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:
2011/05362

April 2, 2012

Teresa Raaf
U. S. Department of Agriculture
Malheur National Forest
P.O. Box 909
John Day, Oregon 97845

Re: Endangered Species Act Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for Administration of the Dark Canyon, Fawn Springs, Hanscomb, Dixie, Fields Peak, Roundtop, John Day, Beech Creek, Mt Vernon, Blue Mountain, Upper Middle Fork, Lower Middle Fork, Long Creek, Camp Creek, Slide Creek, York, Fox, Donaldson, Deer Creek, Indian Ridge, and Murderers Creek Allotments for 2012-2016 on the Malheur National Forest, North Fork John Day (HUC 17070202), Middle Fork John Day (HUC 17070203), and Upper John Day (HUC 17070201) Subbasins, Grant County, Oregon.

Dear Ms. Raaf:

The enclosed document contains a biological opinion (opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7(a)(2) of the Endangered Species Act (ESA) on the effects of administering grazing, as proposed, on the 21 above-referenced allotments during 2012-2016 on the Malheur National Forest under authority of the federal statutes and regulations identified in the Forest Service Manual at 2201.1.

In this opinion, NMFS concludes that the proposed action for the 21 allotments 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.

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 Federal action agency 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 the results of our analysis of the action's likely effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes three conservation recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. Two of these conservation recommendations are a subset of the ESA take statement's terms and conditions. Section 305(b)(4) (B) of the MSA requires Federal agencies to provide a detailed written response to NMFS within 30 days after receiving these recommendations.

If the response is inconsistent with the EFH conservation recommendations, the Federal action agency must explain why the recommendations will not be followed, including the scientific justification for any disagreements over the effects of the action and the recommendations. 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 request that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

Please direct questions regarding this opinion to Spencer Hovekamp, Branch Chief of the Eastern Oregon Branch Office, at 541.975.1835.

Sincerely,

for William W. Stelle, Jr.
Regional Administrator

cc: Robert Bruno, Confederated Tribes of the Warm Springs Reservation
Steve Christianson, BLM Prineville District
Gary Miller, US Fish and Wildlife Service

Endangered Species Act Biological Opinion
and
Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Response

for the

Administration of the Dark Canyon, Fawn Springs, Hanscomb, Dixie, Fields Peak, Roundtop, John Day, Beech Creek, Mt Vernon, Blue Mountain, Upper Middle Fork, Lower Middle Fork, Long Creek, Fox, Camp Creek, Slide Creek, York, Donaldson, Deer Creek Indian Ridge and Murderers Creek Allotments for 2012-2016
Malheur National Forest
North Fork John Day (HUC 17070202), Middle Fork John Day (HUC 17070203), and Upper John Day (HUC 17070201) Subbasins
Grant County, Oregon

NMFS Consultation Number: 2011/05362

Federal Action Agency: Malheur National Forest, U.S. Forest Service

Affected Species and Determinations:

ESA-Listed Species	ESA Status	Is the action likely to adversely affect this species or its critical habitat?	Is the Action likely to jeopardize this species?	Is the action likely to destroy or adversely modify critical habitat for this species?
Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*)	T	Yes	No	No

Fishery Management Plan that Describes EFH in the Action Area	Would the action adversely affect EFH?	Are EFH conservation recommendations provided?
Pacific Coast Salmon	Yes	Yes

Consultation
Conducted By: National Marine Fisheries Service
Northwest Region

Issued by: for Michael Tehan
William W. Stelle, Jr.
Regional Administrator

Date: April 2, 2012

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GLOSSARY

For purposes of this consultation –

Action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by a Federal action agency.

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.

Animal Unit Months (AUM) is the amount of forage needed by an "animal unit" (AU) grazing for one month. The quantity of forage needed is based on the cow's metabolic weight, and the animal unit is defined as one mature 1,000 pound cow and her suckling calf. It is assumed that such a cow nursing her calf will consume 26 pounds of dry matter (DM) of forage per day (20 lbs. for the cow and 6 lbs. for the calf).

Applicant means any person who requires formal approval, authorization, or funding from a Federal action agency as a prerequisite to conducting the action.

Bankfull discharge means the streamflow level when the water just begins to leave the channel and spread onto the floodplain; an event that returns approximately every 1.1 to 1.2 years in western Oregon, and every 2.6 years in eastern Oregon.

Bankfull elevation means the elevation at which a stream first reaches the top of its natural banks and overflows, and is indicated by the topographic break from a vertical bank to a flat floodplain or the topographic break from a steep slope to a gentle slope.

Bankfull width means the stream width measured perpendicular to stream flow between the bankfull elevations. Compare active channel width – because bankfull width is measured between bankfull elevations, it is typically wider than active channel width, which is measured between ordinary high water marks.

Channel-forming discharge means a theoretical streamflow which would result in channel morphology close to that of the existing channel.

Conserve, conserving, and conservation mean to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Federal Endangered Species Act are no longer necessary.

Conservation recommendation means a suggestion by NMFS regarding a discretionary measure to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information.

Critical habitat means any geographical area designated as critical habitat in CFR part 226.

Cumulative effects are those effects of future state or private activities, not involving Federal action, that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Design life means the projected life (in years) of a new structure or structural component under normal loading and environmental conditions before replacement or major rehabilitation is expected.

Designated Monitoring Area (DMA) for the purposes of multiple indicator monitoring protocol, is a permanently marked segment of stream that has been selected for monitoring. It refers to the specific sampling location that extends at least 110 m along the stream. Longer segments may be needed for monitoring larger streams (over 5.5 m greenline-to greenline width or GGW). For such streams, the DMA should be at least two meander wavelengths or approximately 20 times the GGW (Gordon et al. 2004). For example, a DMA on a stream segment with an average GGW of 8.3 m would be 8.3 m x 20, or 166 m in length.

Designated non-Federal representative means a person designated by the Federal action agency as its representative to conduct informal consultation and/or to prepare any biological assessment.

Effectively isolated from the active stream means an area that is inaccessible to fish and that cannot allow a visible release of pollutants or sediment into the water.

Effects of the action are 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.

Endangered species are in danger of extinction throughout all or a significant portion of its range.

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.

Fishery biologist means a person that has an ecological education, thorough knowledge of aquatic biology and fish management, and is professionally engaged in fish research or management activities; a supervisory fishery biologist is professionally responsible for the supervision of biologists and technical staff engaged in fish research or management.

Functional floodplain means an area that is interconnected with the main channel through physical and biological processes such as periodic inundation, the erosion, transport and deposition of bed materials, nutrient cycling, groundwater recharge, hyporheic flows, the production and transport of large wood, aquatic food webs, and fish life history. These processes interact to create and maintain geomorphic features such as alcoves, backwaters, backwater deposits, braided channels, flooded wetlands, groundwater channels, overflow channels, oxbows or oxbow lakes, point bars, ponds, side channels, and sloughs. These features may be difficult to

distinguish on smaller streams, where floodplain deposits are subject to rapid removal and alteration. These permanent or intermittent geomorphic features are extensions of the main stream channel and are critical to the survival and recovery of ESA-listed salmon and steelhead. The functional floodplain area is often assumed to be coincident with the flood prone area, if the entrenchment ratio is less than 2.2, or 2.2 times the active channel width if entrenchment ratio is greater than 2.2. This area may also be reduced by the presence of geomorphic features, flow regulation, or encroachment of built infrastructure.

Harm means 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.

Hazardous material means any chemical or substance which, if released into an aquatic habitat, could harm fish, including, but not limited to, petroleum products, radioactive material, chemical agents, and pesticides.

Incidental take means takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal action agency or applicant.

Indirect effects are caused by the proposed action and are later in time, but still are reasonably certain to occur.

Interdependent actions have no independent utility apart from the action under consideration.

Interdisciplinary Team is comprised of Forest Service resource specialists that represent potentially affected areas of a proposed action and can analyze the risks and benefits to resources and uses on the Forest.

Interrelated actions are part of a larger action and depend on the larger action for their justification.

