning and rearing). The season of livestock use is from April 15 to July 15.

Proposed Monitoring for Johnson Creek Allotment
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), utilization (every 5 years), redd counts (annually), and

[5] E-mail from Jimmy Eisner, Bureau of Land Management, to Reneé Coxen, NMFS (May 13, 2010)(stating how many index reaches BLM will select to monitor for redds).

PACFISH implementation (bank alteration, stubble height, and woody browse will occur every five years). A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

3) Dixie Allotment

The Dixie Allotment (4016) has two pastures with four streams within them and four reaches. Livestock graze both pastures every year managed by AUMS and on/off dates. The time of year the pasture is grazed changes: June 1 to July 15 the first pasture, July 16 to October 15 the second pasture (spring to early hot first year and hot to fall second year). This allotment contains 2,548 acres of BLM land, and provides 319 AUMs of grazing forage for livestock. Dixie, Standard, West Fork Standard Creek, and Comer Creeks are within this allotment. There are 5.7 miles of perennial streams, 2.7 miles of intermittent streams, and 4.6 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches. MCR steelhead period of use is March through October (spawning and rearing).

Proposed Monitoring for Dixie Allotment
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), utilization (every 5 years), photo points (annually), PIBO effectiveness monitoring site #1015 Dixie Creek (next reading 2012). PACFISH implementation (bank alteration, stubble height, and woody browse will occur every five years), redd counts (annually), residual stubble height (annually). A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

4) Murderers Creek Allotment

The Murderers Creek Allotment (4020) has three streams within it, and four reaches. This allotment uses a spring grazing strategy managed by AUMS and on/off dates. Livestock are present on the pasture for approximately 20 days two out of three years. This allotment contains 16,004 acres of BLM land, and provides 860 AUMs of grazing forage for livestock. Cabin Creek, South Fork John Day River, and Cougar Gulch are within this allotment. There are 7.6 miles of perennial streams, 48.0 miles of intermittent streams, and 5.9 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches. MCR steelhead period of use is March through October (spawning and rearing). The season of livestock use is from May 1 to June 30.

Proposed Monitoring for Murderers Creek Allotment
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), photo points (every 5 years), redd counts (annually), and utilization (every 5 years) and PACFISH implementation (bank alteration, stubble height, and woody browse will occur every five years). A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

5) Franks Creek Allotment

The Franks Creek Allotment (4041) has one stream within it, and two reaches. This allotment uses a spring grazing strategy managed by AUMS and on/off dates. It contains 2,617 acres of BLM land, and provides 223 AUMs of grazing forage for livestock. Franks Creek is within this allotment. There are 1.7 miles of perennial streams, 5.8 miles of intermittent streams, and 0.9 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches. MCR steelhead period of use is March through October (spawning and rearing). The season of livestock use is from April 1 to May 31.

Proposed Monitoring for Franks Creek Allotment
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), photo points (annually), redd counts (annually). PACFISH implementation monitoring (bank alteration, stubble height, and woody browse) will occur every five years. A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

6) Johnny Cake Mountain Allotment

The Johnny Cake Mountain Allotment (4042) has two streams within it, and three reaches. This allotment uses a spring grazing strategy managed by AUMS and on/off dates. This allotment contains 280 acres of BLM land, and provides 30 AUMs of grazing forage for livestock. Cabin Creek and North Fork John Day River are within this allotment. There are 1.2 miles of perennial streams, 0.6 miles of intermittent streams, and 1.8 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches. MCR steelhead period of use is March through October (spawning and rearing). The season of livestock use is from April 15 to May 31.

Proposed Monitoring for Johnny Cake Mountain Allotment
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), photo points (every 5 years), redd counts (annually), and PIBO effectiveness monitoring Site #1088 Cabin Creek (next reading 2013) and PACFISH implementation (bank alteration, stubble height, and woody browse will occur every five years). A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

7) Big Baldy Allotment

The Big Baldy Allotment (4052) has two streams within it and two reaches. This allotment uses a spring grazing strategy managed by AUMS and on/off dates. This allotment contains 12,726 acres of BLM land, and provides 600 AUMs of grazing forage for livestock. Deer Creek and South Fork John Day River are within this allotment. There are 11.8 miles of perennial streams, 19.0 miles of intermittent streams, and 4.4 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches.

MCR steelhead period of use is March through October (spawning and rearing). The season of livestock use is from April 15 to May 31 every other year on odd numbered years.

Proposed Monitoring for Big Baldy Allotment
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), photo points (every 5 years), PIBO EM Site #1035 Deer Creek (next reading 2013) and PACFISH Implementation (bank alteration, stubble height, and woody browse will occur at the end of the growing season in 2012 & 2013),and redd counts (annually). A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

8) Rockpile Allotment

The Rockpile Allotment (4103) has three streams within it, and three reaches. This allotment uses a spring grazing strategy managed by AUMS and on/off dates. This allotment contains 4,918 acres of BLM land, and provides 928 AUMs of grazing forage for livestock. South Fork John Day River, Cougar Gulch, and Frazier Creek are within this allotment. There are 10.8 miles of perennial streams, 7.5 miles of intermittent streams, and 7.6 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches. MCR steelhead period of use is March through October (spawning and rearing). The season of livestock use is from April 1 to May 30.

Proposed Monitoring for Rockpile Allotment
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), utilization (every 5 years), photo points (annually), redd counts (annually) and PACFISH implementation (bank alteration, stubble height, and woody browse will occur every five years). A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

9) Little Wall Creek Allotment

The Little Wall Creek Allotment (4108) has two streams within it and three reaches. This allotment uses a spring grazing strategy managed by AUMS and on/off dates. This allotment contains 320 acres of BLM land, and provides 53 AUMs of grazing forage for livestock. Little Wall and Bacon Creeks are within this allotment. There are 0.7 miles of perennial streams, 0.3 miles of intermittent streams, and 0.7 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches. MCR steelhead period of use is March through October (spawning and rearing). The season of livestock use is from April 1 to May 30.

Proposed Monitoring for Little Wall Creek Allotment
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), redd counts (annually) and PACFISH implementation (bank

alteration, stubble height, and woody browse will occur every five years). A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

10) Two County Allotment

The Two County Allotment (4145) has two streams within it, and two reaches. This allotment uses a spring grazing strategy managed by AUMS and on/off dates. This allotment contains 13,796 acres of BLM land, and provides 1,105 AUMs of grazing forage for livestock. Burnt Corral and Holmes Creeks are within this allotment. There are 7.9 miles of perennial streams, 30.8 miles of intermittent streams, and 3.1 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches. MCR steelhead period of use is March through October (spawning and rearing). The season of livestock use is from April 15 to June 30.

Proposed Monitoring for Two County Allotment
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), redd counts (annually) and PACFISH implementation (bank alteration, stubble height, and woody browse will occur every five years). A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

11) Kinzua Allotment

The Kinzua Allotment (4151) has one creek within it, and one reach. This allotment uses a rotational strategy which includes spring, hot, or fall season grazing. The permittee will remove cattle from the allotment before move triggers are reached by monitoring the stubble height and woody browse indicators. This allotment contains 9,463 acres of BLM land, and provides 1170 AUMs of grazing forage for livestock. Squaw Creek is within this allotment. There are 4.8 miles of perennial streams, 15.4 miles of intermittent streams, and 2.7 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches. MCR steelhead period of use is March through October (spawning and rearing). The season of livestock use is from May 1 to October 31.

Proposed Monitoring for Kinzua Allotment
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), utilization (every 5 years), redd counts (annually), residual stubble height (annually), and PACFISH implementation (bank alteration, stubble height, and woody browse will occur every five years). A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

12) Creek Allotment

The Creek Allotment (4163) has one stream within it, and one reach. This allotment uses a spring or fall season grazing strategy managed by AUMS and on/off dates. This allotment contains 706 acres of BLM land, and provides 63 AUMs of grazing forage for livestock. Cottonwood Creek is within this allotment. There are 0.7 miles of perennial streams, 3.0 miles of intermittent streams, and 0.7 miles of MCR steelhead designated critical habitat. The designated critical habitat is the best indicator of steelhead presence in the stream reaches. MCR steelhead period of use is March through October (spawning and rearing). The season of livestock use is from April 15 to May 15, or October 15 to October 30.

Proposed Monitoring for Creek Allotment

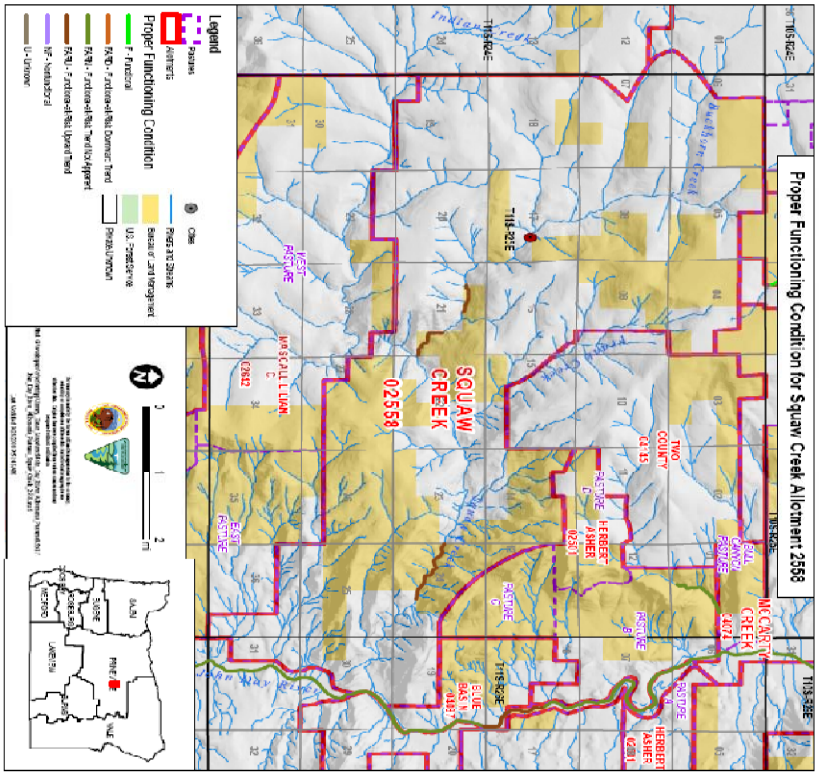
Proposed monitoring for this allotment will be used to cross reference back to adaptive management to ensure the grazing actions will not exceed allowable levels. Monitoring will be as follows: Compliance (annually), utilization (every 5 years), redd counts (annually), and photo points (annually), PIBO effectiveness monitoring site on Cottonwood Creek. PACFISH implementation (bank alteration, stubble height, and woody browse) will occur every five years. A new schedule for PACFISH monitoring is being developed for all category 1 pastures. BLM will notify NMFS if the monitoring year changes.

NMFS relied on the foregoing description of the proposed action, including all features identified to reduce adverse effects, to complete this consultation. To ensure that this consultation remains valid, NMFS requests that the action agency keep NMFS informed of any changes to the proposed action.

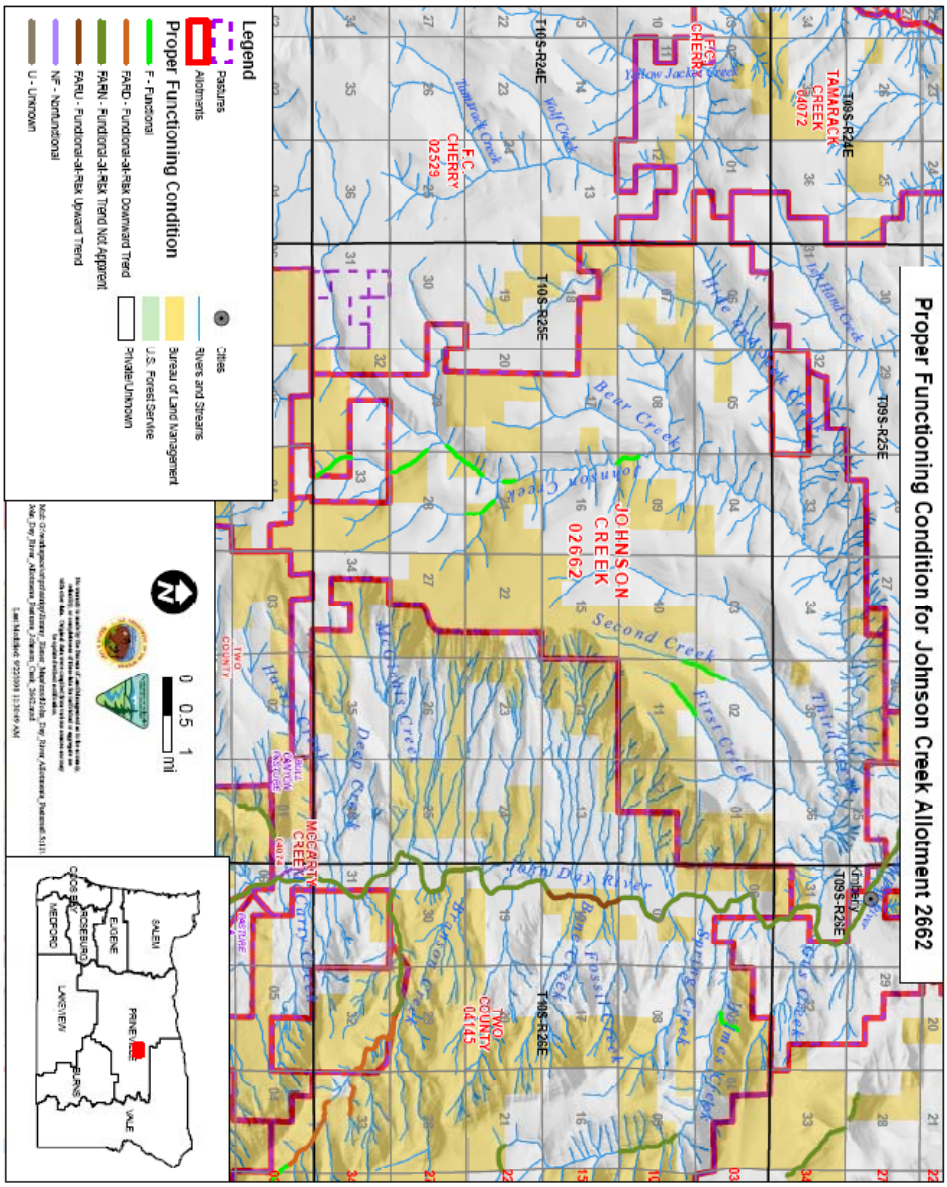
Action Area

Action area means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For this consultation, the action area includes:

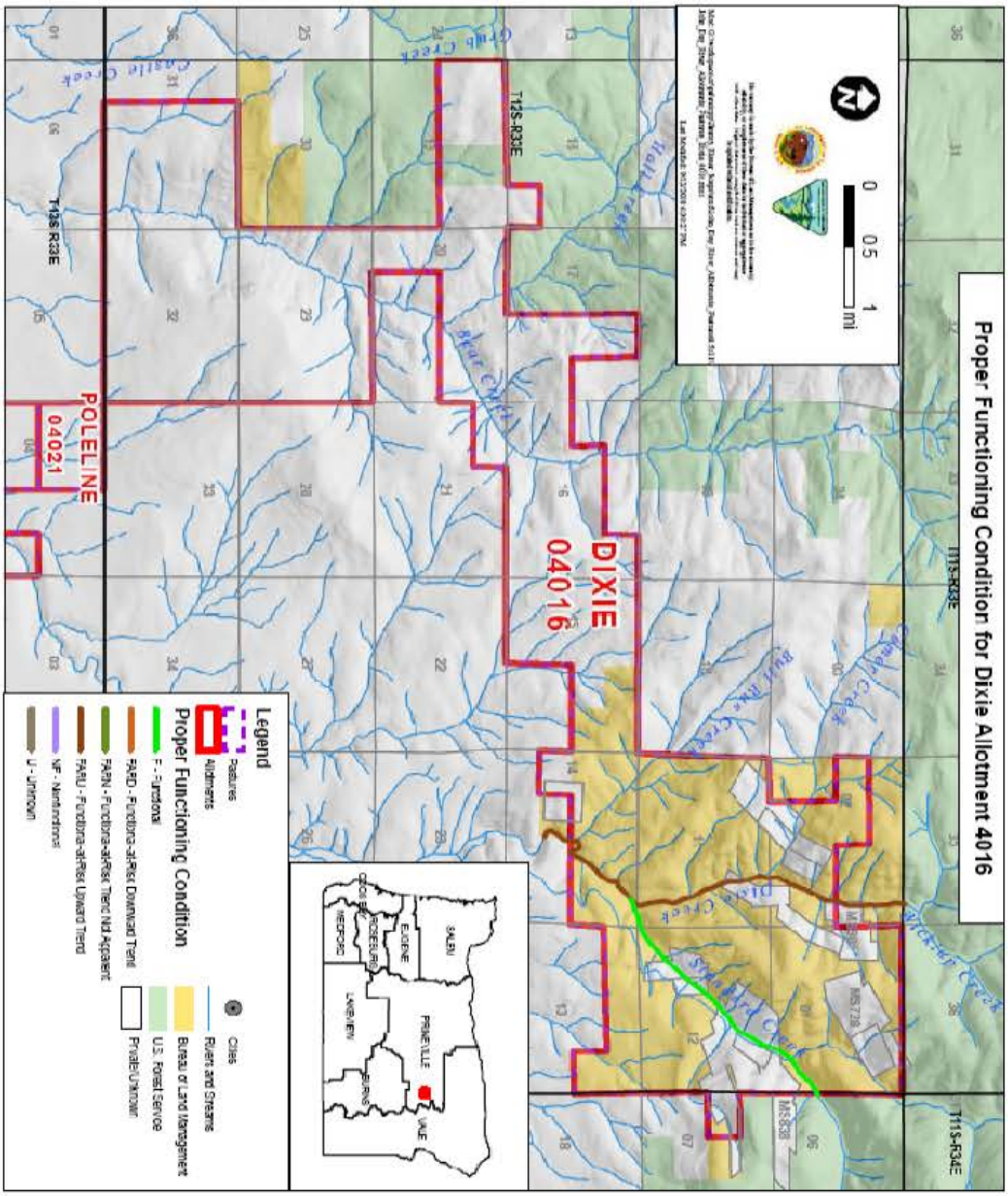
1) Squaw Creek Allotment (2558) with Squaw Creek, Frank Creek, and Buckhorn Creek in the 1707020401 watershed, containing 2.1 miles of MCR steelhead designated critical habitat, 2.5 miles of perennial stream and 6.4 miles of intermittent stream.



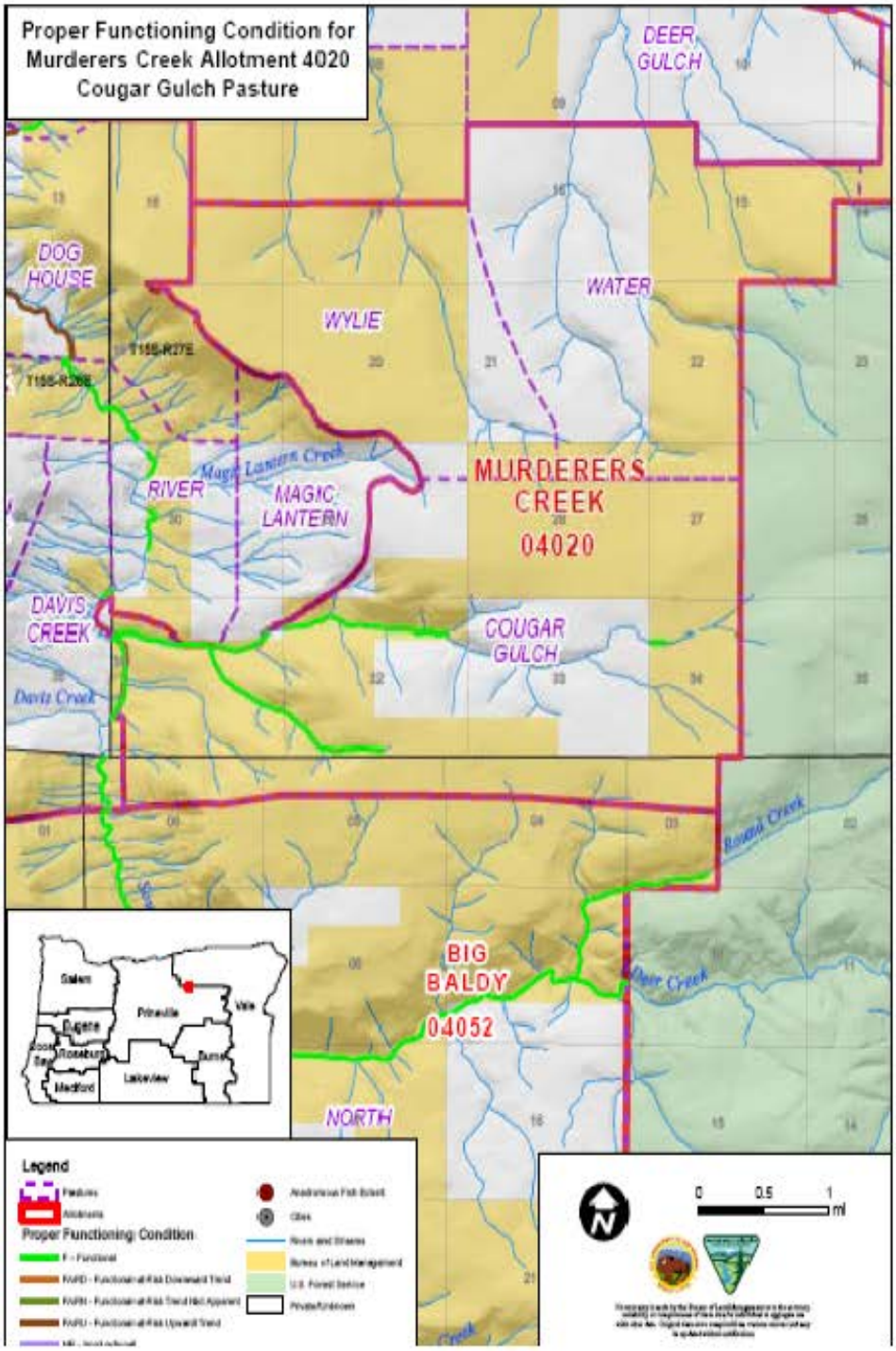
2) Johnson Creek Allotment (2662) with Johnson Creek in the 1717020401, 1717020402, and 1717020115 watersheds, containing 1.6 miles of MCR steelhead designated critical habitat within 2.0 miles of perennial streams and 11.5 miles of intermittent streams.