In-water work includes any part of an action that occurs below ordinary high or within the wetted channel, *e.g.*, excavation of streambed materials, fish capture and removal, flow diversion, streambank protection, and work area isolation.

Jeopardize the continued existence of means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.

Large wood means a tree, log, rootwad, or engineered logjam that is large enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull channel width of the stream in or near which the wood occurs.

Listed species are any species of fish, wildlife, or plant which has been determined to be endangered or threatened under section 4 of the Federal Endangered Species Act.

A Major Spawning Area (MaSA) is an accumulation of spawning branches within a population with enough weighted habitat to support 500 spawners. A spawning branch is defined as a stream reach with enough habitat to support 50 spawners. MaSAs are an important habitat unit for assessing ecological complexity within populations, and for the spatial structure/diversity viability assessment.

Multiple Indicator Monitoring (MIM) is a system of measurement protocols designed to integrate annual grazing use indicators with long-term stream channel trend indicators to evaluate the effects of livestock grazing management on stream channel recovery.

Ordinary high water (OHW) elevation means the elevation to which the high water ordinarily rises annually in season, excluding exceptionally high water levels caused by large flood events. The ordinary high water elevation is typically below the bankfull elevation. The ordinary high water elevation is considered equivalent to the bankfull elevation if the ordinary high water lines are indeterminate.

PACFISH/INFISH Biological Opinion Effectiveness Monitoring Program (PIBO) is a monitoring program to determine whether the aquatic conservation strategies within PACFISH and INFISH, or revised land management plans, are effective in maintaining or restoring the structure and function of riparian and aquatic systems.

Primary constituent elements (PCEs) are the biological and physical features of critical habitat that are essential to the conservation of listed species.

Reasonable and prudent measures (RPM) are actions the NMFS believes necessary or appropriate to minimize the amount or extent of incidental take.

Recovery means an improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of the Federal Endangered Species Act.

Riparian Management Objectives describe good habitat metrics for anadromous fish and were developed from stream inventory data for pool frequency, large woody debris, bank stability, lower bank angle, and width to depth ratio.

Scope of the action means the range of actions and impacts to be considered in the analysis of effects.

Stream-floodplain corridor means the main stream channel and its functional floodplain.

Stream-floodplain system, see stream-floodplain corridor.

Streambank toe means the part of the streambank below ordinary high water.

Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Threatened species are likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Toe, see streambank toe.

Working adequately means erosion controls that do not allow ambient stream turbidity to increase by more than 10% above background 100 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity-causing activity.

List of Acronyms and Abbreviations

AR	At risk
ATV	All-terrain vehicle
AUM	Animal Unit Month
BA	Biological Assessment
BLM	Bureau of Land Management
BMP	Best Management Practice
BMRD	Blue Mountain Ranger District
C	Centigrade or Celsius
CFR	Code of Federal Regulations
CH	Critical habitat
CHART	Critical Habitat Analytical Review Team
CMZ	Channel migration zone
CTWSR	Confederated Tribes of the Warm Springs Reservation
DMA	Designated monitoring area
DPS	Distinct population segment
DQA	Data Quality Act
EFH	Essential Fish Habitat
EM	Effectiveness monitoring
EOY	End of year
ESA	Endangered Species Act
ESU	Evolutionarily significant unit
F	Fahrenheit
FLPMA	Federal Land Policy and Management Act
FR	Federal Register
FSH	Forest Service Handbook
FSR	Forest Service Road
GIS	Geographic information system
GL	Green line
HUC	Hydrologic unit code
IC	Interior Columbia
ICTRT	Interior Columbia Technical Review Team
IDT	Interdisciplinary team
IM	Implementation monitoring
IPCC	Intergovernmental Panel on Climate Change
ISAB	Independent Scientific Advisory Board
JDR	John Day River
LWD	Large woody debris
MCR	Middle Columbia River
MFJD	Middle Fork John Day
MFJDR	Middle Fork John Day River
MIM	Multiple indicator monitoring
mm	Millimeter

MNF	Malheur National Forest
MPG	Major population group
MPI	Matrix of pathways and indicators
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSRA	Most sensitive riparian area
NA or N/A	Not applicable
NFJD	North Fork John Day
NFJDR	North Fork John Day River
NM	Not monitored
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Agency
NPCC	Northwest Power and Conservation Council
NPF	Not properly functioning
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
OHW	Ordinary high water
PCE	Primary constituent element
PDC	Project design criteria
PF	Properly functioning
PIBO	PACFISH INFISH biological opinion
P.O.	Post office
RM	River mile
ROD	Record of decision
RPM	Reasonable and prudent measure
RTT	Regional technical team
SA	Streambank alteration
SFJD	South Fork John Day
SFJDR	South Fork John Day River
SH	Stubble height
TMDL	Total maximum daily load
TRT	Technical Review Team
UJD	Upper John Day
UJDR	Upper John Day River
U.S.	United States
U.S.C.	United States Code
USFWS	US Fish and Wildlife Service
USGCRP	US Global Change Research Program
VSP	Viable salmonid population
WB	Woody browse
W/D	Width to depth ratio

1. INTRODUCTION

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

1.1 Background

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

The NMFS also completed an Essential Fish Habitat (EFH) consultation. It was prepared in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801, *et seq*.) and implementing regulations at 50 CFR 600.

The opinion and EFH conservation recommendations are both in compliance with section 515 of the Treasury and General Government Appropriations Act of 2001 (Public Law 106-5444) ("Data Quality Act") and underwent pre-dissemination review.

1.2 Consultation History

On October 17, 2011, the National Marine Fisheries Service (NMFS) received a letter from the Malheur National Forest (MNF) requesting formal consultation on the effects of authorizing proposed grazing activities for 2012-2016 on Middle Columbia River (MCR) steelhead *(Oncorhynchus mykiss*) and designated critical habitat for MCR steelhead on five allotments (Murderers Creek, Fox, , Mt Vernon, John Day and Beech Creek) in the North Fork John Day (NFJD) (17070202) and Upper John Day (UJD) (17070201) 4th-field hydrologic unit codes (HUCs)[1] in Grant County, Oregon. On October 19, the NMFS received a second letter from the MNF requesting formal consultation on the effects of authorizing proposed grazing activities for 2012-2016 on MCR steelhead and designated critical habitat for MCR steelhead on 15 allotments (Blue Mountain, Camp Creek, Long Creek, Dixie, Roundtop, Dark Canyon, Fawn Springs, Hanscomb, Fields Peak, Upper Middle Fork, Lower Middle Fork, Slide, Donaldson, Deer Creek and York) in the NFJD (17070202), Middle Fork John Day (MFJD) (17070203), and UJD (17070201) 4th-field HUCs in Grant County Oregon. The accompanying biological assessment (BA) described proposed livestock grazing activities for 2012-2016 on the Blue Mountain Ranger District (BMRD) and Prairie City Ranger District, the environmental baseline, and the potential effects of those activities on MCR steelhead and designated critical habitat. On November 11, 2011, NMFS sent the MNF a letter stating that the BAs were complete and that formal consultation began on October 19, 2012.

On November 8, 2011, NMFS received a letter from the MNF regarding the McClellan and Indian Ridge allotments. The MNF had determined the McClellan allotment was not likely to adversely affect MCR steelhead and likely to adversely affect their critical habitat and the Indian Ridge allotment was likely to adversely affect MCR steelhead and likely to adversely affect their

[1] A description of the HUC labeling system can be found at: http://water.usgs.gov/GIS/huc.html.

critical habitat. After consultation was initiated, the MNF became aware of information causing them to change their effect determination for the McClellan allotment from likely to adversely affect to not likely to adversely affect for MCR steelhead and their critical habitat. The McClellan Allotment is addressed in a separate letter of concurrence. For the Indian Ridge allotment, the MNF changed their effect determination from likely to adversely affect critical habitat to not likely to adversely affect critical habitat because although the East Pasture of Indian Ridge Allotment is suspected to support MCR steelhead, there is no designated critical habitat within the allotment. Our concurrence with the determination for critical habitat for the Indian Ridge Allotment can be found in Section 2.11 of this opinion. The MNF included amended BAs with their letter.

The BAs and biological opinion follow the precedent set by the 2007 consultation on these activities and are for five years. On August 24, 2006, NMFS and the U.S. Fish and Wildlife Service (USFWS) sent a joint letter to the MNF Supervisor regarding the possibility of completing a 2-year and possibly 5-year consultation on the MNF grazing activities. On September 6, 2006, the MNF Supervisor responded to the August 24th joint letter expressing a preference to develop a consultation of 5 years in duration. NMFS, USFWS, and the MNF reached an agreement that the grazing consultation should be 5 years in duration, running from 2007 through 2011. NMFS subsequently issued a biological opinion for 13 grazing allotments and a letter of concurrence for nine grazing allotments on the MNF on May 23, 2007, and May 7, 2007, respectively.

For the past 5 years, NMFS has worked closely with the MNF to minimize adverse effects of MNF livestock grazing activities on MCR steelhead and their habitat in the NFJD, MFJD, and UJD River subbasins. Numerous meetings were held with the MNF Interagency Level 1 Streamlining Team (Level 1 Team), MNF range staff, biologists, and grazing permittees to review implementation monitoring results and troubleshoot problems that led to pasture endpoint exceedences.

Six opinions have been completed to date regarding grazing on the MNF (refer to NMFS Nos.: 2007/01290, 2006/01337, 2005/05693, 2004/00610, 2003/00610, and 2002/00510). A letter of concurrence was completed for the 2006 grazing season for allotments that were not likely to adversely affect (NLAA) MCR steelhead or their designated critical habitat. A letter of concurrence (refer to NMFS No.: 2007/01239) was issued to the MNF on May 7, 2007, for grazing on nine allotments determined to be NLAA MCR steelhead or designated critical habitat. A letter of concurrence will be issued concurrent with this opinion for ten allotments determined to be NLAA MCR steelhead or designated critical habitat. Prior to 2006, NMFS provided concurrence with NLAA determinations within the opinions.

Over the past 3 years, the MNF refined the monitoring and adaptive management strategy designed to support grazing management decisions. For 2012-2016, in addition to pre-turnout spawning surveys on 20% of the MCR steelhead critical habitat in each allotment, the monitoring strategy added spawning surveys at 100% of stream sections designated “most sensitive riparian areas” (MSRA) where stream channel and habitat conditions are particularly well suited for MCR steelhead spawning. When surveys locate spawners or redds, permittees will be notified by phone with specific protective measures to protect the redds. Move triggers

and implementation monitoring endpoints were set at more restrictive levels in pastures containing streams with MSRA to provide increased protection to rearing juveniles and riparian habitat. MNF added the requirement for pre-turnout bank alteration monitoring in the Murderers Creek Allotment pastures to measure bank alteration from wild ungulates and horses and determine if streambanks had the capacity for additional bank alteration from livestock. The adaptive management strategy now provides permittees with the exact interim administrative response for each level of streambank alteration exceedance and has provisions to adjust grazing strategies as effectiveness monitoring data reveals riparian recovery trends.

The BA prepared by the MNF for the 2012–2016 grazing program continued the improvements reflected in 2007 BA, providing significantly more information regarding the subject allotments than BAs submitted for previous years. Existing riparian and stream channel conditions were described in detail. All historic data from stream surveys and temperature monitoring sites were provided as appendices. Implementation monitoring data and the cause of endpoint exceedances were summarized and discussed in the BA. Effectiveness monitoring data and some preliminary analysis by effectiveness monitoring (EM) researchers was also provided in the BA. Conservation measures for specific allotments and units were provided, when appropriate, including the many improvements that have been made since 2007, and detailed rationale for the effects determination was provided.

On February 6, 2012, NMFS contacted the MNF to clarify elements of the proposed action. Specifically, we requested clarification regarding the: (1) MNF's adaptive management process; (2) monitoring accomplished in 2009, 2010, and 2011; (3) the proposed monitoring strategy for 2012-2016; (4) locations within pastures where implementation monitoring will occur; (5) stubble height move triggers associated with 4- and 6-inch stubble height endpoint indicators.

On February 13, 2012, the MNF responded with additional information in response to the requested clarifications.

On February 13, 2012, NMFS contacted the MNF to clarify which project design criteria applied to which allotments. Several BAs contain language indicating that the following design criterion, "All pastures will be monitored prior to turnout. If endpoint indicators are at or within proximity to allowable use, cattle will not be allowed to turnout or will be moved to the next pasture" would be applied to allotments addressed in that BA. Based on previous conversations with the MNF, NMFS believed that the MNF intended this criterion to apply only to the Murderers Creek allotment. The MNF confirmed by email that this criterion only applied to the Murderers Creek allotment.[2]

On February 16, 2012, NMFS sent a draft biological opinion to the MNF for their review and comment. Consistent with the order of the Oregon District Court dated January 4, 2012, the draft opinion was transmitted to the permittees and the Oregon Natural Desert Association. Consistent with the *Secretarial Order: American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act* (June 5, 1997), we provided a draft to the Confederated Tribes of the Warm Springs Reservation for their review and comment. On March

[2] Email of February 13, 2012 from Steve Namitz, MNF, to Spencer Hovekamp, NMFS, clarify the application of this project design criterion.

8 and 9, 2012, we received comments from the MNF, the permittees, the Oregon Natural Desert Association, and the Confederated Tribes of the Warm Springs Reservation. Several edits and revisions were made to the opinion in response to the comments provided. We have also included a detailed response to the comments in the Appendix of this opinion.

Based on the BA, other supporting materials, and the recent clarification from the MNF, NMFS is confident that the MNF will ensure that the various conservation measures described as part of the proposed action, including end point indicators and implementation monitoring, will be carried out as described. To the extent resource conditions arise on particular allotments from non-compliance, wildlife, *etc*., the MNF has documented a serious commitment to addressing such issues with responses that address and minimize adverse effects to MCR steelhead and critical habitat. The MNF's proposed action and commitment to follow through on the action combined with existing information from effectiveness monitoring provide NMFS with assurance that long-term improvements in riparian habitat conditions on the allotments are expected to continue as detailed in NMFS' effects analysis below.

1.3 Proposed Action

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies. 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.

MNF proposes to authorize grazing annually for 30 permits on 21 allotments for the 2012 through 2016 grazing seasons pursuant to the Taylor Grazing Act of 1934 and Section 402 of the Federal Land Policy and Management Act (FLPMA) of 1976.

The number of cow/calf pairs, allotment on-off dates and animal unit months (AUM) for each permit stratified by MCR steelhead population are listed in Table 1.

Table 1. Summary of Grazing Strategies Proposed by the MNF for Allotments Addressed by this Opinion