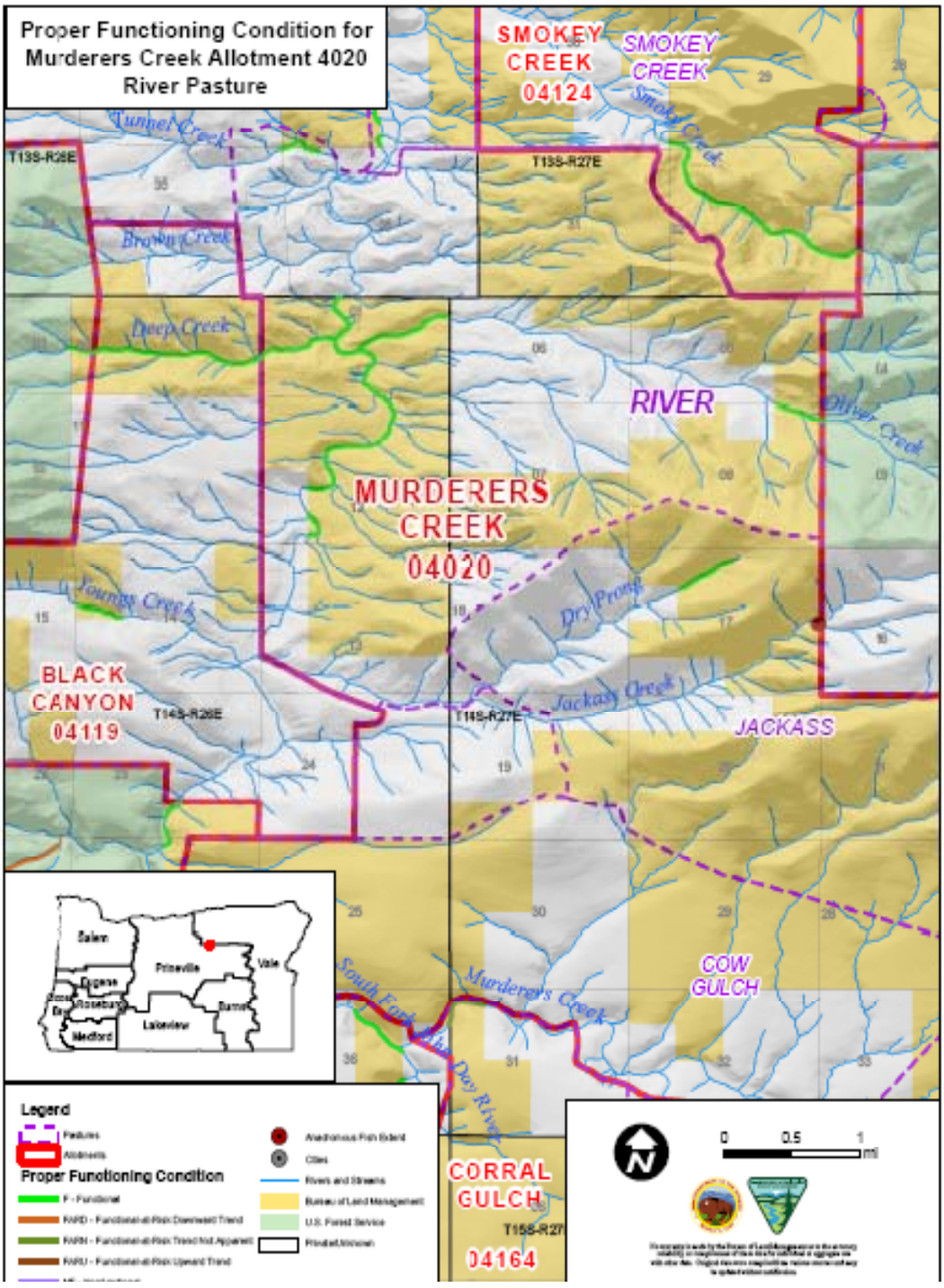


3) Dixie Allotment (4016) with Dixie Creek, Standard Creek, West Fork Standard Creek, and Comer Creek in the 1707020110 watershed, containing 4.6 miles of MCR steelhead designated critical habitat within 5.7 miles of perennial streams and 2.7 miles of intermittent streams.



4) Murderers Creek Allotment (4020) with South Fork John Day River, Cabin Creek, and Cougar Gulch in the 1707020105 and 1707020112 watersheds, containing 5.9 miles of MCR steelhead designated critical habitat within 7.6 miles of perennial streams and 48.0 miles of intermittent streams.




Proper Functioning Condition for Murderers Creek Allotment 4020 River Pasture
SMOKEY CREEK 04124
SMOKEY CREEK
Tunnel Creek
Smoky Creek
T13S-R26E
T13S-R27E
Brown Creek
Deep Creek
RIVER
Oliver Creek
MURDERERS CREEK 04020
Young Creek
Dry Prong
BLACK CANYON 04119
T14S-R26E
T14S-R27E
Jackass Creek
JACKASS
Salem
Prineville
Vale
Eugene
Roseburg
Burns
Medford
Lakeview
COW GULCH
Murderer's Creek
South Fork John Day River
Legend
Pastures
Allotments
Proper Functioning Condition
F - Functional
Anadromous Fish Extent
Cities
Rivers and Streams
Bureau of Land Management
U.S. Forest Service
Private/Unknown
CORRAL GULCH
T15S-R27
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0
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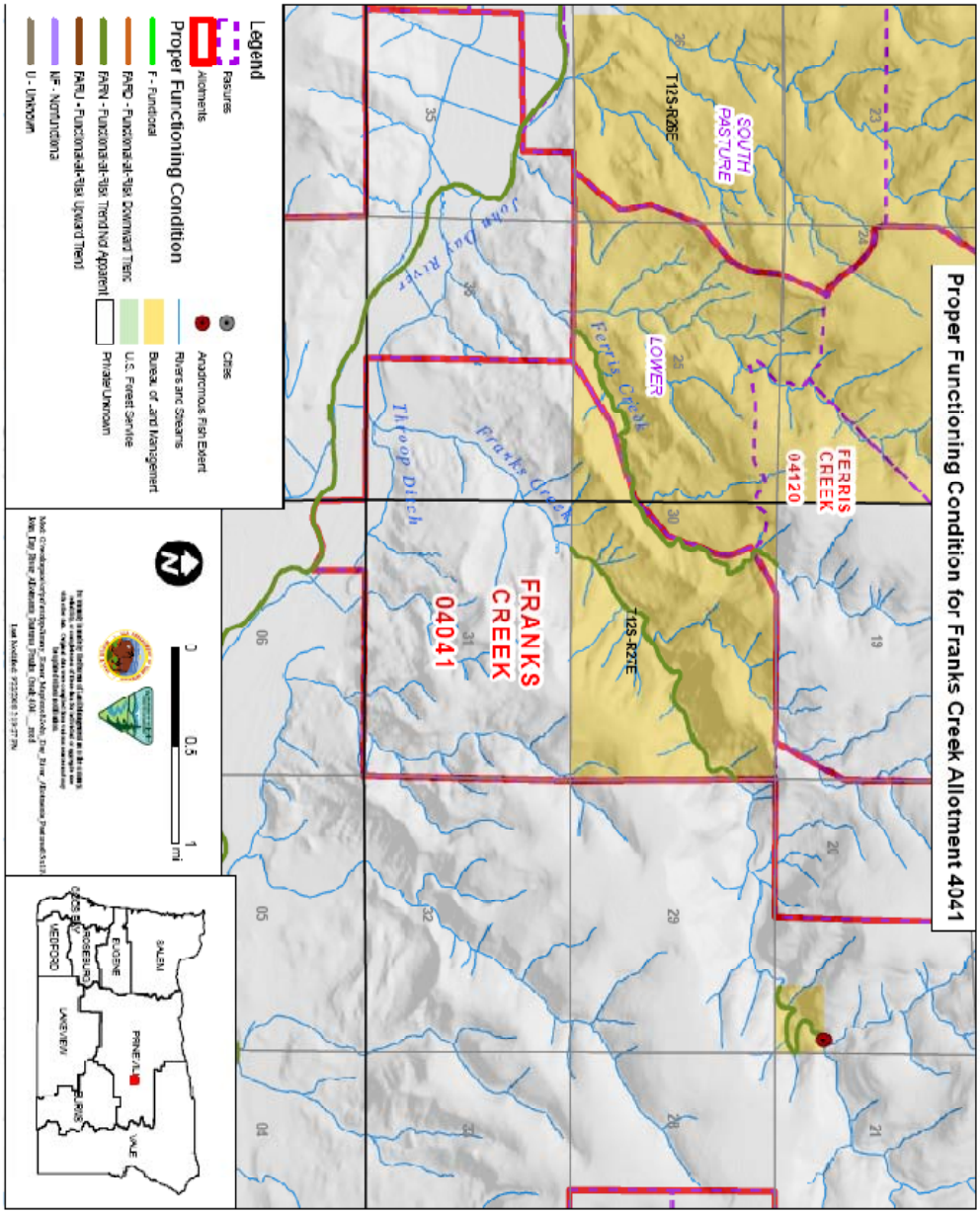
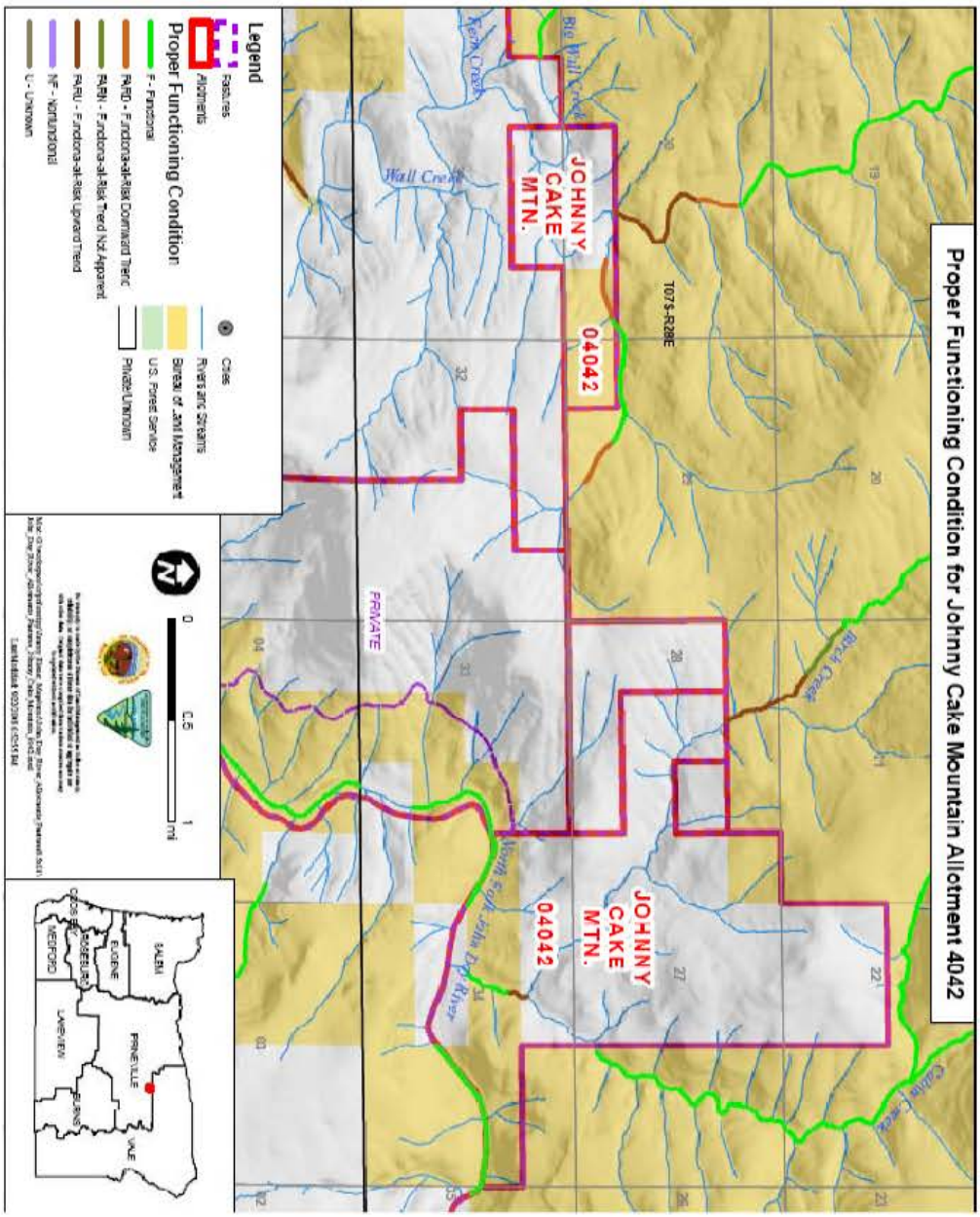
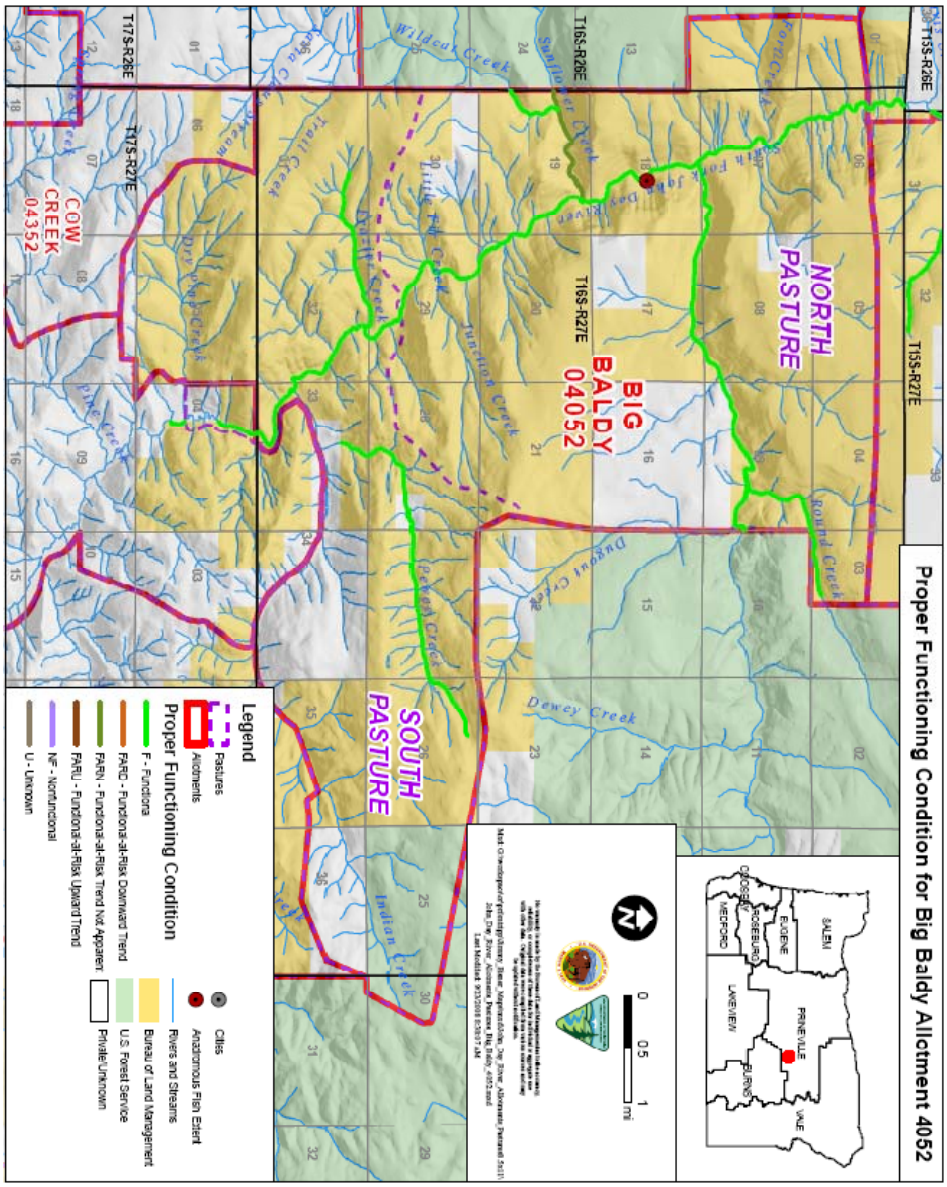
5) Franks Creek Allotment (4041) with Franks Creek in the 1707020112 watershed, containing 0.9 miles of MCR steelhead designated critical habitat within 1.7 miles of perennial streams and 5.8 miles of intermittent streams.



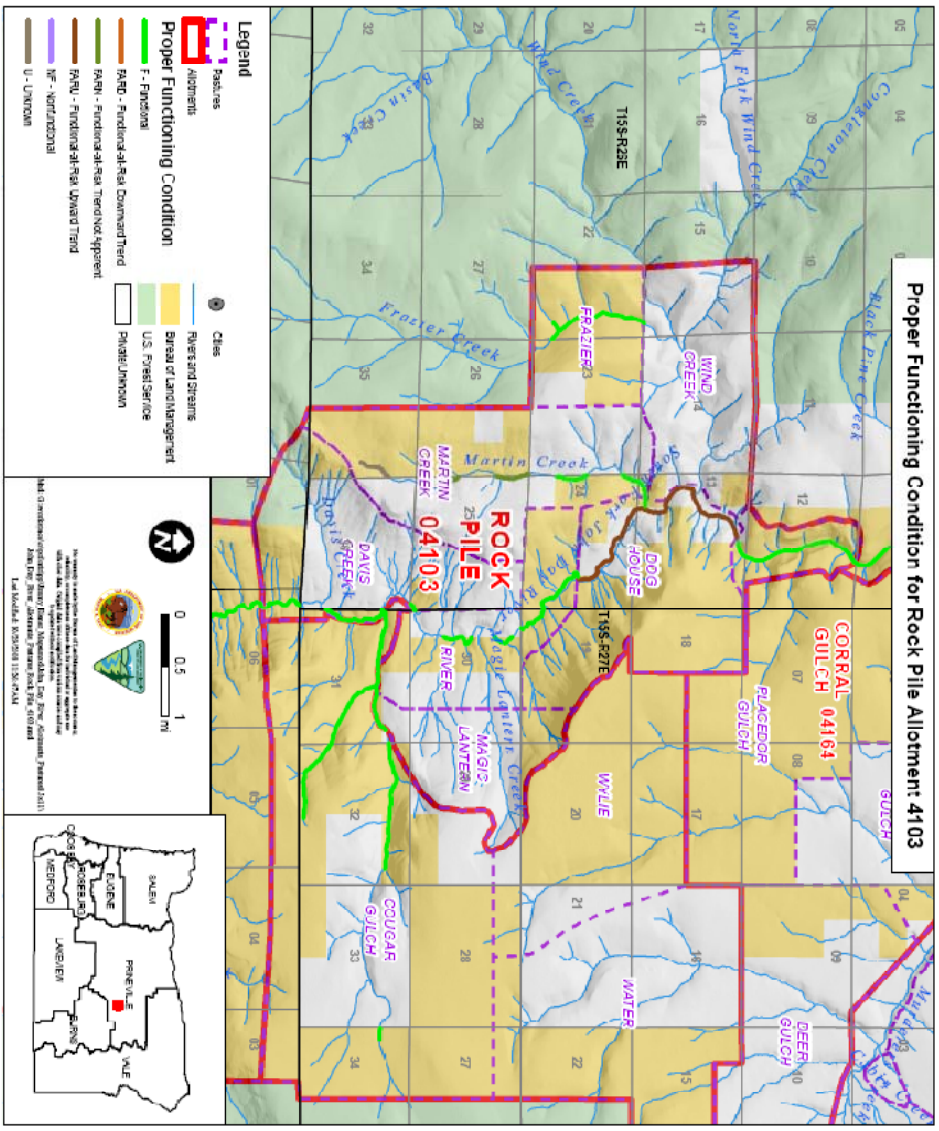
6) Johnny Cake Mountain Allotment (4042) with Cabin Creek and North Fork John Day River in the 1707020210 watershed, containing 1.8 miles of MCR steelhead designated critical habitat within 1.2 miles of perennial streams and 0.6 miles of intermittent streams.



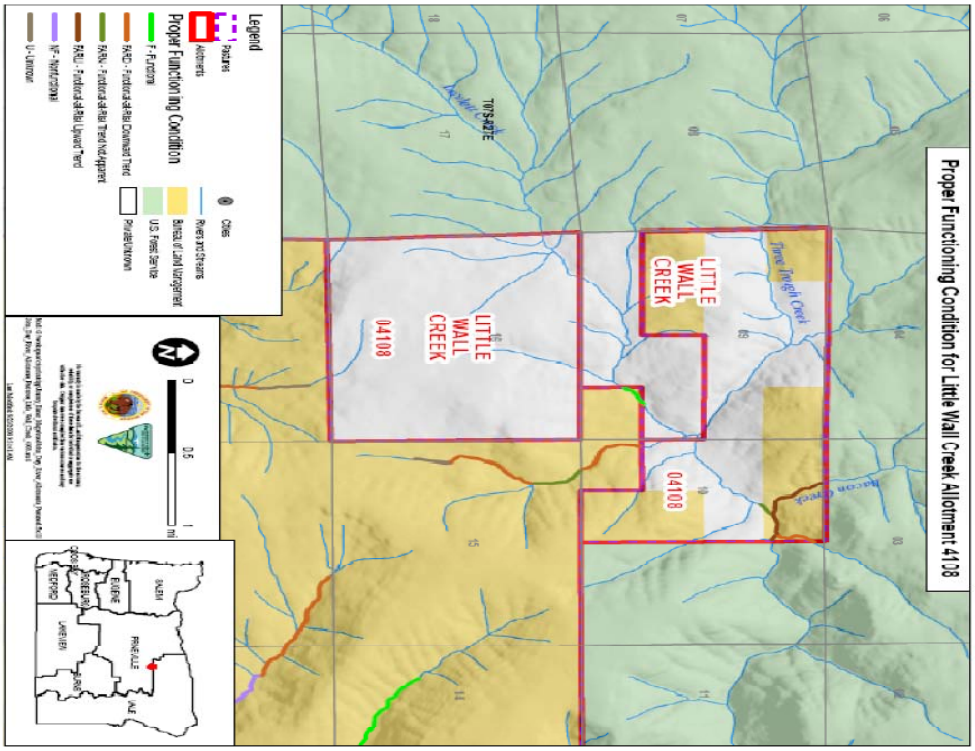
7) Big Baldy Allotment (4052) with Deer Creek and South Fork John Day River, in the 1707020105 and 1707020112 watersheds, containing 4.4 miles of MCR steelhead designated critical habitat within 11.8 miles of perennial streams and 19.0 miles of intermittent streams.