Population	Allotment	Permit	Cow /calf	On	Off	AUM	Permit Expiration
UJDR	Dark Canyon	01846	194	1-Jun	30-Oct	1297	12/31/2016
	Fawn Springs	01706	107	1-Jun	15-Oct	636	12/31/2014
	Hanscomb	01845	121	1-Jun	15-Oct	719	12/31/2016
UJDR SFJDR	Fields Peak	01845	240	15-Jun	15-Oct	1437	12/31/2016
	Dixie	01823	173	1-Jun	15-Oct	1028	12/31/2015
	Roundtop	01727A	200	1-Jun	30-Sep	1059	12/31/2019
	John Day	01786	177	11-Jun	25-Oct	1052	12/31/2013
	Beech	01786	35	15-May	30-Nov	304	12/31/2013
	Mt Vernon	01786	50	11-Jun	5-Oct	254	12/31/2013
		01787	269	11-Jun	5-Oct	1366	12/31/2013
UJDR MFJDR NFJDR	Fox	01784	95	11-Jun	30-Sep	462	12/31/2013
		01716A	110	11-Jun	30-Sep	535	12/31/2018
		01723A	15	11-Jun	30-Sep	73	12/31/2018
		01717A	73	11-Jun	30-Sep	355	12/31/2018
MFJDR	Blue Mountain	01783	163	16-Jun	9-Oct	821	12/31/2014
	Upper Middle Fork	01807	485	1-Jun	15-Oct	2883	12/31/2014
	Lower Middle Fork	01807	209	1-Jun	31-Oct	1387	12/31/2014
		01825	190	1-Jun	15-Oct	1262	12/31/2015
		01728A	150	1-Jun	15-Oct	997	12/31/2019
	Long Creek	01718A	219	1-Jun	15-Oct	1302	12/31/2018
		01790	361	1-Jun	15-Oct	2146	12/31/2013
		01857	306	1-Jun	15-Oct	1819	12/31/2016
		01831	81	1-Jun	15-Oct	482	12/31/2015
	Camp Creek	01783	50	1-Jun	30-Oct	330	12/31/2013
	Slide Creek	01790	546	1-Jun	15-Oct	3246	12/31/2013
		01856	61	1-Jun	15-Oct	363	12/31/2016
		01744A	170	1-Jun	15-Oct	1011	12/13/2020
	York	01760	12	1-Jun	31 0ct	79	12/31/2012
SFJDR	Murderers Creek	Lazy H	175	16-May	15-Oct	1162	12/31/2018
		604010002	400	1-Jun	15 Oct	1857	12/31/2019
		604010002	300	1-Jul	15-Oct	929	12/31/2019
		604010001	400			1857	12/31/2019
NFJDR	Donaldson	01717A	100	15-Jun	30-Oct	599	12/31/2018
	Deer Creek	01717A	88	11-Jun	15-Sep	371	12/31/2018
	Indian Ridge	01829	94	11-Jun	15-Sep	396	12/31/2015

1.3.1 Information Common to All Allotments

The Malheur National Forest strives to provide layers of protection to MCR steelhead from the effects of grazing through grazing strategies, pasture move triggers, the designation of most sensitive riparian areas (MSRAs), monitoring, adaptive management and project design criteria.

Grazing Strategies. Grazing Strategies for each allotment stratified by MCR steelhead population are summarized in Table 2.

Table 2. Grazing Strategy for Each Allotment

MCR Steelhead Population	Allotment	Permit	System
UJDR	Dark Canyon	01846	Deferred rotation
	Fawn Springs	01706	Deferred rotation
	Hanscomb	01845	Deferred rest rotation
UJDR SFJDR	Fields Peak	01845	Deferred rest rotation
	Dixie	01823	Rest rotation
	Roundtop	01727A	Deferred rotation
	John Day	01786	Deferred rotation
	Beech	01786	On/Off
	Mt Vernon	01786	Deferred rotation
		01787	
UJDR MFJDR NFJDR	Fox	01784	Deferred rotation
		01716A	
		01723A	
		01717A	
	Indian Ridge	01829	Deferred Rotation
MFJDR	Blue Mountain	01783	Emergency (Rest rotation)
	Upper Middle Fork	01807	Deferred rotation
	Lower Middle Fork	01807	Deferred rotation
		01825	Deferred rotation
		01728A	Deferred rotation
	Long Creek	01718A	Deferred rotation
		01790	
		01857	
		01831	
	Camp Creek	01783	Note 1
	Slide Creek	01790	Deferred Rotation
		01856	
		01744A	
	York	01760	On/Off
SFJDR	Murderers Creek	Lazy H	Deferred rotation
		604010002	
		604010002	
		604010001	
NFJDR	Donaldson	01717A	Deferred Rotation
	Deer Creek	01717A	Rest rotation

Note 1: On the Camp Creek Allotment the Lower pasture will be used early in the grazing season to allow for continued riparian shrub recovery. Beginning in 2012 the Campground pasture will not be grazed as part of the annual authorization. Cattle will only be driven through to access and leave the Upper Camp pasture.

A rest-rotation grazing system will graze a prescribed number of livestock through a series of pastures for a season while deferring grazing on other pastures. Rest-rotation distributes the early season and late season effects among the pastures and provides a full season of rest for each

pasture over time. A deferred rotation grazing system provides for a systematic rotation of pastures in which grazing is either delayed or discontinued to provide for plant reproduction, establishment of new plants or restoration of the vigor of existing plants. One or more pastures are grazed during the spring while the remaining pastures are rested until after seed ripening of key species and then grazed. Deferred rotation grazing differs from rest rotation grazing in that no yearlong rest is provided but early season and late season effects are distributed among the pastures over time. A deferred grazing system is similar to deferred rotation except the pastures in the allotment are not systematically rotated. Under this system, grazing would begin after key plants have reached an advanced stage of development in their annual growth cycle. The growing season rest provided by this system promotes plant reproduction, establishment of new plants, or restoration of the vigor of old plants. Alternate grazing is grazing by livestock every other season, with the area being rested in the alternate year. Short duration, high intensity grazing permits higher stocking rate than what would be considered normal. The purpose of this type of system is to obtain uniform use of all plants, desirable and undesirable alike, and to prevent regrazing on regrowth of the most desirable plants. This system allows desirable plants to compete for nutrients on an equal basis with less desirable plants. Emergency grazing allows the allotment to be used in a case-by-case base after its readiness has been assessed by the MNF inter-disciplinary team (IDT). On/Off permits are issued when a minor portion, usually less than 1/3, of a logical grazing area is composed of NFS lands. The intent is to promote efficient use of intermingled ownership, while at the same time achieving desired conditions of NFS lands. Under an On/Off permit the management of private lands is not waived to the Forest Service.

Move Triggers. Move triggers are assigned to each pasture as shown in Table 3. When pastures contain Most Sensitive Riparian Areas (MSRA) as described below, move triggers are adjusted from these values.

Table 3. Move Triggers Assigned to Each Pasture

	Browse Trigger (%)	**Browse Endpoint (%)**	**Greenline Stubble Trigger (in)**	**Greenline Stubble Endpoint (in)**	**Streambank Alteration Trigger (%)**	**Streambank Alteration Endpoint (%)**
Early Season	40	50	5	4	15	20
Mid to Late Season	30	40	7	6	15	20

Move triggers and corresponding end-point indicators are developed to suit conditions on each allotment and are based on timing, intensity, frequency, duration of use, and site-specific conditions. Move triggers for all units in all allotments consist of greenline stubble height, bank alteration, shrub use, and upland percent forage utilization. Cattle will be moved as soon as any one of the move triggers is reached. If all move triggers are not met by the expected off date, the permittee may request a stay for additional use. The Forest Service will visually inspect riparian livestock use in each pasture containing steelhead critical habitat near the mid-point of the grazing rotation for that pasture and will conduct applicable Multiple Indicator Monitoring (MIM) on any such pasture where it appears that riparian conditions are approaching one or

more move triggers or end point indicators. Move triggers are designed to ensure that endpoint indicators are not exceeded. The relationship between move triggers and the protection of MCR steelhead and their critical habitat is based on monitoring, knowledge of the site, and current literature.

Both stubble heights and percent utilization measurements will continue to be used to evaluate use on herbaceous hydrophytic riparian species. Where height-weight curves have been developed they will be used to determine when cattle should be moved. However, since height-weight curves are not available for all allotments, this analysis will focus on the 4- and 6-inch stubble height end-point indicators, particularly since stubble heights resulting from the height-weight curves are generally greater than the 4- and 6-inch stubble heights. Stubble heights are particularly useful as move triggers since they are effective and easy to ascertain for both the lay person and the professional. In order to ensure that 4- and 6-inch stubble height end-point indicators will be met, the MNF is implementing move triggers of 5-inch stubble height when the end-point indicator is a 4-inch stubble height and 7-inch stubble height when the end-point indicator is a 6-inch stubble height.

All of the allotments contain a bank alteration move trigger of 15% and end-point indicator of 20% except pastures that contain most sensitive riparian area (MSRA) designated streams (see next section). Pastures with MSRA have a streambank alteration move trigger of 10% and streambank alteration endpoint of 15%. Bank alteration will be measured by MNF staff using the method outlined in Burton *et al*. (2011). Bank alteration will be measured 20 centimeters (cm) on each side of the greenline, and it constitutes the percent of linear streambank length altered by large herbivore hooves (Burton *et al.* 2011). Bank alteration[3] occurs when cattle walk on the streambank and their hoof prints expose at least 12 millimeters (mm) (about ½ inch) of bare soil, their hooves break vegetation and leave a hoof print at least 12 mm deep, or they compact soil by walking over the same area repeatedly even if their hooves displace or sink into the soil less than 12 mm. Linear amount of broken streambank resulting from hoof shearing is also considered bank alteration (Burton *et al*. 2011).

When 20% of a streambank is altered, some soil is exposed to erosion. However, vegetative cover is still present over much of the altered area and continues to protect against surface erosion. Repeat photos taken along East Fork Deer Creek in the Hamilton Allotment found that documented bank alteration had essentially healed by the start of the following grazing season. 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. Cowley (2002) and Cowley and Burton (2002) note that deep-rooted species such as sedges (*Carex* spp.) and rushes (*Juncus* spp.) are capable of supporting the weight of livestock with little or no damage, except under extremely wet conditions.

[3] Bank alteration includes disturbance by cattle hooves meeting the criteria described in the text. Bank stability on the other hand looks at portions of the bank immediately contributing sediment to the channel, regardless of the cause of the disturbance. According to Burton et al. (2011) streambanks are considered unstable if obvious blocks of streambank have broken away, banks are slumping, banks are sheared by animal hooves, banks are fractured, banks are vertical and eroding, or the bank is a depositional bar with <50% ground cover.

The MNF proposes to use the MIM protocol to monitor streambank alteration. The BA states that recent research (Heitke *et al*. 2008) has shown that methods for evaluating bank alteration similar to the MIM protocol consistently overestimate the true amount of streambank alteration (Heitke *et al*. 2008). The authors of the MIM protocol discussed this issue in the recently released 2011 MIM Technical Guide and acknowledged that the MIM protocol "is not a measure of the percent of the area of streambank altered, but rather an estimate of the percent of the length of bank altered along the greenline." They tried to assess the magnitude of potential overestimation and concluded that "the MIM protocol tends to overestimate plot area, but more closely estimates length of the greenline altered" (BA Appendix D). The use of this protocol does not put MCR steelhead or their habitat at greater risk, because there is no research that has suggested it underestimates streambank alteration; rather, some limited research indicates it may tend to overestimate the amount of streambank alteration. Any management action resulting from potential overestimate gives the benefit of the doubt to the species. However, to date, research has not identified a precise and consistent measurement bias, nor has the research provided a useful alternative measurement methodology.

The MNF provides a thorough discussion of the use of the MIM protocol in Appendix D to the BA. For the reasons stated in Appendix D, the MNF will continue to use the MIM protocol for measuring bank alteration. The MNF may adopt an alternative methodology during the term of this opinion if it is approved by the Forest Service Regional Office as scientifically justified and the MNF Supervisor is certain that MNF staff are adequately trained and equipped to reliably perform such new method.

Permittees are responsible for moving cattle out of a unit by the time move triggers are reached. Permittees are also responsible to ensure that end-point indicators are met. The MNF staff will conduct monitoring on an annual basis and notify permittees if move triggers are approached.

Most Sensitive Riparian Areas. Most sensitive riparian areas (MSRA) have been designated for streams in some allotment pastures. Streams with MSRA are listed in Table 4.

Table 4. Pastures with MSRAs by Allotment and MCR Steelhead Population Affected

MCR Steelhead Population	Allotment	Pastures containing MSRA
UJDR	Dark Canyon	Canyon Creek, 15 Road
	Fawn Springs	G4, Lake
	Hanscomb	Laycock
UJDR SFJDR	Fields Peak	North Murderers Creek, Murderers Creek, Tex Creek, Miners Creek, Fields Peak
	Dixie	Bear Creek
	Roundtop	Tinker Creek, Beech Creek, Grub
	John Day	Lower Ennis Creek, Lower McClellan
	Beech	Beef, Paterson
	Mt Vernon	Belshaw Riparian
UJDR MFJDR NFJDR	Fox	South Fork, Lower Fox
MFJDR	Blue Mountain	West Summit, Crawford Creek, Squaw, East Summit, Idaho Creek
	Upper Middle Fork	Butte, Tin Cup Riparian, Caribou, Deerhorn, Lower Vinegar
	Lower Middle Fork	Granite Boulder, Pizer
	Long Creek	Ladd, Flat Camp, Flood Meadow, Camp riparian, Lick Creek, Lick Creek Riparian, Coxie Creek
	Camp Creek	Lower Camp Creek, Middle Camp Creek, Campground
	Slide Creek	Slide Creek Riparian
	York	Slide
SFJDR	Murderers Creek	Martins Corrals, Young Cow Camp, John Young Meadow, Frenchy Butte, Deer Creek, Oregon Mine, Blue Ridge, Horse Mountain, Murderers Creek, Dans Creek
NFJDR	Donaldson	Glade Pasture
	Deer Creek	Deer Creek

MNF designated portions of critical habitat in allotment pastures as MSRA to recognize that the parts of a stream that are most likely to be used as spawning and early rearing habitat are predictable and merit additional layers of protection from livestock grazing. The protocol for selection of MSRA was provided in the BA Appendix G. Briefly, the MNF identified streams in unconfined open meadow reaches in allotments with gradient less than 4% that were Rosgen C and E channels and had riparian zones particularly attractive to grazing livestock seeking water and shade. This set of streams was analyzed with the Intrinsic Potential Model (Sheer 2008) that was used in the MCR steelhead recovery plan to identify potential and current spawning areas and high quality rearing areas for MCR steelhead using topographic and climatic features to rank

stream reaches. The model predictions were verified with the location of ODFW index spawning reaches and validated, adjusted or rejected by range, hydrology and fisheries staff if spawning surveys do not confirm intrinsic potential or if cattle already don't have access.

MCR steelhead protection measures in MSRA-designated streams include:

1. MRSAs were originally developed in 2009 for 10 livestock allotments on the Blue Mountain RD. The concept has been adopted by the MNF and applied to all BMRD 2012-16 grazing allotment BAs including the 21 livestock allotments with LAA determinations. Since the 2009 grazing season, numerous fencing projects have been completed that either exclude livestock from MSRAs and other critical habitat, or protect critical habitat by creating new pastures. These newly installed protection measures have made it easier for the Forest Service to ensure that grazing complies with all standards and objectives.

2. Steelhead spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30. Of the remaining critical habitat reaches, 20% will be randomly surveyed for redds where turn out is prior to June 30. Where there is significant risk for redd trampling, the Forest and permittees will utilize a number of tools to protect redds, which include but are not limited to: alternative rotation, rest, exclusion with water gaps, temporary electric fences, additional riding.

3. In MSRA-designated pastures, the streambank alteration move trigger and endpoint are 10% and 15% respectively. More stringent move triggers require that livestock move to the next pasture earlier and reduce the probability that endpoint indicators will be exceeded. Permittees can have the streambank alteration endpoint in a MSRA pasture increased to 20% if they institute a rest rotation or double rest rotation grazing strategy or build corridor fencing around MSRA critical habitat. Alternatively, the permittee can have the streambank alteration endpoint increased to 20% if they use a full time rider, isolate MSRA with electric fence, use low stress stockmanship, place low moisture nutrient supplement blocks in uplands, or use the pasture for less than 21 days grazing duration during the hot season, if approved by the MNF IDT.

Monitoring. Monitoring is divided into: (1) Move trigger monitoring; (2) implementation monitoring; and (3) effectiveness monitoring. Monitoring data will be collected by MNF staff and permittees. Mid-season monitoring will sometimes be visual but if parameters appear to be approaching the move trigger, quantitative data will be collected using MIM.

The MNF's riparian monitoring strategy compares recovered conditions for riparian communities and channel morphology to current baseline data and is utilized to develop management strategies that will move parameters in an upward trend. Values have been adjusted as more site-specific information is gathered for streams in each allotment

Designated monitoring areas (DMAs)[4] have been established in most allotments. Move trigger, implementation, and effectiveness monitoring is completed at DMAs. In allotments where appropriate conditions for establishing DMAs are not present, key areas or other suitable locations have been or will be identified where move trigger, implementation, and effectiveness monitoring occur. Move triggers are monitored by permittees and MNF staff.