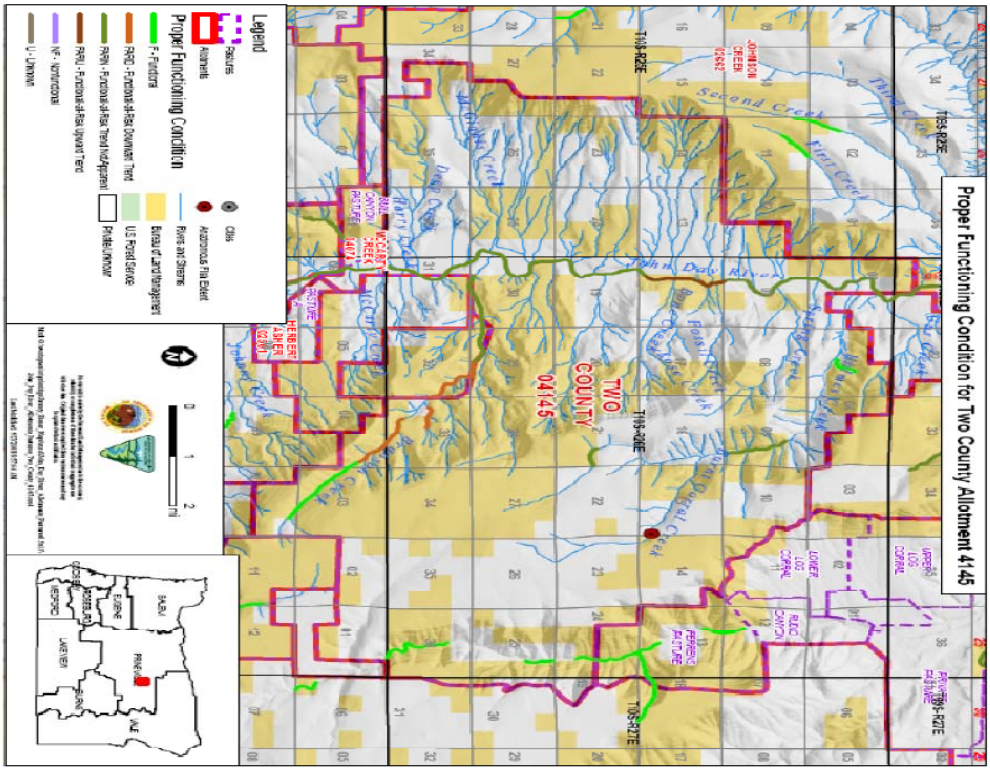
8) Rockpile Allotment (4103) with South Fork John Day River, Cougar Gulch, and Frazier Creek in the 1707020105 and 1707020112 watersheds, containing 7.6 miles of MCR steelhead designated critical habitat within 10.8 miles of perennial streams and 7.5 miles of intermittent streams.



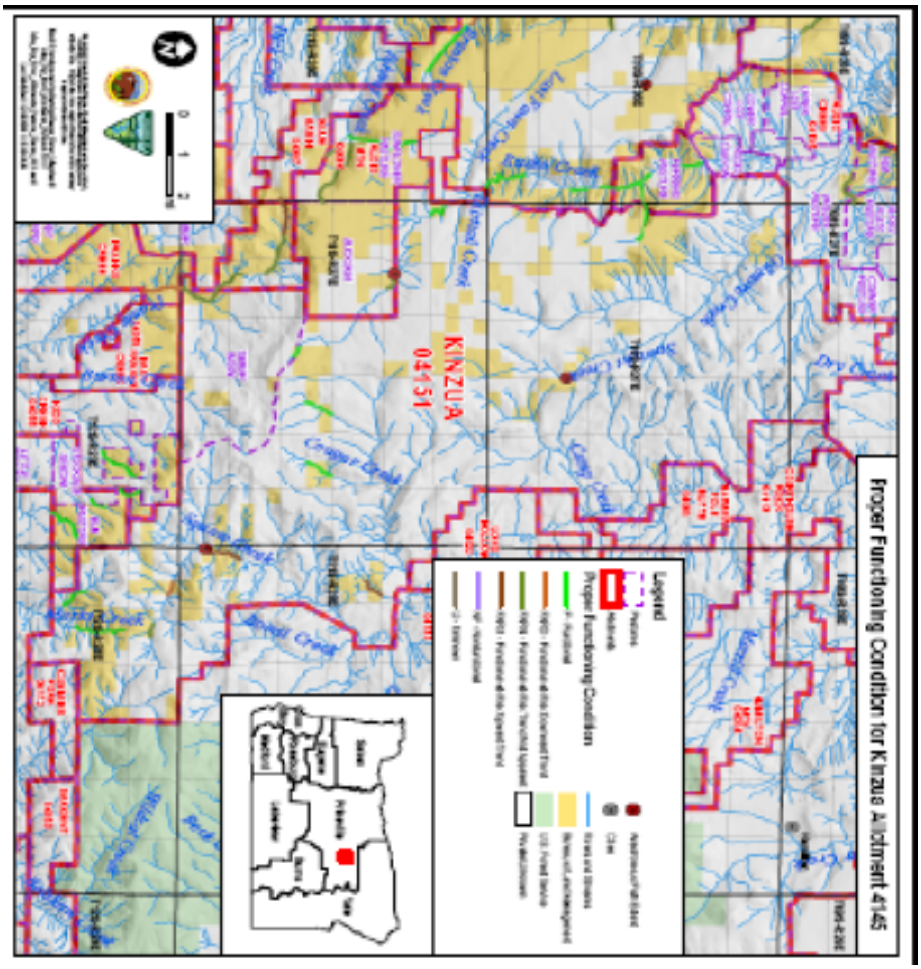
9) Little Wall Creek Allotment (4108) with Little Wall Creek and Bacon Creek in the 1707020210 watershed, containing 0.7 miles of MCR steelhead designated critical habitat within 0.7 miles of perennial streams and 0.3 miles of intermittent streams.



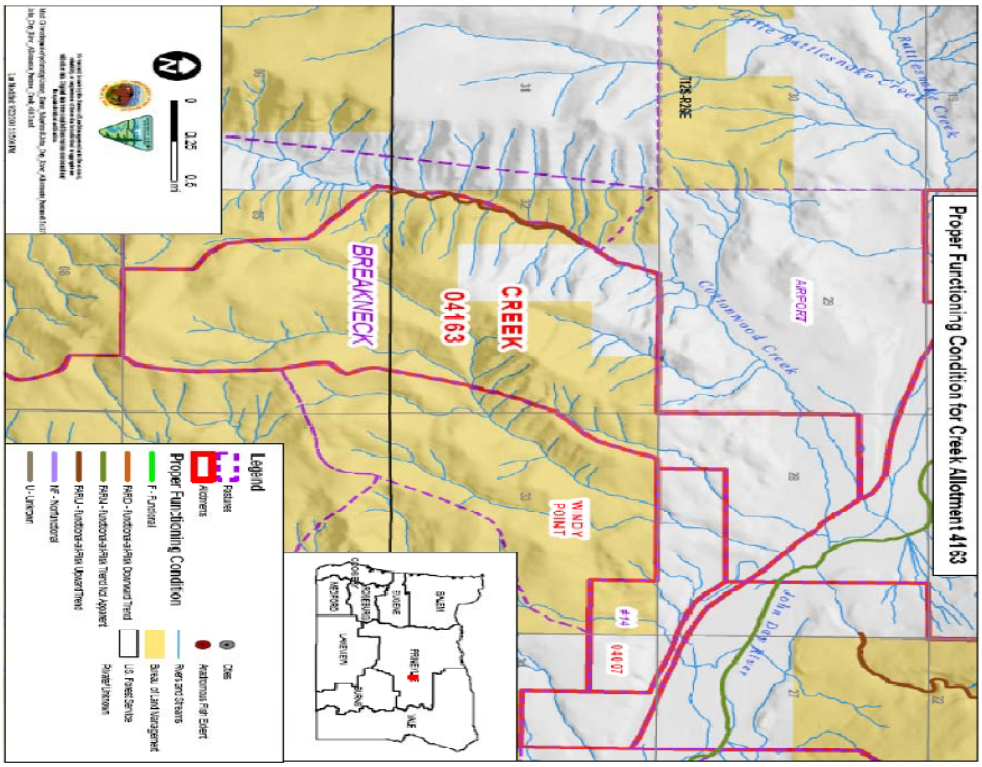
10) Two County Allotment (4145) with Burnt Corral Creek and Holmes Creek in the 1707020401, and 1707020115 watersheds, containing 3.1 miles of MCR steelhead designated critical habitat within 7.9 miles of perennial streams and 30.8 miles of intermittent streams.



11) Kinzua Allotment (4151) with Squaw Creek in the 1707020112, 1707020115, 1707020210, and 1707020401 watersheds, and containing 2.7 miles of MCR steelhead designated critical habitat within 4.8 miles of perennial streams and 15.4 miles of intermittent streams.



12) Creek Allotment (4163) with Cottonwood Creek in the 1707020115 watershed, containing 0.7 miles of MCR steelhead designated critical habitat within 0.7 miles of perennial streams and 3.0 miles of intermittent streams.



There are two known complete passage barriers within the action area, Izee Falls and a barrier on Frank Creek within the Squaw Creek allotment. However, many irrigation diversions occur within the John Day River basin and, in low-water years, fish may encounter passage and spawning difficulties in some tributary reaches due to these diversions. In addition, a number of passage barriers have been identified in the basin outside the action area. The entire action area is designated EFH for Chinook salmon.

ENDANGERED SPECIES ACT BIOLOGICAL OPINION

Section 7(a)(2) of the ESA requires Federal agencies to consult with NMFS to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. The Opinion that follows records the results of the interagency consultation for this proposed action. The ITS provided after the Opinion specifies: (1) The impact of any taking of threatened or endangered species that will be incidental to the proposed action; (2) reasonable and prudent measures that NMFS considers necessary and appropriate to minimize such impact; and (3) nondiscretionary terms and conditions (including, but not limited to, reporting requirements) that must be complied with by the Federal agency, applicants, or both, to carry out the reasonable and prudent measures.

To complete the jeopardy analysis presented in this opinion, NMFS reviews the status of each listed species[6] considered in this consultation, the environmental baseline in the action area, the effects of the action, and cumulative effects (50 CFR 402.14(g)). From this analysis, NMFS determines whether effects of the action are likely, in view of existing risks, to appreciably reduce the likelihood of both the survival and recovery of the affected listed species.

For the critical habitat adverse modification analysis, NMFS considers the status of the entire designated area of the critical habitat considered in this consultation, the environmental baseline in the action area, the likely effects of the action on the function and conservation role of the affected critical habitat, and cumulative effects. NMFS uses this assessment to determine whether, with implementation of the proposed action, critical habitat would remain functional, or retain the current ability for the primary constituent elements (PCEs) to become functionally established, to serve the intended conservation role for the species.[7]

If the action under consultation is likely to jeopardize the continued existence of an ESA-listed species, or destroy or adversely modify critical habitat, NMFS must identify any reasonable and prudent alternatives for the action that avoid jeopardy or destruction or adverse modification of critical habitat and meet other regulatory requirements (50 CFR 402.02).

Status of the Species and Critical Habitat

The summaries that follow describe the status of the ESA-listed species, and its designated critical habitat, that occur within the geographic area of this proposed action and are considered in this opinion. More detailed information on the status and trends of these listed resources, and their biology and ecology, can be found in the listing regulations and critical habitat designations published in the Federal Register.

It is likely that climate change will play an increasingly important role in determining the abundance of ESA-listed species, and the conservation value of designated critical habitats, in the Pacific Northwest. During the last century, average regional air temperatures increased by 1.5°F, and increased up to 4°F in some areas (USGCRP 2009). Warming is likely to continue during the next century as average temperatures increase another 3 to 10°F (USGCRP 2009). Overall, about one-third of the current cold-water fish habitat in the Pacific Northwest is likely to exceed key water temperature thresholds by the end of this century (USGCRP 2009).

Precipitation trends during the next century are less certain than for temperature but more precipitation is likely to occur during October through March and less during summer, and more of the winter precipitation is likely to fall as rain rather than snow (ISAB 2007, USGCRP 2009). Where snow occurs, a warmer climate will cause earlier runoff so stream flows in late spring,

[6] An "evolutionarily significant unit" (ESU) of Pacific salmon (Waples 1991) and a "distinct population segment" (DPS) (Policy Regarding the Recognition of District Vertebrate Population; 61 FR 4721, Feb 7, 1996) are both "species" as defined in section 3 of the ESA.

[7] Memorandum from William T. Hogarth to Regional Administrators, Office of Protected Resources, NMFS (November 7, 2005) (Application of the "Destruction or Adverse Modification" Standard Under Section 7(a)(2) of the Endangered Species Act).

summer, and fall will be lower and water temperatures will be warmer (ISAB 2007, USGCRP 2009).

Higher winter stream flows increase the risk that winter floods in sensitive watersheds will damage spawning redds and wash away incubating eggs (USGCRP 2009). Earlier peak stream flows will also flush some young salmon and steelhead from rivers to estuaries before they are physically mature, increasing stress and the risk of predation (USGCRP 2009). Lower stream flows and warmer water temperatures during summer will degrade summer rearing conditions, in part by increasing the prevalence and virulence of fish diseases and parasites (USGCRP 2009). Other adverse effects are likely to include altered migration patterns, accelerated embryo development, premature emergence of fry, and increased competition and predation risk from warm-water, non-native species (ISAB 2007).

The earth's oceans are also warming, with considerable inter-annual and inter-decadal variability superimposed on the longer-term trend (Bindoff *et al*. 2007). Historically, warm periods in the coastal Pacific Ocean have coincided with relatively low abundances of salmon and steelhead, while cooler ocean periods have coincided with relatively high abundances (Scheuerell and Williams 2005, Zabel *et al*. 2006, USGCRP 2009). Ocean conditions adverse to salmon and steelhead may be more likely under a warming climate (Zabel *et al*. 2006).

Status of the Species. Over the past few decades, the sizes and distributions of the populations considered in this opinion generally have declined due to natural phenomena and human activity, including the operation of hydropower systems, over-harvest, hatcheries, and habitat degradation. Enlarged populations of terns, seals, sea lions, and other aquatic predators in the Pacific Northwest have been identified as factors that may be limiting the productivity of some Pacific salmon and steelhead populations (Bottom *et al*. 2005, Fresh *et al*. 2005).

MCR steelhead. MCR steelhead were listed as threatened under the ESA on March 25, 1999 (64 FR 14517), and confirmed as threatened on January 5, 2006 (71 FR 834). Protective regulations for MCR steelhead were issued under section 4(d) of the ESA on June 28, 2005 (70 FR 37160). MCR steelhead include all naturally-spawning populations of steelhead in streams within the Columbia River basin from above the Wind River in Washington and the Hood River in Oregon (exclusive) upstream to, and including, the Yakima River in Washington, and excluding steelhead from the Snake River basin (64 FR 14517). The major tributaries occupied by this species are in the Deschutes, John Day, Klickitat, Umatilla, Walla Walla, and Yakima River basins. The John Day River (JDR) has the largest naturally spawning, native stock of steelhead in the region. MCR steelhead do not include co-occurring resident forms of *O. mykiss* (rainbow trout).

The Interior Columbia Basin Technical Recovery Team (ICTRT 2007a) identified 19 populations in four major population groups (Cascades Eastern Slopes Tributaries, John Day River, the Walla Walla and Umatilla Rivers, and the Yakima River) and one unaffiliated independent population (Rock Creek) for this species.

The factors limiting recovery as stated in the Middle Columbia River Steelhead Recovery Plan (NMFS 2009) for the John Day River Major Population Group (MPG) are as follows:

(1) Mainstem passage, (2) hatchery-related effects, (3) tributary habitat, and (4) predation/completion/disease.

Mainstem passage. These populations must pass three dams; thus, limiting factors include direct mortality of pre-smolts and smolts at John Day, The Dalles, and Bonneville dams; delayed upstream migration of returning adults; false attraction of returning adults over McNary Dam; and cumulative impact of hydropower system on mainstem and estuary habitat.

Hatchery-related effects. Concern over competition for resources with wild fish and potential hybridization with natural-origin fish resulted in termination of all hatchery stocking of *O. mykiss* in the John Day River basin in 1997. However, hatchery strays, primarily from the Snake River, have been observed in all John Day populations, particularly in the lower John Day mainstem. Hatchery fish straying into natural spawning areas pose risks to genetic traits and productivity of naturally produced steelhead.

Tributary habitat. For all five John Day populations, degraded floodplain and degraded channel structure (key habitat quantity and habitat diversity), altered sediment routing, water quality (high temperatures), and altered hydrology are limiting factors. For the Lower and Upper Mainstem and South Fork populations, passage obstructions in some of the smaller tributaries are also significant.

Predation/competition/disease. Predation, competition, and disease issues in mainstem and estuary can affect all of the MCR steelhead populations.

The ICTRT's DPS-level viability criterion is that all extant MPGs should be at low risk (ICTRT 2007b, NMFS 2009). The majority of natural Middle Columbia steelhead populations are rated at "moderate risk" for all four viable salmonid population (VSP) parameters – abundance, productivity, spatial structure, and diversity. Thus, the Middle Columbia steelhead Distinct Population Segment (DPS) does not currently meet viability criteria based on the determination that the four component MPGs are not at "low" risk (NMFS 2009).

Currently, the John Day MPG is not viable (NMFS 2009). In order to be considered viable, the John Day MPG must meet the following criteria: (1) Three of the five historical populations (Upper, Middle Fork, North Fork, Lower, and South Fork) must meet ICTRT viability criteria; (2) viable populations within the John Day MPG must include two populations classified as "large" or "very large" (only the Lower and North Fork populations satisfy this criterion, so they are required to be viable) and one intermediate size; (3) all major life history strategies must be present; (4) one of the populations must be "highly viable" (the North Fork population currently satisfies this criterion); and (5) all populations that do not meet viable status must be maintained (as defined by ICTRT [2007b]) (NMFS 2009). For the John Day MPG to reach viable status, the Lower Mainstem John Day River, North Fork John Day River, and either the Middle Fork John Day (MFJD) or Upper John Day (UJD) populations should achieve viable status, with one achieving "highly viable" status.

The ODFW reports viability ratings[8] for MCR steelhead populations as determined by the ICTRT. The overall viability rating for the NFJD population is "highly viable," due to an abundance/productivity rating of very low risk and a spatial structure/diversity rating of low risk. Currently, the estimated annual return of adult steelhead in the North Fork John Day River is 2,101. ODFW projects that abundance and productivity of NFJD steelhead will increase markedly for all scenarios analyzed in the Oregon MCR Steelhead Conservation and Recovery Plan (NMFS 2009).

The overall viability rating for the MFJD population is not viable, because the 10-year geometric mean abundance of 756 is below the 1,000 threshold for an intermediate population. Increased annual abundance would allow this population to achieve a viable rating. The overall viability rating for the SFJD population is not viable, because the 10-year geometric mean abundance of 259 is below the 500 threshold for a basic population and the lower end of the adjusted standard error is below the 25% risk level. Increased productivity in combination with abundance would allow this population to achieve a viable rating. The overall viability rating for the UJD population is not viable, because the 10-year geometric mean abundance of 524 is well below the 1,000 threshold for an intermediate population and the lower end of the adjusted standard error is below the 25% risk level (NMFS 2009).

JDR summer steelhead are currently classified as a wild population on Oregon's Wild Fish Management Policy Provisional Wild Fish Population List [OAR 635-07-529(3)]. A population meets the wild population definition according to the ODFW if it is an indigenous species, naturally reproducing within its native range, and descended from a population that is believed to have been present in the same geological area prior to 1800. Genetic changes caused by humans do not disqualify a population from the wild classification under this definition (CORA 2006).

JDR adult summer steelhead enter the lower mainstem as early as September and as late as March, depending on water temperatures. Adult migration in the JDR generally peaks in October. The JDR below the North Fork JDR is used only for migration due to high summer water temperatures. Juvenile steelhead rear in the subbasin for 2 to 3 years before smolting and migrating to the ocean. Smolts outmigrate rapidly, taking 45 days or less to reach the ocean from upstream rearing areas. In the John Day River, below the North Fork John Day, smolts generally stay within the thalweg, taking advantage of cover provided by depth and turbidity. Approximately 80% of the steelhead rear in the ocean for 2 years before returning to the JDR system as adults to spawn (CORA 2006).

One of the likely effects on steelhead and their associated aquatic habitat throughout the John Day River is ongoing and future climate change. Climate change has the potential to profoundly alter aquatic habitat. These effects would be expected to be evident as alterations of water yield, peak flows (quantity and timing), and stream temperature. Other effects, such as increased vulnerability to catastrophic wildfires, may occur as climate change alters the structure and distribution of forest and aquatic systems. Given the increasing certainty that climate change is occurring and is accelerating (IPCC 2007; Battin et al. 2007), we can no longer assume that climate conditions in the future will resemble those in the past.

[8] A population is considered viable when its abundance, productivity, spatial structure, and diversity are sufficient to make extinction unlikely (ICTRT 2007b).

Increased precipitation is likely to occur during October through March and less during summer, and more of the winter precipitation is likely to fall as rain rather than snow (ISAB 2007, USGCRP 2009). In places like central and eastern Oregon where snow occurs, a warmer climate will cause earlier runoff resulting in stream flows in late spring, summer, and fall being lower and water temperatures being warmer (ISAB 2007, USGCRP 2009). Lower stream flows and warmer water temperatures during summer will degrade summer rearing conditions, in part by increasing the prevalence and virulence of fish diseases and parasites (USGCRP 2009).

There is still a great deal of uncertainty associated with likely changes in timing, location and magnitude of future climate change. It is also likely that the intensity of effects will vary by region (ISAB 2007). However, several studies have revealed that climate change has the potential to affect ecosystems in nearly all tributaries throughout the state (ISAB 2007, Battin *et al*. 2007; Rieman *et al*. 2007).

Status of Critical Habitat. Climate change, as described in the introduction above, is likely to adversely affect the conservation value of designated critical habitats in the Pacific Northwest. These effects are likely to include, but are not limited to, depletion of cold water habitat and other variations in quality and quantity of tributary spawning, rearing and migration habitats and estuarine areas.

MCR steelhead Critical habitat. On September 2, 2005, NMFS published a final rule (70 FR 52630) to designate critical habitat for MCR steelhead. Critical habitat has been designated for populations of MCR steelhead in the UJD River, the Lower John Day (LJD) River, and the North, South, and Middle Forks of the John Day River.

Migratory habitat quality for MCR steelhead was adversely affected by the development and operation of the Federal Columbia River Power System (FCRPS) dams in the mainstem Columbia River. Hydroelectric development modified natural flow regimes, resulting in higher water temperatures and changes in fish community structure, which in turn lead to increased rates of piscivorous and avian predation on juvenile anadromous salmonids, and delayed migration for both adult and juvenile anadromous salmonids (NMFS 2009). Physical features of dams such as turbines also kill migrating fish. In addition to the development and operation of the FCRPS system in the mainstem, the development and operation of irrigation systems and hydroelectric dams for water withdrawal and storage in Columbia River tributaries altered hydrologic cycles, causing a variety of adverse impacts to the spawning and rearing habitat of MCR steelhead.

Many stream reaches designated as critical habitat are over-allocated under state water law, with more allocated water rights than existing stream flows can support. The linkage between water quantity and water quality is evident in these flow-limited systems. Continued operation and maintenance of large water reclamation systems such as the Umatilla Basin and Yakima Projects disrupts the riverine ecosystem. Increased summer stream temperatures, migration blockages, stranding of fish, and sediment transport alteration are caused by water withdrawals for irrigation or municipal use (Spence *et al.* 1996).

Changes in habitat quantity, availability and diversity, flow, temperature, sediment load, and channel instability are common symptoms of ecosystem decline in areas of critical habitat for MCR steelhead. Many streams in critical habitat areas for this species are listed as water-quality limited on the Oregon Department of Environmental Quality's (ODEQ) section 303(d) Clean Water Act (CWA) list for parameters such as water temperatures, dissolved oxygen, or biological criteria (ODEQ 2006). Additionally, the ODEQ identified total phosphates and fecal coliform as water quality limitations for many streams within the Lower Mainstem John Day River, and sediment for many North Fork John Day streams (NMFS 2004). Contaminants such as insecticides and herbicides from agricultural runoff and heavy metals from mine waste are common in some areas of critical habitat for MCR steelhead.

Spawning and rearing salmonids, such as steelhead, require physically complex lotic habitats with pools, large woody debris, undercut banks, and substrates with low levels of fine sediments (Spence *et al.* 1996; Bjornn and Reiser 1991). Although these habitat conditions are still present in many wilderness, roadless, and undeveloped areas, recent subbasin assessments and plans (NPCC 2005) indicate that habitat complexity has been greatly reduced in many areas of designated critical habitat. Channel and riparian alterations for agricultural purposes, transportation, mining, forestry and other development activities have affected spawning, rearing and migration PCEs by reducing overall habitat complexity, cover, food availability, and spawning and rearing quality and quantity.

Table 2. PCEs of critical habitat designated for ESA-listed MCR steelhead considered in the opinion and corresponding species life history events.

Primary Constituent Elements		**Species Life History Event**
Site Type	**Site Attribute**	
Freshwater spawning	Substrate Water quality Water quantity	Adult spawning Embryo incubation Alevin growth and development
Freshwater rearing	Floodplain connectivity Forage Natural cover Water quality Water quantity	Fry emergence from gravel Fry/parr/smolt growth and development
Freshwater migration	Free of artificial obstruction Natural cover Water quality Water quantity	Adult sexual maturation Adult upstream migration and holding Kelt (steelhead) seaward migration Fry/parr/smolt growth, development, and seaward migration

The John Day River basin is wholly within Oregon. The John Day River, which flows west from the Blue Mountains and then north through a deeply carved, basaltic landscape, is the second-longest free-flowing river in the continental United States. The towns within the subbasin with the largest populations are John Day, Prairie City, and Condon, all with less than 2,000 residents. The largest tributary to the John Day River is the North Fork John Day, which originates in the

Wallowa-Whitman National Forest in the Blue Mountains at elevations near 8,000 feet. The North Fork John Day River flows westerly for 112 miles and joins the mainstem near Kimberly (RM 185), 15 miles below the town of Monument. The John Day basin drainage area includes over five million acres, or 8000 square miles, and is divided into four major watersheds: Lower John Day River, Upper John Day River, Middle Fork John Day River and North Fork John Day River.

Condition of critical habitat in the John Day River watershed. The designated MCR steelhead critical habitat areas affected by the proposed action are in the North Fork John Day (HUC 17070202), Upper John Day (HUC 17070201), and Lower John Day (HUC 17070204) subbasins (NMFS 2004). The Middle Fork and Upper John Day subbasins provide freshwater spawning, rearing, and migration PCEs for MCR steelhead. The NMFS identified several management activities that may affect the PCEs including agriculture, forestry, fire activity and disturbance, grazing, irrigation impoundments and withdrawals, and road building/maintenance. Water withdrawal and the resulting lack of instream flow further exacerbates poor water quality conditions throughout the John Day River watershed.

Upper John Day - Lower South Fork John Day River (1707020105). The Critical Habitat Analytical Review Team (CHART) report[9] indicates that the Lower South Fork John Day River watershed contains 79.3 miles of the spawning/rearing PCE. The CHART report rates the Lower South Fork John Day River as having a high conservation value. The John Day River Subbasin Plan (Northwest Power and Conservation Council [NPCC] 2004) identified the following limiting factors in the Lower South Fork John Day River: flow, habitat diversity, obstructions, predation, sediment load, temperature, and key habitat quantity.

Upper John Day – Laycock Creek (1707020110). The CHART report indicates that the Laycock Creek watershed contains the following PCEs: 46.8 miles of spawning/rearing, 14.8 miles of rearing/migration, and 1.1 miles of migration/presence**.** The CHART report rates Laycock Creek as having a high conservation value. The John Day River Subbasin Draft Plan (NPCC 2004) identified the following limiting factors in the Laycock Creek: channel stability, competition with other species, flow, habitat diversity, obstructions, predation, sediment load, temperature, and key habitat quantity.

Upper John Day – Upper John Day (1707020112). The CHART report indicates that the Upper John Day watershed contains 41.5 miles of the spawning/rearing PCE, and 7.1 miles of the rearing/migration PCE. The CHART report rates the Upper John Day as having a high conservation value. The John Day River Subbasin Revised Draft Plan (NPCC 2005) identified the following limiting factors in the Upper John Day: habitat diversity, predation, sediment load, temperature, and key habitat quantity.

Upper John Day – John Day River/Johnson Creek (1707020115). The CHART report indicates that the John Day River/Johnson Creek watershed contains 32.1 miles of the spawning/rearing PCE, 19.2 miles of the rearing/migration PCE, and 0.3 miles of the migration/presence PCE. The CHART report rates John Day River/Johnson Creek as having a

[9] CHART report available at: http://www.nwr.noaa.gov/Salmon-Habitat/Critical-Habitat/Redesignations/upload/NWR2005CHARTRPT.PDF

high conservation value. The John Day River Subbasin Draft Plan (NPCC 2004) identified the following limiting factors in the John Day River/Johnson Creek: habitat diversity, temperature, and key habitat quantity.

North Fork John Day – Lower North Fork John Day River (1707020210.) The CHART report indicates that the Lower North Fork John Day River watershed contains the following PCEs: 41.8 miles of spawning/rearing, 22.1 miles of rearing/migration, and 1.3 miles of migration/presence**.** The CHART report rates Lower North Fork John Day River as having a medium conservation value. The John Day River Subbasin Draft Plan (NPCC 2004) identified the following limiting factors in the Lower North Fork John Day River: channel stability, flow, habitat diversity, sediment load, temperature, pathogens, and key habitat quantity.

Lower John Day – Lower John Day River – Kahler Creek (1707020401). The CHART report indicates that the Lower John Day River – Kahler Creek watershed contains the following PCEs: 84.1 miles of spawning/rearing, 0.6 miles of rearing/migration, and 24.4 miles of migration/presence**.** The CHART report rates Lower John Day River – Kahler Creek as having a high conservation value. The John Day River Subbasin Draft Plan (NPCC 2004) identified the following limiting factors in the Lower John Day River – Kahler Creek: flow, habitat diversity, sediment load, temperature, and key habitat quantity.

Lower John Day – Lower John Day River/Service Creek (1707020402). The CHART report indicates that the Lower John Day River/Service Creek watershed contains the following PCEs: 33.5 miles of spawning/rearing, and 24.4 miles of migration/presence**.** The CHART report rates Lower John Day River/Service Creek as having a high conservation value. The John Day River Subbasin Draft Plan (NPCC 2004) identified the following limiting factors in the Lower John Day River/Service Creek: flow, habitat diversity, sediment load, temperature, and key habitat quantity.

Environmental Baseline

The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

Species within the Action Area

The biological requirements of MCR steelhead in the action area vary depending on the life history stage present (Groot and Margolis 1991, NRC 1996, Spence *et al.* 1996). The NMFS describes the environmental baseline in terms of the biological requirements for habitat features and processes necessary to support all life stages of each listed species within the action area.

For these action areas, the biological requirements for MCR steelhead are the habitat characteristics that support successful completion of spawning, rearing, and freshwater migration. During spawning migrations, adult steelhead require clean water with cool

temperatures and access to thermal refugia, dissolved oxygen near 100% saturation, low turbidity, adequate flows and depths to allow passage over barriers to reach spawning sites, and sufficient holding and resting sites.

Anadromous fish select spawning areas based on species specific requirements of flow, water quality, substrate size, and groundwater upwelling. Embryo survival and fry emergence depend on substrate conditions (*e.g.*, gravel size, porosity, permeability, oxygen concentrations), substrate stability during high flows, and MCR steelhead water temperatures of 13ºC or less. Habitat requirements for juvenile rearing include seasonally suitable microhabitats for holding, feeding, and resting. Migration of juveniles to rearing areas, whether to the ocean, lakes, or other stream reaches, requires access to these habitats. Physical, chemical, and thermal conditions may impede movements of adult or juvenile fish.

Explained in further detail below is the historic and on-going human activity in the action area reflected and described in the current condition of the riparian areas on the allotments. As described in the Middle Columbia River Steelhead Recovery Plan, past activities in the action area such as livestock grazing, diverting water, clearing streambank vegetation and ditching the stream channel for agricultural purposes have adversely effected all populations of MCR steelhead to a certain degree (NMFS 2009), including populations present within the action area.

Habitat within the Action Area, including Critical Habitat

According to the BA, the Upper John Day River subbasin encompasses 1.37 million acres from the headwaters of the John Day River upstream of Prairie City to the mouth of the North Fork John Day River at Kimberly, at River Mile (RM) 185. BLM manages about 145,635 acres within the subbasin. Major tributaries within the subbasin include Canyon, Beech, Rock, and Johnson creeks and the South Fork John Day River. Streams on this list generally carry perennial flows, based on USGS Quadrangle maps or direct observations.

The North Fork John Day River subbasin encompasses about 1.18 million acres. Prineville District BLM manages about 35,350 acres within the subbasin, from the mouth to the Umatilla/Grant County line (RM 51.4). Major tributaries within the subbasin include Granite, Desolation, Camas, Potamus, Big Wall, Cottonwood, and Rudio creeks, and the Middle Fork John Day River. Streams on this list generally carry perennial flows, based on USGS Quadrangle maps or direct observations.

The Lower John Day River subbasin encompasses 2,011,000 acres from its headwaters to its confluence with the Columbia River. The BLM manages 242,618 acres (12.1%) in the Lower John Day River subbasin.

Streams and wetlands on BLM managed land have been assessed for condition using the Proper Functioning Condition (PFC) methodology (Prichard *et al*. 1998). The majority of BLM stream channels and floodplains within the John Day River basin planning area are not meeting the BLM standard of PFC. On the other hand, relatively few stream channels are non-functioning. More intermittent stream channels are in non-functioning condition than perennial streams, but they also have more miles of stream at potential and PFC (USDI-BLM 2008).

Conditions of the mainstem John Day River, its forks and its tributaries are in various stages of recovery and trends for all life stages of MCR steelhead. Fish habitat condition, and trend surveys were conducted in 1980-81 on most perennial and fish-bearing streams in the basin. Some surveys were repeated in 1989-1990. PFC surveys were conducted in the late 1990s and early to mid-2000s on all streams within this consultation package. The results of these surveys can be found in the baseline conditions for each allotment.

Proper Functioning Condition. The Prineville District BLM utilizes the Proper Functioning Condition (PFC) qualitative method for assessing the condition or riparian-wetland areas. The term PFC is used to describe both the assessment process and a defined, on the-ground condition of a riparian-wetland area. Given the sheer size of the district, the amount of acres covered, and the number of stream miles present on BLM land within the district, subsampling approaches are used.

A riparian-wetland area is considered to be in proper functioning condition when adequate vegetation, landform, or large woody debris is present to:

- Dissipate stream energy associated with high water flow, thereby reducing erosion and improving water quality.
- Filter sediment, capture bedload, and aid floodplain development.
- Improve flood-water retention and ground-water recharge.
- Develop root masses that stabilize streambanks against cutting action.
- Develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses.
- Support greater biodiversity.

If a riparian-wetland area is not in PFC, it is placed into one of three categories:

Functional-At Risk (FAR) – Riparian-wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

Nonfunctional – Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc.

Unknown – Riparian-wetland areas that managers lack sufficient information on to make any form of determination.

PFC evaluates the current condition against the stream's potential. The PFC information contained in the biological assessment describes the baseline conditions of these streams.

Lower South Fork John Day, Laycock Creek, Upper John Day, Johnson Creek, Potamus Creek, Lower North Fork John Day River, Kahler Creek, and Service Creek are all listed as water-quality limited under section 303(d) of the CWA (ODEQ 2006) with flow modification, habitat modification, sedimentation, and temperature being the parameters of concern.

The information provided for the following allotments is currently the best available, however, the Prineville District BLM will be updating the existing data by utilizing information from the proposed monitoring actions. In the allotments below, only the streams containing MCR steelhead and/or their designated critical habitat are discussed.

1) Squaw Creek Allotment

The Squaw Creek Allotment (2558) has three streams within it, and three reaches. This allotment uses a rotational grazing strategy. Livestock are present on the pasture for 30 to 60 days. The permittee decides when they turn out and monitors use (amount and type of forage utilized) to determine when to leave. The allotment contains 5,086 acres of BLM land, and provides 301 animal unit months (AUMs) of grazing forage for livestock. Squaw, Frank, and Buckhorn creeks are within this allotment. There are 2.5 miles of perennial streams, 6.4 miles of intermittent streams, and 2.1 miles of MCR steelhead designated critical habitat that is utilized March through October for spawning and rearing. The season of livestock use is from April 1 to November 30.

The effects determination for Squaw Creek Allotment was changed from NLAA in 2000 to LAA in the opinion covering 2004 to 2008 due to poor fence maintenance and unauthorized use in 2002 and 2003.

Squaw Creek's lowest section, from RM 1.5-2.25 was listed as Functional at Risk with an upward trend from 2003 data. This system provides good amounts of spawning gravel and canopy cover. The streambanks are cobble dominated with most of the riparian area comprised of alder. A field review in 2008 showed some livestock use on the point bars but it appeared that herbaceous vegetation was increasing. There was little to no use elsewhere in the riparian area. The lack of diverse age class of the hard woods appears to be due to the current alder stand that shades out the majority of the riparian area. There was some braided channel, little or no macroinvertebrates, and it was unconsolidated. Two roads run along the stream. The channel had downcut as far as possible and was stable. This channel will not redevelop a floodplain unless large debris jams develop and revegetate with herbaceous vegetation. Implementation monitoring using the MIM protocol occurred September 23, 2009. Results include a mean stubble height of 21.6 inches, 0 bank alterations, and 0-20% (slight) woody use.

Buckhorn Creek, one quarter mile above the confluence with Indian Creek up to the end of the two BLM sections, was listed as Functional at Risk with an upward trend from 2003 data. Buckhorn Creek provides rearing habitat for MCR summer steelhead. This reach is cobble and boulder dominated and receives little to no livestock use due to the steep slopes and rock content of the streambanks. A field review in 2008 showed good vegetative diversity in the riparian area with some erosion issues along the road. Areas where the gradient decreased were braided or had mid channel bars. Livestock were hedging young woody species and grazing back what few areas could support herbaceous sedges and rushes. Follow up field observations in 2008 and 2009 did not document hedging due to livestock.

No PFC assessment has been done on Frank Creek due to the limited amount of BLM land. Frank Creek is rated poor for fish habitat, limited by low flows, poor pool conditions, siltation

and lack of escape cover and spawning gravel. Rearing habitat for steelhead in Frank Creek is limited to the lower 100 yards of stream on BLM land, where a 6-foot headcut blocks upstream access. Overall, due to the small size of Frank Creek there is limited potential to provide MCR summer steelhead habitat. Juvenile steelhead were observed immediately below barrier in 1999. Current livestock use is not impacting the habitat.

2) Johnson Creek Allotment

The Johnson Creek Allotment (2662) has one stream within it, and two reaches. This allotment uses a spring and early hot-season grazing strategy. This allotment contains 7,698 acres of BLM land, and provides 436 AUMs of grazing forage for livestock. Johnson Creek is within this allotment. There are 2.0 miles of perennial stream, 11.5 miles of intermittent stream, and 1.6 miles of MCR steelhead spawning and rearing habitat that is utilized March through October for spawning and rearing. The season of livestock use is from April 15 to July 15.

The lower reach of Johnson Creek was rated at the lower end of PFC in 2001 data because the creek is still recovering from a debris torrent that had occurred. Both of these reaches provide spawning and rearing for MCR summer steelhead although spawning gravels are limited. Due to the rock content of the stream channel and banks, lack of fines, and the overstory of pine, this system does not have the potential to grow very much riparian vegetation. Because of this, livestock use consists of stream crossings and watering sites.

The middle reach was rated at PFC from 2001 data and appeared to be at potential natural community (PNC) in 2001. This reach was inhabited by large numbers of age 0 and 1+ steelhead. It was flowing about 2 to 3 cfs and is in a stand of old-growth conifers. This reach was rated at PFC and appeared to be at potential natural community.

3) Dixie Allotment

The Dixie Allotment (4016) has four streams within it and four reaches. Livestock graze both pastures every year, the time of year each pasture is grazed alternates, June 1 to July 15 the first pasture, July 16 to October 15 the second pasture (spring to early hot first year and Hot to Fall second year). This allotment contains 2,548 acres of BLM land, and provides 319 AUMs of grazing forage for livestock. Dixie, Standard, West Fork Standard, and Comer creeks are within this allotment. There are 5.7 miles of perennial streams, 2.7 miles of intermittent streams, and 4.6 miles of steelhead designated critical habitat that is utilized March through October for spawning and rearing.

Dixie Creek was rated Functional at Risk with an upward trend, and Standard Creek was rated at PFC using the PFC methodology. The date of data is unknown. Comer Creek and West Fork Standard Creek have not been rated using the PFC methodology. These creeks provide spawning (Dixie and Standard) and rearing habitat (all four) for MCR summer steelhead. These four creeks provide cold and clear water with instream wood being common. These are forested systems with rocky streambanks that are stable and well vegetated. Limiting factors to the fisheries include increased fine sediment from historic mining, and low summer flows in Dixie and

Standard creeks below irrigation diversions. Livestock use is generally limited to watering and crossing sites.

4) Murderers Creek Allotment

The Murderers Creek Allotment (4020) has three streams within it, and four reaches. This allotment uses a spring grazing strategy. Livestock are present on the pasture for approximately 20 days two out of three years. This allotment contains 16,004 acres of BLM land, and provides 860 AUMs of grazing forage for livestock. Cabin Creek, South Fork John Day River, and Cougar Gulch are within this allotment. There are 7.6 miles of perennial streams, 48.0 miles of intermittent streams, and 5.9 miles of MCR steelhead designated critical habitat that is utilized March through October for spawning and rearing. The season of livestock use is from May 1 to June 30.

Cabin Creek section was rated at PFC from 2001 data and appeared to be approaching PNC in 2001. Cabin Creek provides spawning and rearing habitat. Due to the thick stand of woody vegetation there is little to no livestock use.

South Fork John Day River was rated as PFC from data of an unknown date (the field forms justifying the rating are missing). This segment provides spawning and rearing habitat. Limiting factors for MCR steelhead are embedded substrate in spawning areas, low pool volume for rearing, and elevated water temperatures. The high sediment load coming from upstream sources appears to be a major reason for the limiting factors. Very little livestock use occurs along the river due to fencing and the time of year that livestock are in the pastures.

Cougar Gulch was rated as PFC and was in excellent condition in 2001. Livestock grazing did not appear to be affecting the riparian area or creek channel. Cougar Gulch has marginal spawning and rearing habitat due to its gradient and intermittent flows. Lower reach riparian community was very dense and the grazing appeared to not be adversely affecting the riparian vegetation. There are several fences that aid in grazing regulation. It appeared that the management was being affective in protecting the riparian zone. Middle reach was in excellent condition. The upper half of the reach was in pristine condition. There had been no timber harvest in the upper half of the reach and it was at PNC. Cattle present at the time did not appear to be affecting the stream.

5) Franks Creek Allotment

The Franks Creek Allotment (4041) has one stream within it, and two reaches. This allotment uses a spring grazing strategy. It contains 2,617 acres of BLM land, and provides 223 AUMs of grazing forage for livestock. Franks Creek is within this allotment. There are 1.7 miles of perennial streams, 5.8 miles of intermittent streams, and 0.9 miles of MCR steelhead designated critical habitat that is utilized March through October for spawning and rearing. The season of livestock use of use is from April 1 to May 31.

Franks Creek is intermittent and provides spawning and rearing habitat for MCR summer steelhead. Connection to the John Day River occurs approximately two years in five. Most early

season flows go subsurface and connectivity only occurs in February and March. The BLM land portions of Franks Creek were rated as Functional at Risk. The trend was not apparent using the PFC methodology. The Rangeland Health Assessment in 2005 failed this allotment's Watershed Function – Riparian/Wetlands standard. Since this time, the grazing season of use has been changed from April–November to April–May. This change should allow the riparian area to improve due to having most of the growing season to recover from any livestock impacts. This change in the season of use will have livestock in the pasture when the streambanks are under water and not accessible to livestock. Potential impacts should be limited to watering and crossing sites. This pasture was rested in 2009.

Steelhead were identified in Franks Creek including BLM lands in township 12S, range 27E, section 30SE (1 mile). Other BLM lands within this allotment along Franks Creek are in township 12S, range 27E, section 5E. This northern segment is non-fish-bearing due to a passage barrier in section 20. According to the BA, the Oregon Department of Fish and Wildlife and a BLM biologist confirmed *O. mykiss* just downstream of the passage barrier in 2002. Franks Creek is typically intermittent with short, perennial spring fed segments. Approximately 2.8 miles of Franks Creek is within this allotment. However, 1.0 mile is fish-bearing in the lower segment and all of the 0.8 miles of stream in the upper segment on BLM land within the allotment is non-fish-bearing. Vegetation from the 2005 data included cottonwood, re-sprouting mock orange, chokecherry, tall wheat grass and young coyote willow.

Franks Creek July 2009

Franks Creek July 2009

6) Johnny Cake Mountain

The Johnny Cake Mountain Allotment (4042) has two streams within it, and three reaches. This allotment uses a spring grazing strategy. This allotment contains 280 acres of BLM land, and provides 30 AUMs of grazing forage for livestock. Cabin Creek and the North Fork John Day River are within this allotment. There are 1.2 miles of perennial streams, 0.6 miles of intermittent streams, and 1.8 miles of MCR steelhead designated critical habitat that is utilized March through October for spawning and rearing. The season of livestock use is from April 15 to May 31.

The lower reach of Cabin Creek was rated at PFC in 2004. There was a lot of vegetation in the lower portion of channel. There were fairly high flows (close to bank full) at the time of the assessment. There are two road crossings (one just below reach start), and at the property boundary there is a definite change in the channel. Cabin Creek provides spawning and rearing habitat for MCR summer steelhead. Livestock impacts should be limited to watering and crossing sites due to high flows when the livestock are in the pasture.

The upper Reach was rated as Functional at Risk with an upward trend in 2004. There is a split channel at the beginning of the reach. Overall the reach was over widened. Colonizers inhabited the streambanks.