The Forest Service will visually inspect riparian livestock use in each pasture containing steelhead critical habitat near the mid-point of the grazing rotation for that pasture, and will conduct applicable Multiple Indicator Monitoring (MIM) on any such pasture where it appears that riparian conditions are approaching one or more move triggers or end-point indicators. Any pasture containing MSRA grazed longer than 30 days from mid-August through September, or October will have at least one additional in-season field compliance check. A combination of spawning surveys/redd protection measures, range readiness inspections, mid-season monitoring, and routine permit administration compliance checks are sufficient to ensure compliance with endpoint standards.

Frequency of inspections or checks will be adjusted during the course of the grazing season and determined by the resources of concern, length of grazing season, past compliance history, sensitivity of habitats to livestock grazing, and the conditions observed throughout the season. In addition, should standards be exceeded the Forest Service and permittee will implement changes to the grazing strategy with adaptive management tools. Some of the adaptive management tools implemented in past grazing seasons (*i.e*., electric fencing, additional herding/riding, salt placement) will be used in future seasons to provide for greater management flexibility and to protect sensitive resources (plant and animal). These tools and many others are an integral part of the Blue Mountain Range program and will be implemented as situations arise based upon need and the circumstances of each individual situation.

End of Season Monitoring has been prioritized based upon grazed pastures and the presence of MSRAs and critical habitat. Pastures containing MSRA are given Priority 1 in the scheduling of end of season monitoring. Pastures that do not contain a MSRA but still have MCR steelhead critical habitat are Priority 2 for scheduling. Pastures that do not support MCR steelhead or their habitat but contain riparian resources are Priority 3 and those pastures without and streams or riparian are Priority 4. Two allotments have a pasture with either the suspected occurrence of MCR steelhead or its designated critical habitat, but do not have any MSRAs due to the low intrinsic potential of the habitat. The Fawn Springs Allotment contains one pasture (Lake) with critical habitat (Priority 2). When the Lake Pasture is grazed end of season monitoring will be conducted. Also the East Pasture (Priority 3) of the Indian Ridge Allotment is suspected to support MCR steelhead, however there is no designated critical habitat. When the East Pasture is grazed, end of season monitoring will be conducted. For more detail re MNF's implementation monitoring, see the MNF Clarifications Memo dated February 10, 2012.

Effectiveness (riparian objective) monitoring is designed to address the question of whether or not management practices currently applied to the area are achieving the desired results. These procedures are designed to assess the current condition and measure changes in streambanks,

[4]Selecting Designated Monitoring Area (DMA) Power Point presentation from the PACFISH/INFISH website: http://www.fs.fed.us/rm/boise/research/techtrans/projects/pacfish/06_SELECTING%20THE%20DMA.ppt#288,30,

channels, and streamside vegetation over time, *i.e.*, trend. They help determine if local livestock grazing management strategies and other land management actions are making progress toward achieving the long-term goals and objectives for streamside riparian vegetation and aquatic resources. The goal is to conduct effectiveness monitoring every three to five years on riparian areas and streambanks. This period of time is considered to be the minimum necessary to detect changes, although unusually wet years and/or flood events may result in short-term changes that validate the need to monitor more frequently, or at least at the time of the event. Budget and personnel constraints may limit the extent in which monitoring of this type will be conducted.

Presently, effectiveness monitoring includes: modified greenline composition (adapted from Winward 2000 and BLM 1996), woody species height class (Kershner *et al*. 2004), streambank stability and cover (adapted from Kershner *et al*. 2004), woody species age class (adapted from Winward 2000), greenline-to-greenline width (Burton *et al*. 2008), substrate (Bunte and Abt 2001), and residual pool depth and pool frequency (Lisle 1987). These provide data and information concerning the present conditions and trend of riparian vegetation, channels, and streambanks, and to help determine if aquatic systems are being degraded, maintained, or restored across the Malheur National Forest. See website (http://www.fs.fed.us/biology/fishecology/emp/) for PIBO data and sampling procedures used.

Forest Service Region 6 Level II Stream Inventory Surveys generate comparable baseline information on conditions of fish-bearing streams to support a variety of management activities. As inventories are completed and repeated over time, the information generated by them can be useful in measuring changes in stream channel conditions and determining attainment of habitat management objectives. The Level II inventory generates quantitative measurements and estimates of channel conditions and habitat attributes, including core attributes of streamflow, temperature, substrate composition, width/depth ratio, channel length and sinuosity, gradient, pool frequency, large wood, bank stability, and special habitats. Numerous non-core optional attributes may also be evaluated based on MNF needs, such as stream shading and overstory/understory vegetation. The MNF goal is to inventory 10% of fish-bearing streams per year, inferring a 10-year re-inventory recurrence interval.

Adaptive Management. Adaptive Management is designed to provide the MNF the ability to make management decisions based on new information, changing conditions, or the results of implementation/effectiveness monitoring. Adaptive management will be used to ensure: (1) Sites at desired condition remain in desired condition; (2) sites not in desired condition have an upward trend; and (3) direction from consultation with the Services is met.

When the annual utilization data is collected at the end of the growing season, the MNF will consider adjustments of livestock numbers, timing of grazing, and duration of grazing. The MNF may choose to rest the pasture or allotment. However, when annual utilization data is collected at the beginning of a grazing period (*e.g.*, based on substantial historical pre-turnout use by wild horses or big game) and utilization is already about to exceed or already exceeding standards, livestock would not be allowed into the pasture.

Streambank alteration resulting from wild ungulates or unauthorized use in a pasture grazed by the permittee is added to the streambank alteration from the permittees livestock for adaptive

management actions. Through the annual allotment grazing strategies or authorization letters, the MNF shall apply the following interim measures to pastures during the subsequent grazing season to address streambank alteration exceedance as part of the Forest annual adaptive management strategy. Streambank alteration exceedences may also trigger evaluation of the term permit as part of the Forest long-term adaptive management strategy.

Whenever bank alteration is determined to be 1 to 6% in excess of the endpoint indicator, the permittee shall be contacted to plan remedial action. A letter shall be sent to the permittee, with copy to NMFS, documenting the remedial action plan in detail.

Whenever bank alteration is measured at 7 to 13% in excess of the endpoint indicator, MNF shall issue a notice of non-compliance including a remedy order, with copy to NMFS. If the non-compliance occurs a second time on the same pasture within the five-year term of this opinion, the MNF shall reduce authorized AUMs by not less than 25% or rest the pasture for at least one year.

Whenever bank alteration is measured at 14 to 20% in excess of the endpoint indicator, MNF shall issue a notice of non-compliance including a remedy order, with copy to NMFS, and shall rest the pasture for at least one year or reduce authorized AUMs by not less than 25% for not less than one year.

Whenever bank alteration is measured at 21% or more above the endpoint indicator, the MNF shall issue a notice of non-compliance including a remedy order, with copy to NMFS. The MNF shall rest the pasture for at least one year and shall reduce authorized AUMs by not less than 25% for a subsequent one year.

Recurring non-compliance may lead to suspension of AUMs and/or the cancellation in part or whole of the Term Grazing Permit. Permit action involving the suspension or cancelation of grazing permits as per direction outlined in FSH 2209.13, 10, 16.2 and 36 CFR 222.4.

Under existing Forest Service statutes and regulations, the MNF has full authority to ensure compliance with allotment conservation measures. Consistent with this authority, the MNF will hold permittees accountable for compliance with the requirements of their grazing permits and annual instructions.

Project Design Criteria. The following project design criteria (PDC) will be used to minimize or eliminate adverse effects of grazing on MCR steelhead, and designated critical habitat. The MNF regards these PDC as integral components of the proposed action and expects that all proposed project activities will be completed consistent with those measures.