The North Fork John Day River was rated at the low end of the scale of PFC in 2001. The channel was wide and shallow and limited in vegetation diversity and amount. This reach was improving but is subject to periodic ice and high flows that can delay recovery. This reach of river is winter rearing habitat for juvenile MCR summer steelhead. Livestock impacts should be limited to watering sites due to high flows when the livestock are in the pasture.

7) Big Baldy Allotment

The Big Baldy Allotment (4052) has two streams within it and two reaches. This allotment uses a spring grazing strategy. This allotment contains 12,726 acres of BLM land, and provides 600 AUMs of grazing forage for livestock. Deer Creek and the South Fork John Day River are within this allotment. There are 11.8 miles of perennial streams, 19.0 miles of intermittent streams, and 4.4 miles of MCR steelhead designated critical habitat that is utilized March through October for spawning and rearing. The season of livestock use is from April 15 to May 31 every other year on odd numbered years.

The South Fork John Day River was rated as PFC, the actual field forms justifying the rating are missing at this time. This segment provides spawning and rearing habitat. Limiting factors for MCR steelhead are embedded substrate in spawning areas, low pool volume for rearing, and elevated water temperatures. The high sediment load coming from upstream sources appears to be a major reason for the limiting factors. Due to high flows when livestock are in the pasture access to streambanks and riparian vegetation are limited.

Deer Creek was rated as PFC in 2004. The riparian vegetation was extremely thick in most areas and added to the large boulder substrate and steep gradient of most stretches of the creek; pose a significant barrier to livestock. It is unlikely that livestock can access most of the potential spawning and rearing habitats along Deer Creek. The Deer Creek tributary to the South Fork John Day contained mock orange, choke cherry, red osier dogwood, coyote willow, cottonwood, willow spp., alder, wild rose, and service berry. Installed instream log structures seemed to be functioning for their designed purpose.

Deer Creek 2008 PIBO site

8) Rockpile Allotment

The Rockpile Allotment (4103) has three streams within it, and three reaches. This allotment uses a spring grazing strategy. This allotment contains 4,918 acres of BLM land, and provides 928 AUMs of grazing forage for livestock. The South Fork John Day River, Cougar Gulch, and Frazier Creek are within this allotment. There are 10.8 miles of perennial streams, 7.5 miles of intermittent streams, and 7.6 miles of MCR steelhead designated critical habitat that is utilized March through October for spawning and rearing. The season of livestock use is from April 1 to May 30.

The South Fork John Day River was rated as PFC. The actual field forms justifying the rating are missing at this time. Most of the stream within the allotment boundary has been excluded from access. This segment provides spawning and rearing habitat. Limiting factors for MCR steelhead are embedded substrate in spawning areas, low pool volume for rearing, and elevated water temperatures. The high sediment load coming from upstream sources appears to be a major reason for the limiting factors. Due to high flows when livestock are in the pasture, access to streambanks and riparian vegetation is limited.

South Fork John Day River May 19, 2008.

Cougar Gulch may provide spawning and rearing habitat for MCR summer steelhead. Cougar Gulch was rated as PFC from 2001 data. The PFC survey stated that the riparian community was very dense and the grazing was not adversely affecting the riparian area. There were several fences that aided in grazing regulation. It appeared that the management was being effective in protecting the riparian zone.

Frazier Creek provides 0.2 miles of spawning and rearing habitat for MCR summer steelhead. It was rated at PFC from 2001 data. The PFC survey stated the riparian area had probably reached

its potential extent. The steep nature of the terrain and the brush along the creek limit livestock use. The Ponderosa pine forest was in near natural condition. The road constructed up the right side of the stream had healed into the slope and was not causing degradation. The original harvest of timber from previous decades removed very few trees from the watershed. The upper channel and tributaries were filled with fine sediment that was lodged behind niche points of woody material. This material periodically moves but there was no evidence that the channel had any problem moving this fine material on to the South Fork John Day during flow events.

9) Little Wall Creek Allotment

The Little Wall Creek Allotment (4108) has two streams within it and three reaches. This allotment uses a spring grazing strategy. This allotment contains 320 acres of BLM land, and provides 53 AUMs of grazing forage for livestock. Little Wall and Bacon creeks are within this allotment. There are 0.7 miles of perennial streams, 0.3 miles of intermittent streams, and 0.7 miles of MCR steelhead designated critical habitat that is utilized March through October for spawning and rearing. The season of livestock use is from April 1 to May 30.

Little Wall Creek provides approximately 0.4 miles of spawning and rearing for MCR summer steelhead. This section of creek was divided into two PFC reaches with the lower reach rated as Functional at Risk with an upward trend, and the upper reach rated as Functioning at Risk with trend not apparent from 2004 data. The assessment noted that the channel was too wide, however, it appears to be narrowing.

The lower and middle portion of the reach appeared to have a lot of wet areas outside the main channel, which may indicate historic braiding. The upward trend was attributed to evidence of channel narrowing and the appearance of widening of riparian-wetland areas.

The upper reach vegetation did not seem to be at potential. The assessment noted that there could have been many more woody species. The bank full width was difficult to see by the observers, and there were some jagged banks and hoof prints.

Bacon Creek provides approximately 0.3 miles of spawning and rearing for MCR summer steelhead. This reach within the allotment boundary was rated as Functioning at Risk with an upward trend from 2004 data. The justification for the Functioning at Risk determination was that the channel was too wide and there was not enough riparian vegetation to protect the banks**.** There was a road crossing near the reach beginning, and the channel upstream and downstream of the road crossing was behaving similarly. There was a chain-log upstream of the road used for bank stabilization. Grazing by cattle was evident. The streambanks were jagged and the channel was too wide. The slight upward trend was due to the sedge/rush at base of most eroding banks.

10) Two County Allotment

The Two County Allotment (4145) has two streams within it, and two reaches. This allotment uses a spring grazing strategy. This allotment contains 13,796 acres of BLM land, and provides 1,105 AUMs of grazing forage for livestock. Burnt Corral and Holmes creeks are within this allotment. There are 7.9 miles of perennial streams, 30.8 miles of intermittent streams, and 3.1

miles of MCR steelhead designated critical habitat that is utilized March through October for spawning and rearing. The season of livestock use is from April 15 to June 30.

Burnt Corral Creek was rated as Functioning at Risk, trend was not apparent in 2001. Holmes Creek was rated Non-Functioning in 1995 and Barely Functioning at Risk in 2005. The grazing season was changed from April 1 through November 30 to April 15 through June 30 to allow these systems to improve. The Rangeland Health Assessment in 2005 determined that the current livestock management was not contributing to degraded conditions and that water quality was making significant progress. Both of these creeks are in steep canyons. The stream and banks are made up of boulders. Livestock observations in 2009 showed cattle up on the hill sides with little to no use in the canyon bottoms. Both of these creeks have the potential to provide spawning and rearing habitat for MCR summer steelhead.

Approximately 1.5 miles of the John Day River is on BLM land within the Two County Allotment. The John Day River is listed as water quality limited on the 303(d) list for the parameter of temperature for the beneficial use of salmonid fish rearing and anadromous fish passage.

Burnt Corral Creek July 2009

Holmes Creek was rated as Functioning at Risk, trend was not apparent in 2005. Vegetation included oceanspray, choke cherry, elder berry, nettle, rose, mock orange, goose berry, and browsed woody species. The floodplain had bulbous bluegrass and some cheat grass. The floodplain has been logged historically. There were mid-channel bars from a 1964 flood, and the road limited sinuosity. The channel was fairly rocky with a rock armored bank, it appeared to be Rosgen B2 (Rosgen 1996), and in need of large woody debris.

Holmes Creek July 2009

Steelhead were identified in Holmes Creek including BLM lands in township 10S, range 26E, section 5 (0.1 mile) and section 9 (0.75 mile). Burnt Corral Creek, a tributary to Holmes Creek also is fish-bearing in section 15 (0.5 mile). Other BLM lands within this allotment along Holmes Creek are in section 21 (0.1). Holmes Creek is non-fish-bearing above the confluence of Burnt Corral Creek.

Approximately 3.3 miles of Holmes Creek and 1.2 miles of Burnt Corral Creek are within this allotment with 3.1 miles being private land. There are approximately 4.5 total miles of stream in the Holmes Creek subwatershed.

The majority of the channel along both Holmes Creek and Burnt Corral Creek is shaded by mature alder. These streams are fairly steep but appear to be quite stable. The public road adjacent to the stream confines the floodplain in several locations.

11) Kinzua Allotment

The Kinzua Allotment (4151) has one creek within it, and one reach. This allotment uses a spring, hot-season, and fall grazing strategy. The permittee decides when they turn out the cattle and monitors use (amount and types of forage) to determine when to leave. This allotment contains 9,463 acres of BLM land and provides 1170 AUMs of grazing forage for livestock. Squaw Creek is within this allotment. There are 4.8 miles of perennial streams, 15.4 miles of intermittent streams, and 2.7 miles of MCR steelhead designated critical habitat that is utilized March through October for spawning and rearing. The season of livestock use is from May 1 to October 31.

This pasture is part of a rotational grazing strategy and is grazed sometime between May 1 and October 31, depending on that year's rotation. The ranch manager is trying to manage his pastures so that he can rest at least one pasture per year. Movement of livestock from pasture to pasture is dependent on the amount and type of forage being utilized. Assessments of the pasture have documented an upward trend.

Squaw Creek provides spawning and rearing habitat for MCR steelhead within the allotment. A PFC assessment conducted on Squaw Creek rated it Functional at Risk with an upward trend in 2005. The riparian community was comprised of alder, dogwood, and willow species. Removal of large woody material and skid trails across the creek were listed as factors for the rating. This reach is located at township 11S, range 28E, section 30 and 31.

A Rangeland Health Assessment was conducted in 2005. Squaw Creek lacked large wood. Conifer encroachment into the stream channels was limiting the ability of woody riparian species to establish. Also, upstream private log landings appeared to be contributing excess sediment to Squaw Creek.

Squaw Creek July 2009

Squaw Creek July 2009

12) Creek Allotment

The Creek Allotment (4163) contains one stream and one reach. This allotment uses a spring or fall grazing strategy. This allotment contains 706 acres of BLM land, and provides 63 AUMs of grazing forage for livestock. Cottonwood Creek is within this allotment. There are 0.7 miles of perennial streams, 3.0 miles of intermittent streams, and 0.7 miles of MCR steelhead designated critical habitat that is utilized March through October for spawning and rearing. The season of livestock use is from April 15 to May 15, or October 15 to October 30.

Using the PFC methodology, the section of Cottonwood Creek was rated Functional at Risk with an upward trend in 2003. The riparian area contains a diversity of shrubs, willows, birch, alder, and cottonwood which is providing good streambank stability. The only “no” on the PFC checklist was in the hydrological parameter, indicating that there are issues either upstream or in the uplands that appear to be affecting this reach. This creek provides spawning and rearing for MCR summer steelhead. This allotment has not been through the Rangeland Health Assessment. Implementation monitoring using the MIM protocol occurred September 23, 2009. Results include a mean stubble height of 13.6 inches, bank alteration was 2% of the plot lines, and woody use was 0-20% (slight).

Cottonwood Creek July 2009

Cottonwood Creek July 2009

Effects of the Action

Effects of the action refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02). Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration.

The following effects analysis is based on the best information currently available as of the date of this opinion. The effects of the action, as proposed, likely include: (1) A seasonal reduction of riparian vegetation in the allotments that have stream reaches accessible by cattle; (2) cattle trampling of the bank, resulting in excess fines adversely affecting stream substrate conditions; and (3) the potential for cattle to step on MCR steelhead redds during spring grazing.

The proposed monitoring and adaptive management approach is designed to ensure that the action is implemented as intended. It will also allow the BLM to track resource responses to ongoing use. As such, the proposed action relies heavily on the adaptive management strategy to integrate both annual and long-term monitoring data into annual and long-term grazing management decisions. Should monitoring indicate that implementation is not occurring as described or that RMOs are not being met, use of the adaptive management strategy is designed to ensure that either the permit administration or the grazing plan will be adjusted as necessary to ensure upward progress toward or maintenance of properly functioning RMOs.

Early-Season Grazing

The BLM proposes spring grazing for the following allotments: Franks Creek, Johnny Cake Mountain, Rockpile, Little Wall Creek, Two County, Murderers Creek, and Big Baldy. These allotments will be utilized by livestock during MCR steelhead spawning and rearing. The spring use grazing strategy is proposed to minimize effects to MCR steelhead and/or their designated critical habitat.

On early-season grazing allotments, the objective is to graze while palatability of hill slope forage is high and palatability of riparian forage is low. The hill slope growing season begins earlier than the riparian growing season due to warmer temperatures on slopes. Riparian vegetation is often inundated during this time making it unavailable for forage, and riparian temperatures are generally cooler making the hill slopes more desirable for cattle and limiting the time cattle spend in riparian areas to drink or cross the stream.

Cool-season vegetation growth begins and peaks in spring. Warm-season plants begin growing during middle to late-spring. Spring use normally results in better livestock distribution between riparian and upland areas due to flooding, generally cooler temperatures of riparian areas, and highly palatable upland forage. In late summer, upland forage has aged and is lower in quality than riparian vegetation. In contrast, forage quality of riparian areas and uplands are both high in spring and early summer. Consequently, livestock are likely to graze more uniformly, because

alternative choices of sites to forage within the pasture are relatively similar (Bailey 2005). Spring use provides more opportunity for regrowth and plant recovery than summer or fall use and also results in more residual cover (Leonard *et al.* 1997, Wyman *et al*. 2006).

Spring grazing is becoming a more popular strategy to protect the health of riparian areas. It has the greatest chance for success when there is sufficient herbaceous forage in uplands. Cool temperatures may discourage livestock loitering in riparian areas. In addition, soils in riparian areas are wet enough to discourage livestock use, and/or well drained soils reduce the possibility of soil compaction (Erhart and Hansen 1997, Clary and Webster 1989, Kinch 1989). Many range management specialists believe that livestock spend less time in riparian areas during spring. Two studies found that livestock are not as disproportionately attracted to riparian areas in spring as they are in summer or fall (Clary and Booth 1993, Parsons *et al.* 2003). The presence of abundant herbaceous vegetation in both riparian and upland areas may prevent unwanted browse of riparian woody species such as willows. Clary and Webster (1989) conclude that "while no one management approach is best for all situations, spring grazing has shown promise in many areas of the Western United States." Crouse (1987) and Leonard *et al.* (1997) give examples of improved riparian conditions after a switch to spring grazing.

Impacts to critical habitat should be limited to a short-term impact from vegetation being consumed or trampled. For most of the grazing season riparian vegetation is usually underwater due to higher flows or under sediment. Livestock are moved out of the pasture when there is sufficient moisture and most of the growing season is still available for the vegetation to recover. Additionally, drainages are colder than adjacent uplands, therefore, only a minimal amount of browse of riparian woody vegetation occurs. Streambanks tend to be frozen so soil compaction and bank trampling are minimal. Lack of palatable forage and unfavorable climate conditions for livestock in the riparian area result in minimal fish-livestock interaction.

Denuded areas and other bank disturbances that occur 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 will be difficult to distinguish between turbidity resulting from these minor grazing impacts and background turbidity. A slight increase in fine sediment deposition for a short distance downstream of denuded and disturbed areas is also likely to occur. Increased fine sediment in substrate is likely to slightly decrease the amount of area in the substrate macroinvertebrates can inhabit, and therefore likely to slightly decrease the number of macroinvertebrates available as prey.

Some utilization of riparian vegetation is likely to occur. The 4-inch stubble height and shrub use standards established for these pastures are likely to render effects on shade insignificant. In addition, some minor bank alteration is likely to occur while cattle graze riparian vegetation along the streambank. Cattle trailing and trampling directly on streambanks puts sediment directly in the stream channel and increases channel width (Platts 1991). Bank alteration is likely to result in a slight increase in fine sediment delivery.

Grazing when upslope vegetation is palatable and upland water sources are available will minimize riparian effects. The shortened grazing season will allow for the riparian areas to improve due to having most of the growing season to recover from livestock impacts.

Cattle accessing streams are likely to deposit waste in riparian areas in the process which increases the likelihood that nitrogen and phosphorous will enter the stream. Nutrients derived from livestock wastes may be more bio-available than those bound in organic litter.

The proposed management strategy is likely to allow riparian recovery to continue. Cowley (2002) noted that the amount of unaltered streambank needed to maintain streambank stability ranges from 70 to 100%, therefore the maximum allowable bank alteration in any system should be 30%. Powell *et al*. (2000) in Cowley (2002) stated that concentrated trampling (>20% of the surface affected by deep hoof prints) should not occur along high-value fish habitat. Coupled with the proposed monitoring and adaptive management for each pasture, instream habitat values are expected to be maintained or restored.

Spring to Early-Hot Season

The Johnson Creek allotment will utilize a spring to early hot season grazing strategy. Spring use effects were discussed in the above section. Hot season grazing is the use of the pasture during the primary growing season for riparian plants. Riparian herbaceous vegetation may be more palatable and nutritious than dried upland plants at this time. Streambanks are drier than in the spring which lessens the chance of bank compaction. There is frequently sufficient riparian soil moisture to allow for regrowth. With streams that have sufficient flow and temperature to support fisheries at this time of year, fish-livestock interaction is at its greatest with this use.

Summer or hot season grazing is prevalent across Federal lands throughout the western United States. This is especially true for high elevation areas where range conditions are not suitable for grazing until late June or July. Summer is both the period of greatest photosynthetic activity for plants and is also when grazing causes the most stress to plants (Leonard *et al.* 1997). Livestock tend to spend more time in riparian areas and consume more riparian vegetation in the summer months. Most authors agree that grazing without close control of livestock during the summer is detrimental to riparian areas (Leonard *et al.* 1997, Platts 1991, Erhart and Hansen 1997, Clary and Webster 1989). As upland vegetation begins to dry and become less palatable to livestock, more time is spent in riparian areas consuming succulent vegetation located there.

Where free-choice grazing is allowed in the summer, use of riparian vegetation is high and regrazing of the same plants can occur. Darambazar *et al*. (2003) suggest that cattle grazing in late summer in mountain riparian pastures will begin using shrubs intensively when the quality and quantity of grasses and the abundance of forbs decline. They recommend that late-summer grazing should be light or avoided if grasses have become dormant (Wyman *et al*. 2006).

Regardless of whether it is spring or hot-season grazing, if denuded areas do occur in Johnson Creek, they 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 will be difficult to distinguish between turbidity resulting from these minor grazing impacts and background turbidity. A slight increase in fine sediment deposition for a short distance downstream of denuded areas is also likely to occur. Increased fine sediment in substrate is likely to slightly decrease the amount of area in the substrate macroinvertebrates can

inhabit, and therefore likely to slightly decrease the number of macroinvertebrates available as prey.

Some utilization of riparian vegetation is likely to occur. The 4-inch stubble height and shrub use standards established for these pastures are likely to render effects on shade insignificant. In addition, some minor bank alteration is likely to occur while cattle graze riparian vegetation along the streambank. Cattle trailing and trampling directly on streambanks puts sediment directly in the stream channel and increases channel width (Platts 1991). Bank alteration is likely to result in a slight increase in fine sediment delivery.

Where cattle have access to the steambank of Johnson Creek, an increase in nutrients is likely. Cattle accessing the stream are likely to deposit waste in riparian areas in the process which increases the likelihood that nitrogen and phosphorous will enter the stream. Nutrients derived from livestock wastes may be more bio-available than those bound in organic litter.

Due to the rock content of the stream channel and banks from an earlier debris torrent that occurred in Johnson Creek, as well as the lack of fines and the over story of pine, this system does not have the potential to grow much riparian vegetation. Because of this, livestock use consists of stream crossings and watering sites and minimal streambank effects are expected.

According to the BA, Johnson Creek is not at full potential. Cowley (2002) noted that the amount of unaltered streambank needed to maintain streambank stability ranges from 70 to 100%, therefore the maximum allowable bank alteration in any system should be 30%. Powell *et al*. (2000) in Cowley (2002) stated that concentrated trampling (>20% of the surface affected by deep hoof prints) should not occur along high-value fish habitat. The proposed RMO of <20% bank alteration is in the range recommended in the literature for maintaining streambank stability. When coupled with the other proposed compliance, utilization and PACFISH Implementation monitoring for vegetation management, instream habitat values are expected to be maintained or restored.

Spring, Hot and Fall Grazing

The BLM will utilize spring, hot and fall grazing seasons for the Dixie Allotment. Spring and hot season use were discussed in the above sections. Fall (late) season grazing is after the plants have set seed. Livestock generally will utilize the new forage in the uplands limiting their time in the riparian areas. With streams that have sufficient flow and temperature to support fisheries at this time of year, fish-livestock interaction is generally limited to watering and crossing areas.

Fall or late season grazing is another widespread strategy used throughout the Federal lands in the western states, especially in high elevation areas. Erhart and Hansen (1997) recommend fall grazing for achieving healthy riparian areas when the plant communities of these areas are dominated by herbaceous and not woody vegetation. This is because consumption of woody species by livestock tends to increase as herbaceous vegetation dries and becomes less palatable during the summer. Soils tend to be drier in fall, so streambank alteration may be reduced. However, heavy utilization in the fall may leave streambank vegetation reduced and banks vulnerable to damage during the next high flow event (Leonard *et al.* 1997).

In many areas, upland vegetation may begin to regrow as temperatures cool and precipitation resumes. Livestock may discontinue loitering in riparian areas to make use of this vegetation. In other areas, livestock may continue to congregate in riparian areas because the only remaining succulent vegetation is found in these areas.

The Dixie allotment has two pastures which are grazed every year. The time of year each pasture is grazed changes from spring to early hot season (June 1 to July 15) the first year and hot to fall season (July 16 to Oct. 15) the second year. This alternating system allows for maintaining and reestablishing the vegetation.

Habitat impacts associated with Dixie allotment are likely to include a few areas per mile of denuded streambank up to a few feet wide where cattle access streams to drink or cross. Cattle trailing and trampling directly on streambanks puts sediment directly in the stream channel and increases channel width (Platts 1991).

Denuded areas that do occur 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 will be difficult to distinguish between turbidity resulting from these minor grazing impacts and background turbidity. A slight increase in fine sediment deposition for a short distance downstream of denuded areas is also likely to occur. Increased fine sediment in substrate is likely to slightly decrease the amount of area in the substrate macroinvertebrates can inhabit, and therefore likely to slightly decrease the number of macroinvertebrates available as prey.

Some utilization of riparian vegetation is likely to occur. The 4-inch stubble height and shrub use standards established for these pastures are likely to render effects on shade insignificant. In addition, some minor bank alteration is likely to occur while cattle graze riparian vegetation along the streambank. Cattle trailing and trampling directly on streambanks puts sediment directly in the stream channel and increases channel width (Platts 1991). Bank alteration is likely to result in a slight increase in fine sediment delivery.