1. Management will be framed in a manner that will allow managers to manipulate grazing strategies (dates, stocking levels, rotational patterns) depending on annual environmental factors and permittee success at meeting standards during the previous year.
2. Permittees must maintain perimeter and interior fences prior to turn-out.[5]

[5] NMFS understands fence maintenance requirements include riparian exclosure fences,

3. Standards that are required of the permittee (*e.g.*, turn on dates, move triggers, end point standards) will be outlined in an addendum to Part III of the grazing permit.
4. MSRA will be located and used to identify stream sections that are most vulnerable to livestock impacts. Identifying MSRA locations will guide application of bank alteration values.
5. Spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30. Of the remaining critical habitat reaches, 20% will be randomly surveyed for redds where turn out is prior to June 30 (See Appendix F of the BA, Strategy to minimize Redd Trampling —Take of Steelhead and Bull trout).
6. Where there is significant risk for redd trampling, the MNF and permittees will utilize a number of tools to protect redds, which include but are not limited to: alternative rotation, rest, exclusion with water gaps, temporary electric fences, additional riding.
7. Complete all required monitoring at Effectiveness Monitoring DMAs. DMA's to be monitored are provided to the MNF yearly by the Effectiveness Monitoring Team via the Forest Service Regional Office.
8. The Forest Service will visually inspect riparian livestock use in each pasture containing steelhead critical habitat near the mid-point of the grazing rotation for that pasture, and will conduct applicable Multiple Indicator Monitoring (MIM) on any such pasture where it appears that riparian conditions are approaching one or more move triggers or end-point indicators. This will help meet our long-term riparian resource objectives.
9. Annual use indicators will dictate when livestock are moved between units or off the allotment, within the terms of the term grazing permit, including moves in response to fish spawning. This will help the MNF meet our long-term riparian resource objectives.
10. The MNF will provide the NMFS with an End of Year Grazing Report by March 1 of each year.
11. Use of roads and off-road travel by permittees and staff will follow these PDC:
    a. Vehicles are not authorized to travel through seeps, springs or streams except for use of existing fords on road crossings;
    b. All refueling activities and fuel storage will occur at least 150 feet away from live streams;
    c. Off-Highway Vehicle routes within 100 feet of streams will be camouflaged so that access routes do not become new trails and minimize disturbance to riparian vegetation;
    d. Off-Highway Vehicle travel off established roads within 100 feet of streams would occur only during periods when soil is dry.

1.3.2 Allotment-Specific Actions

1.3.2.1 Dark Canyon Allotment

The Dark Canyon Allotment is located within the Upper John Day River subbasin. The pastures comprising the Dark Canyon Allotment lie within the Canyon Creek (HUC # 1707020107) and the Bear Creek (HUC # 1712000202) watersheds. The allotment encompasses approximately 31,854 acres and is divided into seven pastures: Canyon Creek, Dark Canyon, North Rock Springs, South Rock Springs, CH, Wickiup, and 15 Road (see Map 2).

The MNF proposes to authorize livestock grazing on the Dark Canyon Allotment for the next 5 years, 2012-2016. The Dark Canyon Allotment is currently permitted for 194 cow/calf pairs (1,297 AUMs) from June 1 to October 30. The Dark Canyon Allotment consists of five main pastures to be managed as follows:

- The Dark Canyon Allotment's grazing rotation system will utilize a deferred rotation with a staggered season of use entry system.
- The Canyon Creek Pasture will utilize a deferred rotation system, alternating areas of use between the Table Mountain/Middle Fork Canyon Creek area and the Chamber Spring/Canyon Creek area. During years of abundant forage this type of rotation will allow for a rest rotation to be implemented.
- MSRA is designated in the Canyon Creek and 15 Road pastures. The required move triggers and endpoint indicators are summarized below.

Table 5. Move Triggers and Endpoint Indicators for Dark Canyon pastures

Pasture Name/DMA or Key Area Name/Creek Name	**Monitoring Attribute**	**Key Species**	**Move Trigger**	**Endpoint Indicator**
Canyon Creek To be determined/Canyon Creek MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
15 Road PIBO DMA/Middle Fork Canyon Creek MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorized use.

1.3.2.2 Fawn Springs Allotment

The Fawn Springs Allotment is located within the Upper John Day River subbasin. The pastures comprising the Fawn Springs Allotment lie within the Canyon Creek (HUC # 1707020107) watershed. The allotment encompasses approximately 6,614 acres and is divided into five pastures: Lake, G-4, L-8, Alder, and Fawn Springs (see Map 3).

The MNF proposes to authorize livestock grazing on the Fawn Springs Allotment for the next 5 years, 2012-2016. The Fawn Springs Allotment is currently permitted for 107 cow/calf pairs (636 AUMs) from June 1 to October 15. The Fawn Springs Allotment will be managed as follows:

- The Fawn Springs Allotment will utilize a deferred rotation grazing system.
- The Lake Pasture will continue to be used during the early season. This will lessen impacts to steelhead critical habitat on Wall Creek.
- Currently, cattle are removed from the allotment by mid-late August. This strategy will continue.
- When forage availability allows, the Lake Pasture will be rested. It is expected that during the life of this consultation, the Lake Pasture may be rested 2 out of the 5 years.
- MSRA is designated in the Fawn Springs pastures. The required move triggers and endpoint indicators are summarized below.

Table 6. Move Triggers and Endpoint Indicators for Fawn Springs pastures

Pasture Name/DMA or Key Area Name/Creek Name	**Monitoring Attribute**	**Key Species**	**Move Trigger**	**Endpoint Indicator**
Lake/Wall Creek DMA/Wall Creek MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorized use.

1.3.2.3 Hanscomb Allotment

The Hanscomb Allotment is located within the Upper John Day River (HUC # 17070201) and Silvies (HUC # 17120002) subbasin. The pastures comprising the Hanscomb Allotment lie within the Headwaters Silvies River (HUC # 1712000201) and Laycock Creek-John Day River (HUC # 1707020109) watersheds, mostly within T 14 and 15 S and R 30 E. The allotment includes approximately 9,102 acres of National Forest System (NFS) Lands. The Hanscomb Allotment is divided into four pastures: Laycock, Upper Geary, Geary Meadows, and Allen/Morris (see Map 4).

The MNF proposes to authorize livestock grazing on the Hanscomb Allotment for the next 5 years, 2012-2016. The Hanscomb Allotment is currently permitted for 121 cow/calf pairs from June 1 to October 15 (for a total of 719 AUMs). Specific management of this allotment is as follows:

- The Deadhorse, Hanscomb, and Fields Peak allotments will be managed as one allotment utilizing a deferred rest-rotation grazing strategy.
- MSRA is designated in the Laycock Pasture. The required move triggers and endpoint indicators are summarized below.

Table 7. Move Triggers and Endpoint Indicators for Hanscomb pastures.

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Laycock Creek, Laycock Creek DMA, Laycock Creek MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

- Range Readiness and utilization levels may result in varying on/off dates and pasture rotations within the parameters of authorized use.

1.3.2.4 Dixie Allotment

The Dixie Allotment is located within the Upper John Day River and Middle Fork John Day River (MFJDR) subbasins. The pastures comprising the Dixie Allotment lie within the Camp Creek – MFJDR (HUC # 1707020302), Reynolds Creek – John Day River (HUC # 1707020105), and Grub Creek – John Day River (HUC # 1707020106) watersheds. The Dixie Allotment encompasses approximately 26,874 acres of which only 16,824 are managed by the MNF. Approximately 7,265 acres of private land, 42 acres of state land, and 2,743 acres of Bureau of Land Management (BLM) lands are intermingled with MNF lands. These lands are unfenced and management of these lands has not been waived to the MNF. BLM lands within the allotment are administered by the BLM. The Dixie Allotment is divided into two pastures: Bear Creek and Standard Creek (see Map 6).

The MNF proposes to authorize livestock grazing on the Dixie Allotment for the next 5 years, 2012-2016. The Dixie Allotment is currently permitted for 173 cow/calf pairs (1,028 AUMs) from June 1 to October 15. The Dixie Allotment consists of two main pastures to be managed as follows:

- The Dixie Allotment will be managed using a rest rotation grazing system.
- MSRA is designated in the Bear Creek pastures. The required move triggers and endpoint indicators are summarized below.

Table 8. Move Triggers and Endpoint Indicators for Dixie pastures.