Utilization of riparian vegetation is likely to be more uniform during late season use. Late season grazing tends to lead cattle to congregate in riparian areas. In the Dixie allotment riparian impacts are expected to be minimized due to the rocky streambanks which will deter cattle from using, other than to cross in acceptable sites and for watering. This allotment will be managed by on/off dates with a conservative AUM. Consistent monitoring by the BLM will be used to ensure that cattle are moved at the appropriate time. The PIBO monitoring data collected on Dixie Creek will also provide long-term trend data to monitor impacts.

Cattle accessing streams are likely to deposit waste in riparian areas in the process which increases the likelihood that nitrogen and phosphorous will enter the stream. Nutrients derived from livestock wastes may be more bio-available than those bound in organic litter.

According to the BA, these streams are not at full potential. Cowley (2002) noted that the amount of unaltered streambank needed to maintain streambank stability ranges from 70 to 100%, therefore the maximum allowable bank alteration in any system should be 30%. Powell *et*

al. (2000) in Cowley (2002) stated that concentrated trampling (>20% of the surface affected by deep hoof prints) should not occur along high-value fish habitat. The proposed RMO of <20% bank alteration is in the range recommended in the literature for maintaining streambank stability. When coupled with the other proposed compliance, utilization, photo point, and PACFISH Implementation and effectiveness monitoring for vegetation management, instream habitat values are expected to be maintained or restored.

Spring or Fall Grazing

The BLM will utilize a spring or fall grazing season for the Creek Allotment. The permittee will decide which season to use the BLM land for this allotment in conjunction with other (private) lands. The permittee will use either spring or fall grazing season (April 15 –May 15, or October 15 - October 30) that is not necessarily rotational in this allotment.

On early-season grazing allotments, the objective is to graze while palatability of hill slope forage is high and palatability of riparian forage is low. The hill slope growing season begins earlier than the riparian growing season due to warmer temperatures on slopes. Riparian vegetation is often inundated during this time making it unavailable for forage, and riparian temperatures are generally cooler making the hill slopes more desirable for cattle and limiting the time cattle spend in riparian areas to drink or cross the stream.

Fall season grazing is after the plants have set seed. Livestock generally will utilize the new forage in the uplands limiting their time in the riparian areas. With streams that have sufficient flow and temperature to support fisheries at this time of year, fish-livestock interaction is generally limited to watering and crossing areas.

Regardless of which season of use is utilized, the habitat impacts associated with this allotment are likely to include a few areas of denuded streambank per mile up to a few feet wide where cattle access streams to drink or cross. Early in the season cattle do not 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 that do occur 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 will be difficult to distinguish between turbidity resulting from these minor grazing impacts and background turbidity. A slight increase in fine sediment deposition for a short distance downstream from denuded areas is also likely to occur. Increased fine sediment in substrate is likely to slightly decrease the amount of area in the substrate macroinvertebrates can inhabit, and therefore likely to slightly decrease the number of macroinvertebrates available as prey.

Some utilization of riparian vegetation is likely to occur. The 4-inch stubble height and shrub use standards established for these pastures are likely to render effects on shade insignificant. In addition, some minor bank alteration is likely to occur while cattle graze riparian vegetation along the streambank. Cattle trailing and trampling directly on streambanks puts sediment

directly in the stream channel and increases channel width (Platts 1991). Bank alteration is likely to result in a slight increase in fine sediment delivery to Cottonwood Creek.

Cattle accessing the stream are likely to deposit waste in riparian areas in the process which increases the likelihood that nitrogen and phosphorous will enter the stream. Nutrients derived from livestock wastes may be more bio-available than those bound in organic litter.

According to the BA, in recent years Cottonwood Creek has not been at full potential, however, it was on an upward trend. Cowley (2002) noted that the amount of unaltered streambank needed to maintain streambank stability ranges from 70 to 100%, therefore the maximum allowable bank alteration in any system should be 30%. Powell *et al*. (2000) in Cowley (2002) stated that concentrated trampling (>20% of the surface affected by deep hoof prints) should not occur along high-value fish habitat. The proposed Riparian Management Objectives (RMO) of <20% bank alteration is in the range recommended in the literature for maintaining streambank stability. Coupled with the proposed utilization, photo points and PACFISH Implementation and effectiveness monitoring for vegetation management, instream habitat values are expected to be maintained or restored. Implementation monitoring using MIM protocol in September of 2009 on Cottonwood Creek showed a 2% bank alteration, along with 13.6 inch stubble height and slight woody use (0-20%).

Rotational Grazing

The BLM will utilize a deferred rotational grazing system on the Squaw Creek and Kinzua allotments. In deferred rotation grazing systems, one or more pastures are not grazed during part of the year. This deferment is then rotated among the pastures during following years. For instance, an allotment made up of three pastures (A, B, and C) may be grazed in the following manner one year: A-early season, B-summer, and C-fall. In the next year, the allotment may be grazed C-early season, A-summer, and B-fall. This type of grazing system allows a period of rest during the growing season for each pasture every few years. During this rest period, plants can store carbohydrates and put out seed without the pressure of grazing.

Leonard *et al.* (1997) give examples of the success of this system in protecting riparian areas, but stress that livestock must be moved from pasture to pasture quickly for this system to be effective. Platts (1991) rates this system as fair for stream/riparian rehabilitation potential. Utilization of riparian grasses and woody species must be carefully monitored in pastures grazed during summer and fall, as shifts in palatability may lead to increased use of these plants. Streambanks should be left with sufficient cover to withstand high flow events the following spring.

A study in Nevada by Myers (1995) found that a switch to deferred grazing strategy resulted in improved riparian and stream condition. This study also found that complete rest resulted in the greatest degree of recovery and factors like road crossings along streams can complicate efforts to reach restoration goals by switching grazing strategies.

To minimize riparian habitat effects in Squaw Creek allotment, this allotment uses a rotational grazing system with other (private) pastures. The BLM land will be used during spring, hot or fall season, depending on the year of rotation.

Regardless of the season of use, habitat impacts associated with this allotment are likely to include a few areas of denuded streambank per mile, up to a few feet wide where cattle access streams to drink or cross and in areas of bank disturbance where cattle graze in riparian areas. Cattle trailing and trampling directly on streambanks puts sediment directly in the stream channel and increases channel width (Platts 1991).

Denuded streambanks are less likely to occur in the Buckhorn Creek than in Squaw Creek or Frank Creek, because this section of Buckhorn Creek is cobble and boulder dominated with steep slopes. Denuded areas that do occur 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 will be difficult to distinguish between turbidity resulting from these minor grazing impacts and background turbidity. A slight increase in fine sediment deposition for a short distance downstream from denuded areas is also likely to occur.

Increased fine sediment in substrate is likely to slightly decrease the amount of area in the substrate macroinvertebrates can inhabit, and therefore likely to slightly decrease the number of macroinvertebrates available as prey. The alder stands, in addition to the 4-inch stubble height and shrub use standards established, these pastures are likely to render effects on shade insignificant. Some minor bank alteration is likely to occur while cattle graze riparian vegetation along the streambank. Bank alteration is likely to result in a slight increase in fine sediment delivery to Squaw Creek, and Frank Creek.

Cattle accessing streams are likely to deposit waste in riparian areas in the process which increases the likelihood that nitrogen and phosphorous will enter the stream. Nutrients derived from livestock wastes may be more bio-available than those bound in organic litter.

The rotational grazing system used on the Squaw Creek Allotment allows for alternating seasonal rest of the pasture. According to the BA, in recent years, streams were not at full potential; however, they were on an upward trend. Cowley (2002) noted that the amount of unaltered streambank needed to maintain streambank stability ranges from 70 to 100%, therefore the maximum allowable bank alteration in any system should be 30%. Powell *et al*. (2000) in Cowley (2002) stated that concentrated trampling (>20% of the surface affected by deep hoof prints) should not occur along high-value fish habitat. The proposed RMO of <20% bank alteration is in the range recommended in the literature for maintaining streambank stability. The Implementation monitoring using MIM protocol in September of 2009 on Squaw Creek showed a 0% bank alteration. When coupled with the proposed compliance, and utilization monitoring for vegetation management, instream habitat values are expected to be maintained or restored.

The Kinzua Allotment will use a deferred rotational grazing system with other (private) pastures. The BLM land will be used during spring, hot or fall season.

Habitat impacts associated with Squaw Creek in the Kinzua allotment are likely to include a few areas per mile of denuded streambank up to a few feet wide where cattle access streams to drink or cross. Early in the season cattle do not loiter in riparian areas and they are expected to access streams to drink or cross in the same areas to avoid breaking new trail. Cattle trailing and

trampling directly on streambanks puts sediment directly in the stream channel and increases channel width (Platts 1991).

Regardless of the season of use, denuded areas that do occur 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 will be difficult to distinguish between turbidity resulting from these minor grazing impacts and background turbidity. A slight increase in fine sediment deposition for a short distance downstream of denuded areas is also likely to occur. Increased fine sediment in substrate is likely to slightly decrease the amount of area in the substrate macroinvertebrates can inhabit, and therefore likely to slightly decrease the number of macroinvertebrates available as prey.

In spite of early use of this allotment, some utilization of riparian vegetation is likely to occur. The 4-inch stubble height and shrub use standards established for this allotment are likely to render effects on shade insignificant. However, overhead cover is likely to be slightly reduced when vegetation is trampled by cattle. In addition, some minor bank alteration is likely to occur while cattle graze riparian vegetation. Bank alteration is likely to result in a slight increase in fine sediment delivery to the stream.

Utilization of riparian vegetation is likely to be more uniform in the late season use. However, there is a greater risk of riparian impacts being more severe along Squaw Creek if cattle over utilize an area, because these streams will be grazed into the late season when cattle are more likely to congregate in riparian areas. Consistent monitoring by the BLM will be used to ensure that cattle are moved at the appropriate time.

Cattle accessing streams are likely to deposit waste in riparian areas in the process which increases the likelihood that nitrogen and phosphorous will enter the stream. Nutrients derived from livestock wastes may be more bio-available than those bound in organic litter. Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream.

According o the BA, Squaw Creek is not at full potential. Cowley (2002) noted that the amount of unaltered streambank needed to maintain streambank stability ranges from 70 to 100%, therefore the maximum allowable bank alteration in any system should be 30%. Powell *et al*. (2000) in Cowley (2002) stated that concentrated trampling (>20% of the surface affected by deep hoof prints) should not occur along high-value fish habitat. The proposed RMO of <20% bank alteration is in the range recommended in the literature for maintaining streambank stability. Coupled with the other proposed utilization, annual residual stubble height and PACFISH Implementation monitoring for vegetation management, instream habitat values are expected to be maintained or restored.

Effects to Species within the Action Area

Effects on MCR steelhead can be in the form of direct disturbance or indirectly through habitat disturbance. Direct disturbance includes cattle trampling on MCR steelhead redds; disturbing holding or spawning adults, forcing them to alter their behavior and seek cover; or disturbing

rearing juveniles, forcing them to alter their behavior and seek cover. As discussed above, poorly-managed grazing can result in a variety of negative riparian impacts. When riparian habitat is negatively affected, listed fish species are also negatively affected. For example, if temperatures increase due to reduced shade, salmonid survival can decrease. Loss of overhead cover in the form of overhanging vegetation or undercut banks is likely to result in increased predation of juvenile salmonids. Increases in fine sediment are likely to increase turbidity which can alter salmonid behavior, and are likely to increase fine sediment in spawning gravels which decreases egg-to-fry survival.

However, well-managed grazing is likely to result in reduced riparian impacts, and in turn allow recovery of degraded riparian habitat to occur. Riparian area recovery results in more complex habitat largely due to increases in vegetation. Vegetation increases allow roots to stabilize streambanks and stems and foliage to slow water velocities, trap fine sediment, provide overhead cover for fish, provide shade that may aid in keeping stream temperatures cool, and provide surfaces for macroinvertebrates to inhabit. Stable streambanks and fine sediment trapping result in less fine sediment in spawning substrate which increases egg-to-fry survival of MCR steelhead (Bjornn and Reiser 1991).

Reduced water velocities along stream edges increase the amount of available habitat for young salmonids (Bjornn and Reiser 1991). Spawning salmonids appear to prefer spawning in areas in close proximity of overhead cover (Bjorn and Reiser 1991), and overhead cover protects juvenile salmonids from predation. Shade provided by vegetation can be important in keeping stream temperatures cool for salmonids. Li *et al.* (1994) found that trout abundance decreased as solar input and water temperature increased. Macroinvertebrates inhabiting overhanging vegetation provide forage for juvenile MCR steelhead when they fall into the stream. Each of these benefits contributes to increasing the amount of habitat available for each MCR steelhead freshwater life stage to be carried out successfully. The result is a significant contribution to MCR steelhead recovery. The following allotment-specific effects discussion considers impacts of the proposed action with respect to the life cycle of MCR steelhead.

1) Squaw Creek Allotment

Direct effects in the form of adult disturbance or redd trampling are likely to occur in the Squaw Creek Allotment because cattle will be present during spawning or incubating. The three creeks within the Squaw Creek allotment: Squaw, Frank and Buckhorn Creek units will be monitored with redd counts to determine if steelhead spawning is occurring. A slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of eggs, embryos or juveniles concentrated in a redd. There is a chance for redd trampling in Squaw Creek, as it provides a good amount of spawning gravel and canopy cover, and cattle will have access to the stream during spawning. Buckhorn Creek is cobble and boulder dominated, rearing only habitat with steep slopes which limit livestock access. Therefore, the risk of redd trampling is minimized. Frank Creek is rated as having poor fish habitat with low flows, poor pool conditions, siltation and lack of escape cover and spawning gravel. Therefore, the risk of redd trampling here is also minimal.
It is likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach the streams to drink or cross, rearing juveniles are likely to be disturbed and may leave near

shore cover in an attempt to escape and enter open water where they are likely to be more vulnerable to predation. In most cases, juveniles are likely to simply move into adjacent cover.

Streambank disturbance at water access points and areas grazed along Squaw, Frank and Buckhorn creeks will result in sediment delivery and reduced overhead cover. Increased fine sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Since only a few small areas will be exposed to erosion due to grazing, eroded sediment volumes will be small. Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. Squaw Creek is the only stream with spawning in this allotment. During spring use grazing, the area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to spring runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor. During hot season or fall season grazing use, incubation will be completed and fry will move into rearing areas.

In this allotment the permittee will remove cattle from the allotment before move triggers are reached by monitoring the stubble height and woody browse indicators. This is expected to have the same result as if the grazing strategy was managed with AUMS and on/off dates. There is likely to be a slight reduction in overhead vegetative cover at each access point and intermittent areas along streams where cattle have grazed. Access points and areas disturbed during grazing will have at most a short-term (1 to 6 months) reduction in vegetation height along the 2.1 miles of MCR steelhead stream within this allotment. This vegetation will begin growing back as soon as cattle are removed from the allotment. Regardless of the grazing season, the grazed areas will be dispersed over a large area and therefore the effects are expected to be similar. The proposed monitoring and adaptive management will aid in minimizing the effects to MCR steelhead.

McIver and McInnis (2007) investigated the effects of grazing on aquatics food webs. They observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling of banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, given the rotational grazing system, the amount of fine sediment input is likely to be small. The amount of interstitial habitat available to macroinvertebrates is likely to decrease slightly and a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient supply for the food chain (Cummins 1974 *cited in* Platts 1991). This introduced material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation

affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Implementation monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease.

Increased nitrogen and phosphorous from cattle waste will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

As Implementation monitoring using MIM protocol of bank alteration and slight use of woody shrubs along Squaw Creek and observations of vegetative diversity on Buckhorn Creek have indicated, riparian recovery along the Squaw Creek and Buckhorn Creek in this allotment is expected to continue to occur. In the long term (5 to 10 years), as riparian recovery continues, available cover for juvenile MCR steelhead is likely to increase, the amount of sediment input is likely to decrease (improving egg-to-fry survival).These improvements will result in increased habitat carrying capacity. A variety of monitoring data including compliance, utilization and PACFISH Implementation and adaptive management measures will ensure this grazing strategy will not impede recovery efforts.

2) Johnson Creek Allotment

Cattle will have access to spawning areas in Johnson Creek during critical spawning times. Though spawning gravels are limited, the potential exists that spawning behavior will be interrupted forcing adults to retreat to nearby cover and redds will be at risk of being trampled. These risks will be minimized with annual redd count monitoring to determine if steelhead spawning is occurring. However, a slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of embryos or juveniles concentrated in a redd.

It is also likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach Johnson Creek to drink or cross, rearing juveniles are likely to be disturbed and may leave near shore cover in an attempt to escape and enter open water where they are likely to be more vulnerable to predation. Since Johnson Creek is small, it is likely that juveniles will simply move into adjacent cover; however, given the length of stream in the allotment with rearing MCR steelhead, it is likely that juveniles will be forced into open water at some point during the grazing season.

This stream does not have potential to grow much riparian vegetation. Therefore, livestock use consists of stream crossings and watering sites. Streambank disturbance at water access points along Johnson Creek will result in sediment delivery. Increased fine sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access

points is limited to a relatively small area. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. The area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor.

Increased sediment load is detrimental to juvenile salmonids by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Increased sediment associated with grazing will be small in comparison to naturally high levels during high flows. Sediment delivery and associated turbidity will only occur during high flows with naturally high background turbidity levels, so turbidity associated with the proposed action will have a small effect on fish present.

McIver and McInnis (2007) observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, due to the course rock content surrounding the channel and the proposed monitoring, the amounts of fine sediment entering the stream due to grazing impacts are expected to be very small. The amount of interstitial habitat available to macroinvertebrates is likely to decrease slightly. However, a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Implementation monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease substantially.

Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al.* (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

According to the BA, the lower reach of Johnson Creek was rated at the lower end of PFC in 2001because the creek was still recovering from a debris torrent that had occurred. The middle reach was rated at PFC and appeared to be at potential natural community (PNC) in 2001. This reach was inhabited by large numbers of age 0 and 1+ steelhead. It was flowing about 2 to 3 cfs and is in a stand of old-growth conifers. In the long term (5 to 10 years), as riparian recovery continues, available cover for juvenile MCR steelhead is likely to increase, the amount of sediment input is likely to decrease which will improve egg-to-fry survival, and stream channels will continue to narrow resulting in increased habitat carrying capacity. A variety of monitoring data including, compliance, utilization and PACFISH Implementation and adaptive management measures will ensure this grazing strategy will not impede recovery efforts.

3) Dixie Allotment

The Dixie allotment uses a rotational grazing system. Dixie and Standard Creek provide spawning habitat. On alternate years cattle will have access to spawning areas during critical spawning and incubating times. Therefore, the potential exists that spawning behavior will be interrupted forcing adults to retreat to nearby cover and that redds will be at risk of being trampled. These risks will be minimized with annual redd count monitoring to determine if steelhead spawning is occurring. However, a slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of embryos or juveniles concentrated in a redd.

It is also likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach Dixie Creek, Standard Creek, West Fork Standard Creek, and Comer Creek to drink or cross, rearing juveniles are likely to be disturbed and may leave near shore cover in an attempt to escape and enter open water where they are likely to be more vulnerable to predation. Since most of these streams are small, it is likely that juveniles will simply move into adjacent cover; however, given the length of stream in the allotment with rearing MCR steelhead, it is likely that juveniles will be forced into open water at some point during the grazing season.

These are forested systems with rocky streambanks. Therefore, livestock use consists of stream crossings and watering sites. Streambank disturbance at water access points along all four creeks will result in sediment delivery and reduced overhead cover. Increased fine sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. Regardless of the grazing season of use, the area of deposition will be isolated to small areas close to shore and fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor.

Increased sediment load is detrimental to juvenile salmonids by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Increased sediment associated with grazing will be small in comparison to naturally high levels during high flows. Sediment delivery and associated turbidity will only occur during high flows

with naturally high background turbidity levels, so turbidity associated with the proposed action will have a small effect on fish present.

Access points and areas disturbed during grazing will have at most a short-term (1 to 6 months) reduction in vegetation height along the streams in this allotment. This vegetation will begin growing back adjacent to the streams as soon as cattle are removed from the allotment and growth will continue the following spring, so that impacts to MCR steelhead are no longer occurring by the time the following grazing season starts.

McIver and McInnis (2007) observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, due to the proposed monitoring and associated adaptive management measures, the amounts of fine sediment entering the channel due to grazing impacts are expected to be very small. The amount of interstitial habitat available to macroinvertebrates is likely to decrease slightly. However, a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Implementation monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease substantially.

Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

According to the BA, Dixie Creek was rated as having an upward trend and Standard Creek was rated as being at PFC. Comer Creek and West Fork Creek have not been rated, the proposed monitoring will establish some trend data for these. A variety of monitoring data including water temperature, residual stubble height, PIBO and PACFISH, and adaptive management measures will ensure this grazing strategy will not impede recovery efforts.

4) Murderers Creek Allotment

This allotment uses a spring grazing strategy with livestock present for approximately 20 days two out of three years. Cattle will have access to spawning areas during critical spawning times. Therefore, the potential exists that spawning behavior will be interrupted forcing adults to retreat to nearby cover and redds will be at risk of being trampled. Due to a thick stand of woody vegetation, there is little to no livestock use on Cabin Creek. The South Fork John Day River within this allotment gets very little livestock use due to fencing and time of year livestock are in the pasture. Therefore the potential for redd trampling in these two streams is minimal. Cougar Gulch has dense vegetation and fencing to aid in restricting cattle use. These risks will be further reduced with annual redd count monitoring to determine if steelhead spawning is occurring. However, a slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of embryos or juveniles concentrated in a redd.

It is also likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach Cougar Gulch or the South Fork John Day to drink or cross, rearing juveniles are likely to be disturbed and may leave near shore cover in an attempt to escape and enter open water where they are likely to be more vulnerable to predation. It is likely that juveniles will simply move into adjacent cover. However, it is likely that juveniles in the South Fork John Day will attempt escape to open water if disturbed. Cabin Creek has little to no livestock use, therefore disturbance of juvenile MCR steelhead is expected to be minimal.

Streambank disturbance at water access points and areas grazed along Cabin Creek, Cougar Gulch or the South Fork John Day will result in sediment delivery and reduced overhead cover. Increased fine sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. The area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor.

Increased sediment load is detrimental to juvenile salmonids by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Increased sediment associated with grazing will be small in comparison to naturally high levels during high flows. Sediment delivery and associated turbidity will only occur during high flows with naturally high background turbidity levels, so turbidity associated with the proposed action will have a small effect on fish present.

There is likely to be a slight reduction in overhead vegetative cover at each access point and possibly in intermittent areas along the streams where cattle have grazed. Access points and areas disturbed during grazing will have at most a short-term (1 to 6 months) reduction in vegetation height along the streams in this allotment. This vegetation will begin growing back adjacent to the streams as soon as cattle are removed from the allotment and growth will

continue the following spring, so that impacts to MCR steelhead are no longer occurring by the time the following grazing season starts.

McIver and McInnis (2007) observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, due to the limited use and proposed monitoring, the amounts of fine sediment entering the channel due to grazing impacts are expected to be very small. The amount of interstitial habitat available to macroinvertebrates is likely to decrease slightly. However, a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Implementation monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease substantially.

Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

According to the BA, all three of these systems were rated to be at PFC and are expected to continue to improve. In the long term (5 to 10 years), as riparian recovery continues, available cover for juvenile MCR steelhead is likely to increase, the amount of sediment input is likely to decrease which will improve egg-to-fry survival, and stream channels will continue to narrow resulting in increased habitat carrying capacity. A variety of monitoring data including water temperature, utilization, compliance and PACFISH, and adaptive management measures will verify this grazing strategy will not impede recovery efforts.

5) Franks Creek Allotment

Cattle will have access to spawning areas in Franks Creek during critical spawning times. Therefore, the potential exists that spawning behavior will be interrupted forcing adults to retreat to nearby cover and redds will be at risk of being trampled. These risks will be minimized with annual redd count monitoring to determine if steelhead spawning is occurring. However, a slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of embryos or juveniles concentrated in a redd.

It is also likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach Franks Creek to drink or cross, rearing juveniles are likely to be disturbed and may leave near shore cover in an attempt to escape and enter open water where they are likely to be more vulnerable to predation. Since Franks Creek is small, it is likely that juveniles will simply move into adjacent cover.

Streambank disturbance at water access points and areas grazed along Franks Creek will result in sediment delivery and reduced overhead cover. Increased fine sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. The area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor.

Increased sediment load is detrimental to juvenile salmonids by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Increased sediment associated with grazing will be small in comparison to naturally high levels during high flows. Sediment delivery and associated turbidity will only occur during high flows with naturally high background turbidity levels, so turbidity associated with the proposed action will have a small effect on fish present.

There is likely to be a slight reduction in overhead vegetative cover at each access point and intermittent areas along streams where cattle have grazed. Access points and areas disturbed during grazing will have at most a short-term (1 to 6 months) reduction in vegetation height along the streams in this allotment. This vegetation will begin growing back adjacent to the streams as soon as cattle are removed from the allotment and growth will continue the following spring, so that impacts to MCR steelhead are no longer occurring by the time the following grazing season starts.

McIver and McInnis (2007) observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to

molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, due to the proposed monitoring, the amounts of fine sediment entering the channel due to grazing impacts are expected to be very small. The amount of interstitial habitat available to macroinvertebrates is likely to decrease slightly. However, a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Implementation monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease substantially.

Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

A variety of monitoring data including annual photo points, compliance and PACFISH Implementation and adaptive management measures will ensure this grazing strategy will not impede these recovery efforts.

6) Johnny Cake Mountain Allotment

Cattle will have access to spawning areas in Cabin Creek and the North Fork John Day River during critical spawning times. Therefore, the potential exists that spawning behavior will be interrupted forcing adults to retreat to nearby cover and redds will be at risk of being trampled. Livestock impacts are expected to be limited to watering sites on the North Fork John Day River due to high flows when the livestock are in the pasture, therefore risks to redd trampling will be minimal. These risks in Cabin Creek will be minimized with annual redd count monitoring to determine if steelhead spawning is occurring. However, a slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of embryos or juveniles concentrated in a redd.

It is also likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach Cabin Creek and the North Fork John Day River to drink or cross, rearing juveniles are likely to be disturbed and may leave near shore cover in an attempt to escape and enter open

water where they are likely to be more vulnerable to predation. Since Cabin Creek is small, it is likely that juveniles will simply move into adjacent cover. The North Fork John Day River is winter rearing habitat for juvenile MCR steelhead. In this reach livestock impacts will be limited due to high flows; however rearing juveniles will likely attempt escape to open water as well if disturbed.

Streambank disturbance at water access points and areas grazed along Cabin Creek and the North Fork John Day River will result in sediment delivery and reduced overhead cover. Increased fine sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. The area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor.

Increased sediment load is detrimental to juvenile salmonids by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Increased sediment associated with grazing will be small in comparison to naturally high levels during high flows. Sediment delivery and associated turbidity will only occur during high flows with naturally high background turbidity levels, so turbidity associated with the proposed action will have a small effect on fish present.

There is likely to be a slight reduction in overhead vegetative cover at each access point and intermittent areas along streams where cattle have grazed. Access points and areas disturbed during grazing will have at most a short-term (1 to 6 months) reduction in vegetation height along the streams in this allotment. This vegetation will begin growing back adjacent to the streams as soon as cattle are removed from the allotment and growth will continue the following spring, so that impacts to MCR steelhead are no longer occurring by the time the following grazing season starts.

McIver and McInnis (2007) observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, given the tightly controlled use early in the season and proposed monitoring, the amounts of fine sediment entering the channel due to grazing impacts are expected to be very small. The amount of interstitial habitat available to macroinvertebrates is likely to decrease slightly. However, a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Implementation monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease substantially.

Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

A variety of monitoring data including photo points, compliance, PIBO and PACFISH Implementation and adaptive management measures will ensure this grazing strategy will not impede recovery efforts.

7) Big Baldy Allotment

Cattle will have access to spawning areas in Deer Creek and the South Fork John Day River every other year during critical spawning times. Therefore, the potential exists that spawning behavior will be interrupted forcing adults to retreat to nearby cover and redds will be at risk of being trampled. Due to high flows in the South Fork John Day River when livestock are in the pasture, access to streambanks and riparian vegetation are limited and therefore risk to redd trampling are minimized. Deer Creek has extremely thick vegetation, large boulder substrate and steep gradient along most of the creek that creates a significant livestock barrier, therefore, risk to redd trampling in this system is also minimized. However, a slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of embryos or juveniles concentrated in a redd.

It is also likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach Deer Creek and the South Fork John Day River to drink or cross, rearing juveniles are likely to be disturbed and may leave near shore cover in an attempt to escape and enter open water where they are likely to be more vulnerable to predation. It is likely that juveniles will simply move into adjacent cover. This Deer Creek segment has extremely thick riparian vegetation and poses a significant barrier to livestock which will aid in the protection of redds and juveniles during spawning and rearing.

Streambank disturbance at water access points along limited areas of Deer Creek and the South Fork John Day River will result in sediment delivery and reduced overhead cover. Increased fine

sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. The area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor.

Increased sediment load is detrimental to juvenile salmonids by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Increased sediment associated with grazing will be small in comparison to naturally high levels during high flows. Sediment delivery and associated turbidity will only occur during high flows with naturally high background turbidity levels, so turbidity associated with the proposed action will have a small effect on fish present.

There is likely to be a slight reduction in overhead vegetative cover at each access point and intermittent areas along streams where cattle have grazed. Access points and areas disturbed during grazing will have at most a short-term (1 to 6 months) reduction in vegetation height along the streams in this allotment. This vegetation will begin growing back adjacent to the streams as soon as cattle are removed from the allotment and growth will continue the following spring, so that impacts to MCR steelhead are no longer occurring by the time the following grazing season starts.

McIver and McInnis (2007) observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, given the tightly controlled use of every other year and early in the season, in addition to the proposed monitoring, the amounts of fine sediment entering the channel due to grazing impacts are expected to be very small. The amount of interstitial habitat available to macroinvertebrates is likely to decrease slightly. However, a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Implementation monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease substantially.

Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

A variety of monitoring data including photo points, utilization, compliance, PIBO and PACFISH Implementation and adaptive management measures will ensure this grazing strategy will not impede recovery efforts.

8) Rockpile Allotment

Cattle will have access to spawning areas in the South Fork John Day River, Cougar Gulch and Frazier Creek during critical spawning times. Therefore, the potential exists that spawning behavior will be interrupted forcing adults to retreat to nearby cover and redds will be at risk of being trampled. Due to high flows in the South Fork John Day River when livestock are in the pasture, access to streambanks and riparian vegetation is limited, therefore minimizing the risk of redd trampling in the system. These risks will be minimized in Cougar Gulch and Frazier Creek with annual redd count monitoring to determine if steelhead spawning is occurring. However, a slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of embryos or juveniles concentrated in a redd.

It is also likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach the South Fork John Day River, Cougar Gulch and Frazier Creek to drink or cross, rearing juveniles are likely to be disturbed and may leave near shore cover in an attempt to escape and enter open water where they are likely to be more vulnerable to predation. It is likely that juveniles will simply move into adjacent cover.

Streambank disturbance at water access points along the South Fork John Day River, Cougar Gulch and Frazier Creek will result in sediment delivery and reduced overhead cover. Increased fine sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. The area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor.

Increased sediment load is detrimental to juvenile salmonids by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Increased sediment associated with grazing will be small in comparison to naturally high levels

during high flows. Sediment delivery and associated turbidity will only occur during high flows with naturally high background turbidity levels, so turbidity associated with the proposed action will have a small effect on fish present.

There is likely to be a slight reduction in overhead vegetative cover at each access point and intermittent areas along streams where cattle have grazed. Access points and areas disturbed during grazing will have at most a short-term (1 to 6 months) reduction in vegetation height along the streams in this allotment. This vegetation will begin growing back adjacent to the streams as soon as cattle are removed from the allotment and growth will continue the following spring, so that impacts to MCR steelhead are no longer occurring by the time the following grazing season starts.

McIver and McInnis (2007) observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, given the limited access livestock have in these systems and the proposed monitoring, the amounts of fine sediment entering the channel due to grazing impacts are expected to be very small. The amount of interstitial habitat available to macroinvertebrates is likely to decrease slightly. However, a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Effectiveness monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease substantially.

Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

A variety of monitoring data including photo points, utilization, water temperature, compliance and PACFISH Implementation and adaptive management measures will ensure this grazing strategy will not impede recovery efforts.

9) Little Wall Creek Allotment

Cattle will have access to spawning areas in Little Wall Creek and Bacon Creek during critical spawning times. Therefore, the potential exists that spawning behavior will be interrupted forcing adults to retreat to nearby cover and redds will be at risk of being trampled. These risks will be minimized with annual redd count monitoring to determine if steelhead spawning is occurring. However, a slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of embryos or juveniles concentrated in a redd.

It is also likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach the Little Wall Creek and Bacon Creek to drink or cross, rearing juveniles are likely to be disturbed and may leave near shore cover in an attempt to escape and enter open water where they are likely to be more vulnerable to predation. Since these streams are small, it is likely that juveniles will simply move into adjacent cover; however, given the length of stream in the allotment with rearing MCR steelhead, it is likely that juveniles will be forced into open water at some point during the grazing season.

Streambank disturbance at water access points and areas grazed along Little Wall Creek and Bacon Creek will result in sediment delivery and reduced overhead cover. Increased fine sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. The area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor.

Increased sediment load is detrimental to juvenile salmonids by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Increased sediment associated with grazing will be small in comparison to naturally high levels during high flows. Sediment delivery and associated turbidity will only occur during high flows with naturally high background turbidity levels, so turbidity associated with the proposed action will have a small effect on fish present.

There is likely to be a slight reduction in overhead vegetative cover at each access point and intermittent areas along streams where cattle have grazed. Access points and areas disturbed during grazing will have at most a short-term (1 to 6 months) reduction in vegetation height along the streams in this allotment. This vegetation will begin growing back adjacent to the streams as soon as cattle are removed from the allotment and growth will continue the following spring, so that impacts to MCR steelhead are no longer occurring by the time the following grazing season starts.

McIver and McInnis (2007) observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, given the controlled use early in the season and the proposed monitoring, the amounts of fine sediment entering the channel due to grazing impacts are expected to be very small. The amount of interstitial habitat available to macroinvertebrates is likely to decrease slightly. However, a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Implementation monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease substantially.

Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

A variety of monitoring data including photo points, compliance and PACFISH Implementation and adaptive management measures will ensure this grazing strategy will not impede recovery efforts.

10) Two County Allotment

Cattle will have access to spawning areas in Burnt Corral Creek and Holmes Creek during critical spawning times. Therefore, the potential exists that spawning behavior will be interrupted forcing adults to retreat to nearby cover and redds will be at risk of being trampled. These risks will be minimized with annual redd count monitoring to determine if steelhead spawning is occurring. However, a slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of embryos or juveniles concentrated in a redd.

It is also likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach the Holmes and Burnt Corral creeks to drink or cross, rearing juveniles are likely to be disturbed and may leave near shore cover in an attempt to escape and enter open water where they are likely to be more vulnerable to predation. Since these streams are small, it is likely that juveniles will simply move into adjacent cover; however, given the length of stream in the allotment with rearing MCR steelhead, it is likely that juveniles will be forced into open water at some point during the grazing season.

Streambank disturbance at water access points and areas grazed along Holmes and Burnt Corral creeks will result in sediment delivery and reduced overhead cover. Increased fine sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. The area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor.

Increased sediment load is detrimental to juvenile salmonids by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Increased sediment associated with grazing will be small in comparison to naturally high levels during high flows. Sediment delivery and associated turbidity will only occur during high flows with naturally high background turbidity levels, so turbidity associated with the proposed action will have a small effect on fish present.

There is likely to be a slight reduction in overhead vegetative cover at each access point and intermittent areas along streams where cattle have grazed. Access points and areas disturbed during grazing will have at most a short-term (1 to 6 months) reduction in vegetation height along the streams in this allotment. This vegetation will begin growing back adjacent to the streams as soon as cattle are removed from the allotment and growth will continue the following spring, so that impacts to MCR steelhead are no longer occurring by the time the following grazing season starts.

McIver and McInnis (2007) observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, given the steep terrain and boulders along the banks and stream, in addition to the proposed monitoring, the amounts of fine sediment entering the channel due to grazing impacts are expected to be very small. The amount of interstitial habitat available to

macroinvertebrates is likely to decrease slightly. However, a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Implementation monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease substantially.

Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

A variety of monitoring data including photo points, compliance, trend and PACFISH Implementation and adaptive management measures will ensure this grazing strategy will not impede recovery efforts.

11) Kinzua Allotment

Cattle will have access to spawning areas in Squaw Creek during critical spawning times. Therefore, the potential exists that spawning behavior will be interrupted forcing adults to retreat to nearby cover and redds will be at risk of being trampled. These risks will be minimized with annual redd count monitoring to determine if steelhead spawning is occurring. However, a slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of embryos or juveniles concentrated in a redd.

It is also likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach this reach of Squaw Creek to drink or cross, rearing juveniles are likely to be disturbed and may leave near shore cover in an attempt to escape and enter open water where they are likely to be more vulnerable to predation. Since Squaw Creek is small, it is likely that juveniles will simply move into adjacent cover; however, given the length of stream in the allotment with rearing MCR steelhead, it is likely that juveniles will be forced into open water at some point during the grazing season.

Streambank disturbance at water access points and areas grazed along Squaw Creek will result in sediment delivery and reduced overhead cover. Increased fine sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Fine sediment deposition is

likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. During spring use grazing, the area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor. During hot season or fall season grazing use, incubation will be completed and fry will move into rearing areas.

In this allotment the permittee will remove cattle from the allotment before move triggers are reached by monitoring the stubble height and woody browse indicators. This is expected to have the same result as if the grazing strategy was managed with AUMs and on/off dates. There is likely to be a slight reduction in overhead vegetative cover at each access point and intermittent areas along streams where cattle have grazed. Access points and areas disturbed during grazing will have at most a short-term (1 to 6 months) reduction in vegetation height along the streams in this allotment. This vegetation will begin growing back adjacent to the streams as soon as cattle are removed from the allotment and growth will continue the following spring, so that impacts to MCR steelhead are no longer occurring by the time the following grazing season starts.

McIver and McInnis (2007) observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, due to the rotational grazing strategy and the proposed monitoring, the amounts of fine sediment entering the channel due to grazing impacts are expected to be very small. The amount of interstitial habitat available to macroinvertebrates is likely to decrease slightly. However, a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Implementation monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease substantially.

Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit

filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

A variety of monitoring data including annual residual stubble height, utilization, trend and PACFISH Implementation and adaptive management measures will ensure this grazing strategy will not impede recovery efforts.

12) Creek Allotment

When grazed in the spring, cattle will have access to spawning areas in Cottonwood Creek during critical spawning times. Therefore, the potential exists that spawning behavior will be interrupted forcing adults to retreat to nearby cover and redds will be at risk of being trampled. These risks will be minimized with annual redd count monitoring to determine if steelhead spawning is occurring. However, a slight potential for redd trampling exists, and redd trampling is likely to result in partial or total mortality of embryos or juveniles concentrated in a redd.

It is also likely that some minor disturbance of juvenile MCR steelhead will occur. As cattle approach the Cottonwood Creek to drink or cross, rearing juveniles are likely to be disturbed and may leave near shore cover in an attempt to escape and enter open water where they are likely to be more vulnerable to predation. Since Cottonwood Creek is small, it is likely that juveniles will simply move into adjacent cover; however, given the length of stream in the allotment with rearing MCR steelhead, it is likely that juveniles will be forced into open water at some point during the grazing season.

Streambank disturbance at water access points and areas grazed along Cottonwood Creek will result in sediment delivery and reduced overhead cover. Increased fine sediment delivery is likely to affect MCR steelhead through increased deposition in the substrate. Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. The area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor.

Increased sediment load is detrimental to juvenile salmonids by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Increased sediment associated with grazing will be small in comparison to naturally high levels during high flows. Sediment delivery and associated turbidity will only occur during high flows with naturally high background turbidity levels, so turbidity associated with the proposed action will have a small effect on fish present.

There is likely to be a slight reduction in overhead vegetative cover at each access point and intermittent areas along streams where cattle have grazed. Access points and areas disturbed

during grazing will have at most a short-term (1 to 6 months) reduction in vegetation height along the streams in this allotment. This vegetation will begin growing back adjacent to the streams as soon as cattle are removed from the allotment and growth will continue the following spring, so that impacts to MCR steelhead are no longer occurring by the time the following grazing season starts.

McIver and McInnis (2007) observed a reduction in macroinvertebrates in their test area correlated with a variety of linked grazing effects that include the reduction of streamside vegetation, stream widening, increased embeddedness, subtle changes in channel morphology, and changes in aquatic biodiversity. Inputs of fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance and lead to a shift from aquatic insects to molluscs, which are less palatable to salmonids. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). However, given the rotational grazing system, the amounts of fine sediment entering the channel due to grazing impacts are expected to be very small. The amount of interstitial habitat available to macroinvertebrates is likely to decrease slightly. However, a measurable increase in embeddedness is not expected to occur.

Reducing riparian vegetation also reduces habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation provides organic material directly to the stream, making up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This material provides an important food source for aquatic insects that in turn become prey for salmonids. Consequently, removal of riparian vegetation affects the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963). Implementation monitoring will ensure that the standards are conservative enough that organic material input is not likely to decrease substantially.

Increased nutrients will likely increase stream productivity at the source of nutrients and for a short distance downstream. This will result in increased periphyton and in turn an increase in invertebrate biomass. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to salmonids may be small, because these larvae are well protected from fish predation by their cases. Regardless, the increase in nutrients will be fairly localized and not have wide-ranging effects.

A variety of monitoring data including water temperature, utilization and PACFISH Implementation and adaptive management measures will ensure this grazing strategy will not impede recovery efforts.

Effects on Critical Habitat within the Action Area

The following allotment-specific discussion evaluates effects to critical habitat PCEs within the action area which correspond to specific life stages in the MCR steelhead life cycle as described in Table 2. The proposed action will have no effect on the water quantity or floodplain connectivity PCEs. Therefore, no discussion on those PCEs is provided below.

1) Squaw Creek Allotment

Freshwater spawning sites
Regardless of season of livestock use, the following effects will apply.

Water quality –Squaw Creek is the only stream within this allotment that provides spawning habitat. The streambanks are cobble dominated, therefore, a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points during spring season grazing use and to a lesser extent during other seasons of use along Squaw Creek is expected. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management measures will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate –Fine sediment deposition is likely to be limited to 50 feet downstream from each crossing since disturbance at access points is limited to a relatively small area and actual riparian utilization will be limited. Sediment that cannot be transported by the stream can become embedded in spawning gravels, reducing salmonid egg and alevin survival. The area of deposition will be isolated to a small area close to shore, and since flows will be relatively high due to runoff, fine sediment will be deposited in slow water areas that are not conducive to spawning, so effects to incubating eggs and alevins are likely to be minor. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites
Regardless of season of livestock use, the following effects will apply.

Water quality – Buckhorn Creek and Frank Creek provide rearing habitat within this allotment. There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along the Buckhorn Creek and Frank Creek. The Buckhorn Creek reach is cobble and boulder dominated and receives little to no livestock use due to the steep slopes and rock content of the streambanks, therefore sediment delivery is expected to be minimal. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management measures will ensure. There will be a slight increase in nutrients due to cattle waste; however,

impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by MCR steelhead will decrease slightly during grazing and up to 6 months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point and grazed riparian area.

Freshwater migration corridors

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points and intermittent areas where cattle have grazed along Squaw, Frank and Buckhorn Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management measures will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point.

2) Johnson Creek Allotment

Freshwater spawning sites

Regardless of season of livestock use, the following effects will apply.

Water quality – There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points during spring season grazing use and to a lesser extent during other seasons of use along Johnson Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate – There is likely to be a minor, temporary increase in substrate fine sediment in low velocity areas resulting from sediment delivery associated with the cattle stream crossings, watering areas.

Freshwater rearing sites
Regardless of season of livestock use, the following effects will apply.

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Johnson Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients due to cattle waste; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by MCR steelhead is expected to be minimally effected due to this stream only being utilized by livestock for crossings and watering sites. There will be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Johnson Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

Freshwater migration corridors
Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Johnson Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Johnson Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

3) Dixie Allotment

Freshwater spawning sites
Regardless of season of livestock use, the following effects will apply.

Water quality – During spring season grazing use, there will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream

crossing and watering access points and to a lesser extent during other seasons of grazing use along Dixie and Standard creeks. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate – There is likely to be a minor, temporary increase in substrate fine sediment in low velocity areas resulting from sediment delivery associated with the cattle stream crossings, watering areas. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites

Regardless of season of livestock use, the following effects will apply.

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Dixie, Standard, West Fork Standard and Comer Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients due to cattle waste; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by MCR steelhead will decrease slightly during grazing and up to 6 months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Dixie, Standard, West Fork Standard and Comer Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

Freshwater migration corridors

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Dixie, Standard, West Fork Standard and Comer Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Dixie, Standard, West Fork Standard and Comer Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

4) Murderers Creek Allotment

Freshwater spawning sites

Water quality – There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points and intermittent areas where cattle have grazed along the South Fork John Day River, and Cougar Gulch. Cabin Creek has little to no livestock use due to thick woody vegetation; therefore, effects are expected to be minimal. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate – There is likely to be a minor, temporary increase in substrate fine sediment in low velocity areas resulting from sediment delivery associated with the cattle stream crossings and watering areas. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points and intermittent areas where cattle have grazed along the South Fork John Day River, Cabin Creek and Cougar Gulch. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients due to cattle waste; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey

species preferred by MCR steelhead will decrease slightly during grazing and up to 6 months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to the South Fork John Day River, Cabin Creek and Cougar Gulch will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

Freshwater migration corridors

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along the South Fork John Day River, Cabin Creek and Cougar Gulch. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to the South Fork John Day River, Cabin Creek and Cougar Gulch will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

5) Franks Creek Allotment

Freshwater spawning sites

Water quality – There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Franks Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate – There is likely to be a minor, temporary increase in substrate fine sediment in low velocity areas resulting from sediment delivery associated with the cattle stream crossings, watering areas. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Franks Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients due to cattle waste; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by MCR steelhead will decrease slightly during grazing and up to 6 months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Franks Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

Freshwater migration corridors

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Franks Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Franks Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

6) Johnny Cake Mountain Allotment

Freshwater spawning sites

Water quality – There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Cabin Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate – There is likely to be a minor, temporary increase in substrate fine sediment in low velocity areas resulting from sediment delivery associated with the cattle stream crossings, watering areas. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Cabin Creek and the North Fork John Day River. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients due to cattle waste; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by MCR steelhead will decrease slightly during grazing and up to 6 months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Cabin Creek and the North Fork John Day River will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

Freshwater migration corridors

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Cabin Creek and the North Fork John Day River. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Cabin Creek and the North Fork John Day River will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

7) Big Baldy Allotment

The Big Baldy allotment is used for grazing every other year. Therefore, the following effects are expected to occur every other year.

Freshwater spawning sites

Water quality –There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Deer Creek and the South Fork John Day River. Due to the extremely thick vegetation, large boulder substrate, and steep gradient of most stretches of the creek, effects from livestock on Deer Creek are expected to be minimal. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate – There is likely to be a minor, temporary increase in substrate fine sediment in low velocity areas resulting from sediment delivery associated with the cattle stream crossings and watering areas. Due to the extremely thick vegetation, large boulder substrate, and steep gradient of most stretches of the creek, effects from livestock on Deer Creek are expected to be minimal. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Deer Creek and the South Fork John Day River. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients due to cattle waste; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by MCR steelhead will decrease slightly during grazing and up to 6 months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Deer Creek and the South Fork John Day River will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

Freshwater migration corridors

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Deer Creek and the South Fork John Day River. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Deer Creek and the South Fork John Day River will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

8) Rockpile Allotment

Freshwater spawning sites

Water quality – There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access

points along the South Fork John Day River, Cougar Gulch and Frazier Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate – There is likely to be a minor, temporary increase in substrate fine sediment in low velocity areas resulting from sediment delivery associated with the cattle stream crossings, watering areas, and intermittent areas where cattle have grazed. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along the South Fork John Day River, Cougar Gulch and Frazier Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients due to cattle waste; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by MCR steelhead will decrease slightly during grazing and up to 6 months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to the South Fork John Day River, Cougar Gulch and Frazier Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

Freshwater migration corridors

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points and intermittent areas where cattle have grazed along the South Fork John Day River, Cougar Gulch and Frazier Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize

nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to the South Fork John Day River, Cougar Gulch and Frazier Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

9) Little Wall Creek Allotment

Freshwater spawning sites

Water quality – There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Little Wall and Bacon Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate – There is likely to be a minor, temporary increase in substrate fine sediment in low velocity areas resulting from sediment delivery associated with the cattle stream crossings and watering areas. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Little Wall and Bacon Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients due to cattle waste; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by MCR steelhead will decrease slightly during grazing and up to 6 months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Little Wall and

Bacon Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

Freshwater migration corridors
Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Little Wall and Bacon Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Little Wall and Bacon Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

10) Two County Allotment

Freshwater spawning sites
Water quality – There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Holmes and Burnt Corral Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate – There is likely to be a minor, temporary increase in substrate fine sediment in low velocity areas resulting from sediment delivery associated with the cattle stream crossings and watering areas. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites
Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Holmes and Burnt Corral Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients due to cattle waste; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by MCR steelhead will decrease slightly during grazing and up to 6 months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Holmes and Burnt Corral Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

Freshwater migration corridors

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Holmes and Burnt Corral Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Holmes and Burnt Corral Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

11) Kinzua Allotment

Freshwater spawning sites

Regardless of season of livestock use, the following effects will apply.

Water quality – There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points during spring season grazing use and to a lesser extent during other grazing seasons along this reach of Squaw Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate – There is likely to be a minor, temporary increase in substrate fine sediment in low velocity areas resulting from sediment delivery associated with the cattle stream crossings and watering areas. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites

Regardless of season of livestock use, the following effects will apply.

Water quality –There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Squaw Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients due to cattle waste; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by MCR steelhead will decrease slightly during grazing and up to 6 months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Squaw Creek will grow back as soon as cattle are removed.

Freshwater migration corridors

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Squaw Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Squaw Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

12) Creek Allotment

Freshwater spawning sites
Regardless of season of livestock use, the following effects will apply.

Water quality – During spring season grazing, there will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points and to a lesser extent during fall season grazing use along Cottonwood Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Substrate – There is likely to be a minor, temporary increase in substrate fine sediment in low velocity areas resulting from sediment delivery associated with the cattle stream crossings and watering areas. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites
Regardless of season of livestock use, the following effects will apply.

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Cottonwood Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients due to cattle waste; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by MCR steelhead will decrease slightly during grazing and up to 6 months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Cottonwood Creek will grow back as soon as cattle are removed, and will continue to grow back the following spring so that habitat effects are no longer apparent by the start of the following grazing season.

Freshwater migration corridors

Water quality – There will be a minor, temporary decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along Cottonwood Creek. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure. There will be a slight increase in nutrients; however, impacts will be localized, and recovering riparian vegetation will function to trap and utilize nutrients deposited in riparian areas. In addition, flows will be higher during migration periods, so nutrients will be diluted.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to Cottonwood Creek will grow back as soon as cattle are removed.

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 Act.

The BLM did not identify any specific private or state actions that are reasonably certain to occur in the future that would affect MCR steelhead or their habitat within the action area. Significant improvement in MCR steelhead designated critical habitat and status outside of Federally-administered land is unlikely unless changes in grazing, agricultural, and other practices occur within these nonfederal riparian areas in the John Day River basin. NMFS is not aware of any specific future actions that are reasonably certain to occur on nonfederal lands. Until improvements in non-federal land management practices are actually implemented, NMFS assumes that future private and state actions will continue at similar intensities as in recent years.

Synthesis and Integration of Effects

The Integration and Synthesis section is the final step of NMFS' assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action to the environmental baseline and the cumulative effects to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) result in appreciable reductions in the likelihood of both survival and recovery of the species in the wild by reducing its numbers, reproduction, or distribution; or (2) reduce the value of designated or proposed critical habitat for the conservation of the species. These assessments are made in full consideration of the status of the species and critical habitat.

Species at the Population Scale

The John Day MPG includes the North Fork, Middle Fork, Upper, Lower, and South Fork. The population(s) affected by the proposed action(s) are the North Fork, Upper, and Lower. The

North Fork John Day population is currently the only population considered viable (ICTRT 2007a). All of the other populations are not currently viable but meet the definition of a 'maintained' population. This means that they have moderate risk for abundance and productivity and very low, low, or moderate risk for spatial structure and diversity (ICTRT 2007a).

A very small proportion of the total number of MCR steelhead individuals will be affected by the action. This is because: (1) The population is well distributed throughout its range; (2) cattle presence in and use of riparian areas will be low during MCR steelhead incubation periods (spring), due to high flows, cool temperatures, and high palatability of upland vegetation at those times, so the exposure will be limited to a short period a few times per day as cows cross and drink at established locations; (3) during hot or fall season grazing, MCR steelhead will be rearing and will leave the area if startled; (4) monitoring and associated adaptive management will ensure grazing impacts are minimized; (5) continued riparian improvement, as exhibited during recent past grazing, is expected to further limit cattle access to streams over time.

Utilizing conservative AUM calculations along with adaptive management to support achieving RMOs, the BLM will ensure cattle are moved prior to causing long-term riparian impacts. Those few fish or redds present will be exposed to additional stress caused by displacement, disturbance, reduced water quality and substrate deterioration, and slightly reduced overhead cover, primarily limited to the few access points or grazed areas anticipated to occur along streams within each allotment.

Any stress experienced by individuals is likely to be brief (minutes) and limited to once or twice a day for 1 month while cattle are in the allotment. The few individuals affected are likely to respond by moving upstream or downstream 20 or 30 feet, although some eggs or alevins will likely be destroyed if a redd is trampled, although a trampled redd is anticipated to occur infrequently. Thus, while a small number of juvenile steelhead are likely to be harmed or harassed by the proposed action, most are likely to recuperate quickly.

According to the BA, the Prineville District BLM has conducted spawning surveys yearly for the past 15 years and has not observed a redd that has been trampled.

Critical Habitat at the Watershed Scale

The effects of grazing on proposed critical habitat PCEs will be limited to small, localized, short-term turbidity increases when cattle cross or water from action area streams, water quality, forage, and natural cover impacts as a result of minor riparian vegetation utilization and less than 20% bank alteration. Although the substrate PCE for MCR steelhead will also be temporarily affected by redd trampling, this will only affect a very small area in any given season and will occur infrequently. Proposed grazing strategies and monitoring, conservative AUM calculations, and successful adaptive management all contribute to limiting the potential effects of the action on critical habitat PCEs to low levels. In the long term (years to decades), all critical habitat PCEs are expected to continue to improve since grazing is being implemented with closely monitored compliance and utilization data followed with subsequent adaptive management decisions that will continue allowing riparian vegetation and stream channels to recover to

appropriate conditions. Thus, the proposed action will allow for a gradual increase in the conservation value of critical habitat.

Conclusion

After reviewing the status of MCR steelhead and its designated critical habitat, the environmental baseline for the action area, the effects of grazing on all of the allotments, and cumulative effects, NMFS concludes that the proposed action is not likely to jeopardize the continued existence of MCR steelhead and is not likely to destroy or adversely modify designated critical habitat for MCR steelhead.

Incidental Take Statement

Section 9 of the ESA and Federal regulation 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 results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. For purposes of this consultation, we interpret "harass" to mean an intentional or negligent action that has the potential to injure an animal or disrupt its normal behaviors to a point where such behaviors are abandoned or significantly altered.[10] Section7(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 incidental take statement.

Amount or Extent of Take

The proposed grazing program will result in livestock entering streams to obtain water or move between grazing locations. The livestock will approach, enter, and walk in these streams at times when the streams will be used by adult MCR steelhead for migration and spawning, and by juveniles for rearing and migration. The MCR steelhead eggs and alevins will also be present in, or emerging from, spawning redds.

The NMFS predicts that take may occur in the form of harassment of MCR steelhead adults or juveniles when livestock enter the riparian area to cross or drink from a stream. In addition, MCR steelhead eggs, alevins, or both, are likely to be injured or killed by the trampling of livestock that are crossing or drinking from a stream at an access point. The intermittent nature

[10] NMFS has not adopted a regulatory definition of harassment under the ESA. The World English Dictionary defines harass as "to trouble, torment, or confuse by continual persistent attacks, questions, etc." The U.S. Fish and Wildlife Service defines "harass" in its regulations as:

> an intentional or negligent act or omission which creates 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 (50 CFR 17.3).

The interpretation we adopt in this consultation is consistent with our understanding of the dictionary definition of harass and is consistent with the U.S. Fish and Wildlife interpretation of the term.

of spawning activity in many tributaries within the action area, the limited access cattle have to these tributaries, and conservation measures built into the proposed action considerably limit the risk of redd trampling. Therefore, the amount of incidental take anticipated due to redd trampling for all authorized grazing is up to two redds per year. A trampled redd is a good indicator of the amount of incidental take because it can be measured in the field by visual observation, and a trampled redd is indicative of cattle presence in a stream and can be monitored. Redds, unlike individual fish, are stationary and retain evidence of trampling, while individual fish are mobile and unless disturbance is viewed when it occurs it is impossible to know if a fish has been disturbed by cattle at other times.

The habitat effects of the proposed action are expected to increase the likelihood that MCR steelhead will be injured or killed. However, the distribution and abundance of fish within the action area cannot be attributed entirely to habitat conditions, nor can NMFS precisely predict the number of fish that are reasonably certain to be injured or killed if their habitat is modified or degraded by the proposed action. This is because the distribution and abundance of fish that occur within an action area are affected by habitat quality, competition, predation, and the interaction of processes that influence genetic, population, and environmental characteristics. These biotic and environmental processes interact in ways that may be random or directional, and may operate across far broader temporal and spatial scales than are affected by the proposed action. In such circumstances, NMFS quantifies an extent of take as the spatial dimensions of habitats within which fish condition or behaviors will be adversely affected.

MCR steelhead are reasonably certain to be injured or killed, or the likelihood that they will be injured or killed will be increased by habitat effects of the proposed action in the following ways: (1) Egg-to-fry survival will be reduced by increased fine sediment deposited on spawning gravel; (2) juvenile foraging success will be reduced by loss of terrestrial insects and other aquatic food chain resources due to lost riparian vegetation and nutrient inputs; (3) juvenile predation rates will be increased by loss of hiding cover that would have been provided by riparian vegetation and banks; and (4) adults and juveniles will be displaced from preferred habitats by the physical presence of livestock and due to increased turbidity in the water column caused by trampling and vegetation removal.

Although habitat effects are likely to significantly impair essential behavior patterns, very few individual fish are expected to be impacted since the amount of habitat affected is limited. The incidental take will occur as a result of habitat effects manifested when up to 20% of the streambank is altered by hoof action, as measured using MIM protocol for each stream identified in the accompanying opinion likely occupied by MCR steelhead. Here, the best available indicator for the extent of take is the percent bank alteration as a result of hoof action because bank alteration is proportional to all of the habitat impacts, and because it is a standardized and repeatable measurement methodology.

In the accompanying opinion, NMFS determined that the proposed action is not likely to result in jeopardy to the species. The maximum extent of take that may occur by the proposed action through habitat effects is a measured 20% bank alteration. This extent of take is not coextensive with the proposed action, because grazing is not intended or expected to reach the specified extent of bank alteration. For each allotment, the proposed action includes a prescribed number

of cow/calf pairs with specific on and off dates. This specified amount of grazing is intended to achieve the BLM's objectives of allowing recovery of MCR steelhead and conservation of critical habitat. However, to ensure that recovery of MCR steelhead and conservation of critical habitat is achieved, grazing strategies will be reevaluated if RMOs are not met.

These indicators are triggers for reinitiation: More than two redds trampled per year within the CORA Upper John Day Grazing allotments or more than 20% of the streambank within a pasture being altered by hoof action for those streams identified in the accompanying opinion as likely occupied by MCR steelhead. Exceeding any of these limits will trigger the reinitiation provisions of this opinion.

Reasonable and Prudent Measures

The following measures are necessary and appropriate to minimize the impact of incidental take of listed species due to the proposed action:

The BLM shall:

1. Minimize incidental take by protecting the streambank from being altered by less than 20% hoof action.
2. Ensure completion of a monitoring and reporting program, to include monitoring for redd trampling, to confirm that the take exemption for the proposed action is not exceeded, and that the terms and conditions in this incidental take statement are effective in minimizing incidental take.

Terms and Conditions

The measures described below are non-discretionary, and must be undertaken by the BLM and, in relevant part, must become binding conditions of all permits issued to permittees for the exemption in section 7(o)(2) to apply. The BLM has a continuing duty to regulate the activity covered by this incidental take statement. If the BLM (1) fails to assume and implement the terms and conditions or, (2) fails to require a permittee to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the BLM must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement.

1. To implement reasonable and prudent measure #1 (take on MCR steelhead due to streambank alteration), the BLM shall:

    a. Consistently implement grazing-related standards and guidelines to achieve RMOs regarding bank stability, water temperature, large woody material, lower bank angle, width/depth ratio and other aquatic habitat parameters that may be affected by livestock grazing.

b. If current utilization standards are insufficient to prevent less than 50% unwanted browse of shrubs or keep bank alteration below 20%, change the utilization standard for that pasture to facilitate meeting allotment objectives.
c. Work with the Level 1 Team to develop implementation and effectiveness monitoring requirements for specific pasture units if needed.
d. Ensure that permit holders for Squaw Creek and Kinzua allotments are aware of BLM's resource objectives and the indicators BLM is concerned with (stubble height, woody utilization, and bank alteration).

2. To implement reasonable and prudent measure #2 (monitoring and reporting), the BLM shall ensure that the following monitoring information is collected and reported to NMFS:

a. Conduct one redd count per year, when redds are present and visible, to look for trampling on all allotments where livestock have access to redds. Conduct biweekly redd counts on two index reaches in areas where cattle have access to redds until cattle are removed from the area.
    i. Notify NMFS Eastern Oregon Branch Chief as soon as possible when 2 redds have been identified as trampled.
    ii. Meet with NMFS within 1 week of identifying 2 redds as being trampled to develop appropriate protective measures to incorporate which would prevent further take.
b. Continue surveying areas on allotments where MCR steelhead spawning may occur but has not been verified.
c. Maintain and ensure proper operation of all exclosure structures, such as fences, designed to protect MCR steelhead spawning and rearing.
d. Work with the Level 1 Team to develop implementation and effectiveness monitoring requirements for specific pastures as needed.
e. Carry out all proposed monitoring, including MIM monitoring for bank alteration.

f. Provide an end-of-year report to NMFS by December 1 of each year. The following shall be included in the report for each allotment:
    i. Actual authorized AUMs.
    ii. On-off dates.
    iii. Results from all monitoring identified as part of the proposed action, including upland photos, utilization, unauthorized use, riparian photos, riparian cover measurements, line-intercept measurements, 3x3 photo plots, and frequency plots.
    iv. Redd trampling monitoring results including number of redds and adult steelhead observed.
    v. Review of management and compliance successes and failures.
    vi. New habitat trend.
    vii. Compliance with each pertinent term and condition contained in this opinion.
    viii. Review of adequacy of monitoring program for determining habitat condition and trends.

ix. Management recommendations for subsequent years.
x. Multiple Indicator Monitoring data.

g. To submit the monitoring report, or to reinitiate consultation, contact:

Oregon State Habitat Office
National Marine Fisheries Service
Attn: 2010/00159
1201 NE Lloyd Blvd., Ste. 1100
Portland, OR 97232-2182

Conservation Recommendations

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

1. Review the range improvement budget annually, and give top priority to restoring riparian areas along streams containing MCR steelhead designated critical habitat by development of off-channel water sources and cattle exclusion devices including riparian fencing.
2. Review all allotments for opportunities to allow for rest of high-priority pastures. Using the results, reduce grazing impacts by making allotment management changes, such as more efficient grazing systems, restructured pasture boundaries, and increased numbers of pastures within an allotment.

Please notify NMFS if the BLM carries out any of these recommendations so that we will be kept informed of actions that are intended to improve the conservation of listed species or their designated critical habitats.

Reinitiation of Consultation

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

Failure to monitor may constitute a modification of the proposed action that affects listed species in a manner and to an extent not previously considered, thus requiring reinitiation.

To reinitiate consultation, contact the Oregon State Habitat Office of NMFS, and refer to NMFS consultation number 2010/00159. This consultation covers the described activities only through the end of calendar year 2015.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The consultation requirement of section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions, or proposed actions that may adversely affect EFH. Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitats, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside EFH, and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that may be taken by the action agency to conserve EFH.

The Pacific Fishery Management Council (PFMC) described and identified EFH for groundfish (PFMC 2006), coastal pelagic species (PFMC 1998), and Chinook salmon, coho salmon, and Puget Sound pink salmon (PFMC 1999). The proposed action and action area for this consultation are described in the Introduction to this document. The action area includes areas designated as EFH for various life-history stages of Chinook salmon (PFMC 1999).

Based on information provided by the action agency and the analysis of effects presented in the ESA portion of this document, NMFS concludes the effects on Chinook salmon EFH are the same as those for MCR steelhead designated critical habitat. These adverse effects are:

Freshwater spawning sites
Water quality – There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along streams in the action area. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring will ensure.

Substrate – There is likely to be a minor, short-term increase in substrate fine sediment resulting from sediment delivery associated with the cattle stream crossings and watering areas. There will also be a long-term reduction in sedimentation as riparian conditions continue to improve.

Freshwater rearing sites
Water quality – There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along streams in the action area. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure.

Forage – The minor, short-term increase in substrate fine sediment and reduced overhanging vegetation are likely to result in a slight reduction in macroinvertebrate prey items. There will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point. The vegetation immediately adjacent to streams in the action area will grow back as soon as cattle are removed, and will continue to grow back.

Freshwater migration corridors

Water quality – There will be a minor decrease in water quality associated with increased turbidity during high-flow periods downstream from cattle stream crossing and watering access points along streams in the action area. There will also be a long-term reduction in turbidity as riparian conditions continue to improve over time as past monitoring has indicated, and ongoing monitoring and associated adaptive management will ensure.

Forage – Productivity of terrestrial insects and organic material that makes up a significant part of the nutrient supply for the macroinvertebrates in the aquatic food chain of invertebrate prey species preferred by steelhead will decrease slightly during grazing and up to six months following grazing in proportion to the change in riparian vegetation, substrate, and water quality. However, there will also be a long-term increase in available forage with a reduction in sedimentation and an increase in riparian vegetation as riparian conditions continue to improve, as past monitoring has indicated is occurring. Ongoing monitoring and associated adaptive management will ensure that recovery is likely to continue.

Natural cover – There will be a slight, short-term (1 to 6 months) reduction in overhead vegetative cover at each access point and grazed riparian areas. The vegetation immediately adjacent to streams in the action area will grow back as soon as cattle are removed. The small and short-term nature of the reduction in riparian vegetation will not reduce the conservation value of the 5th field watersheds.

Essential Fish Habitat Conservation Recommendation

The following conservation measure is necessary to avoid, mitigate, or offset the impact of the proposed action on EFH. This conservation recommendation is a subset of the ESA terms and conditions.

1. To determine the level of EFH effects, the BLM should ensure that:

    a. Indirect riparian vegetation effects due to authorized livestock grazing do not exceed those described in this Opinion by consistently implementing grazing-related standards and guidelines to achieve RMOs regarding bank stability, water temperature, large woody material, pool frequency, lower bank angle, width/depth ratio and other aquatic habitat parameters which may be affected by livestock grazing.

Statutory Response Requirement

Federal agencies are required to provide a detailed written response to NMFS' EFH conservation recommendations within 30 days of receipt of these recommendations [16 U.S.C. 1855 (b)(4)(B)]. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse affects of the activity on EFH. If the response is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations. The reasons must include the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

Supplemental Consultation

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

DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

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

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

The Opinion in this document concludes that the proposed BLM Upper John Day River Basin Grazing Program from 2011 to 2015 will not jeopardize the affected listed species. Therefore, the BLM can authorize this action in accordance with its authority under the Federal Land Policy and Management Act of 1976. The intended users are the BLM and their permittee(s).

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

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

Objectivity:

Information Product Category: Natural Resource Plan.

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

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

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

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

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