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Bear Creek/Dixie Meadows/Dixie Creek MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Standard Creek/ Site yet to be determined	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

- Range Readiness and utilization levels may vary on/off dates within the parameters of authorized use.

1.3.2.5 Fields Peak Allotment

The Fields Peak Allotment is located within the Upper John Day River subbasin. The pastures comprising the Fields Peak Allotment lie within the Murderers Creek (HUC # 1707020103), Fields Creek-John Day River (HUC # 1707020110), and Laycock Creek-John Day River (HUC # 1707020109) watersheds. This allotment is approximately 30,718 acres, with elevations ranging from approximately 3,200 feet to 7,300 feet (see Map 5). The BA states that the Fields Peak Allotment is divided into five pastures: Fields Peak, Tex Creek, Miners Creek, North Murderers Creek, and Murderers Creek.

The MNF proposes to authorize livestock grazing on the Fields Peak Allotment for the next 5 years, 2012-2016. The Fields Peak Allotment is currently permitted for 240 cow/calf pairs and two horses from June 15 to October 15 (for a total of 1,437 AUMs [cattle] and 11 AUMs [horses]). Specific management of this allotment is as follows:

- The Deadhorse, Hanscomb, and Fields Peak allotments will be managed as one allotment utilizing a deferred rest-rotation grazing strategy.
- MSRA is designated in the Fields Peak, Tex Creek, Miners Creek and Murderers Creek pastures. The required move triggers and endpoint indicators are summarized below.

Table 9. Move Triggers and Endpoint Indicators for Fields Peak pastures.

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Fields Peak, Fields Creek DMA, Fields Creek MSRA Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Tex Creek, DMA site yet to be determined, Tex Creek MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Miners Creek, DMA site yet to be determined, Miners Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
	Streambank Alteration		10%	15%
North Murderers Creek, DMA site yet to be determined MSRA - none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Murderers Creek, Murderers Creek DMA #2, Murderers Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

- Range Readiness and utilization levels may result in varying on/off dates and pasture rotations within the parameters of authorized use.

1.3.2.6 Roundtop Allotment

The Roundtop Allotment is located within the Upper John Day subbasin. The pastures comprising the Roundtop Allotment lay within the Grub Creek – John Day River (HUC # 1707020106) and Beech Creek (HUC # 1707020108) watersheds. The allotment encompasses approximately 13,707 acres and is divided into six pastures: Tode, Four Corners, Short-n-Dirty, Grub, Tinker Creek, and Beech Creek (see Map 7).

The MNF proposes to authorize livestock grazing on the Roundtop Allotment for the next 5 years, 2012-2016. The Roundtop Allotment is currently permitted for 200 cow/calf pairs (1,059 AUMs) from June 1 to September 30. The Roundtop Allotment consists of six pastures to be managed as follows:

- The Roundtop Allotment's grazing rotation system will be a deferred rotation with a staggered season of use entry system.
- The Grub Pasture will be managed as a riparian pasture. Grazing will not exceed 21 days in this pasture.
- The Tinker Creek pasture will not be grazed during the hot/late season. As forage allows, the Tinker Creek pasture may be rested.

- MSRA is designated in the Beech Creek, Tinker Creek and Grub pastures. The required move triggers and endpoint indicators are summarized below.

Table 10. Move Triggers and Endpoint Indicators for Roundtop pastures

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Tinker Creek, Site yet to be determined, Tinker Creek MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Grub/Site yet to be determined/Grub Creek MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Beech Creek/PIBO DMA/East Fork Beech Creek MSRA Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble		5 inches 7 inches	4 in (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorized use.

1.3.2.7 John Day Allotment

The John Day Allotment is located in the Upper John Day subbasin. The pastures comprising the John Day Allotment lie within the Beech Creek watershed (HUC # 1707020108). This allotment is approximately 18,621 acres with elevations range from approximately 3,600 feet to 6,100 feet (see Map 8).

The John Day Allotment is divided into four pastures: Upper Ennis Creek, Lower Ennis Creek, Upper McClellan Creek, and Lower McClellan Creek. The allotment contains approximately 9.4 miles of steelhead critical habitat and 2.6 miles of stream reaches designated as MSRAs.

The MNF proposes to authorize livestock grazing on the John Day Allotment for the next 5 years, 2012-2016. The John Day Allotment is currently permitted for 177 cow/calf pairs from June 11 to October 25 (for a total of 1,052 AUMs). Specific management of this allotment is as follows:

- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use.
- Beginning in 2012, a deferred rotation with a staggered season of use entry system will be implemented on the John Day Allotment. This will give more flexibility for a rest rotation schedule to be implemented.
- MSRA is designated in the Lower Ennis and Lower McClellan pastures. The required move triggers and endpoint indicators are summarized below.

Table 11. Move Triggers and Endpoint Indicators for John Day pastures.

Pasture Name/DMA or Key Area Name/Creek Name	**Monitoring Attribute**	**Key Species**	**Move Trigger**	**Endpoint Indicator**
Lower Ennis MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upper McClellan MSRA-none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Lower McClellan, McClellan DMA, McClellan Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.8 Beech Creek Allotment

The Beech Creek Allotment is located within the North Fork John Day and Upper John Day subbasins. The pastures comprising the Beech Creek Allotment lie within the Beech Creek and Cottonwood Creek watersheds (HUC # 1707020209, 1707020108). The allotment elevations range from approximately 3,700 feet to 4,500 feet (see Map 9).

Several thousand acres of private land are congruent with MNF lands, making this an On/Off allotment. On/Off permits are issued when a minor portion, usually less than 1/3, of a logical grazing area is composed of National Forest lands. The intent is to promote efficient use of intermingled ownership, while at the same time achieving desired conditions of Forest Service lands. Under an On/Off permit, the management of private lands is not waived to the Forest Service.

The BA states that the Beech Creek Allotment is divided into four pastures: Timber, Grouse Creek, Beef, and Paterson. The Timber and Grouse Creek pastures do not contain any MCR steelhead critical habitat. This allotment contains approximately 1.4 miles of MCR steelhead critical habitat and all of this habitat is designated as a MSRA.

The MNF proposes to authorize livestock grazing on the Beech Creek Allotment for the next 5 years, 2012-2016. The Beech Creek Allotment is currently permitted for 35 cow/calf pairs from May 15 to November 30 (for a total of 304 AUMs). Specific management of this allotment is as follows:

- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use.
- The Beech Creek Allotment is being managed congruently with approximately 3,500 acres of private land. Pastures are used at varying times of the season each year as the permittee uses his private land.

Table 12. Move Triggers and Endpoint Indicators for Beach Creek pastures

Pasture Name/DMA or Key Area Name/Creek Name	**Monitoring Attribute**	**Key Species**	**Move Trigger**	**Endpoint Indicator**
Beef, E.F. Beech DMA, E.F. Beech Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.9 Mt Vernon Allotment

The Mt Vernon Allotment is located within the North Fork John Day and Upper John Day subbasins. The pastures comprising the Mt Vernon Allotment lie within the Laycock Creek (HUC # 1707020109), Fields Creek (HUC # 1707020110), Cottonwood Creek (HUC # 1707020209) and Beech Creek (HUC # 1707020108) watersheds. This allotment is approximately 31,000 acres with elevations range from approximately 4,000 feet to 6,000 feet (see Map 10).

The BA states that the Mt Vernon Allotment is divided into five pastures: Bear Creek, Belshaw Creek, Belshaw Meadows, Belshaw Riparian, and Cohoe. This allotment contains approximately 5 miles of MCR steelhead critical habitat and 2.4 miles of streams MSRAs.

The MNF proposes to authorize livestock grazing on the Mt Vernon Allotment for the next 5 years, 2012-2016. The Mt Vernon Allotment is currently permitted for 319 cow/calf pairs from June 11 to October 5 (for a total of 1,620 AUMs). Specific management of this allotment is as follows:

- The Mt Vernon Allotment will continue to be managed using a deferred rotation grazing system.
- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use.
- The Belshaw Creek Riparian and Belshaw Meadows units are used primarily to facilitate gathering or moving of livestock. The use of these pastures will be decided on an annual basis.

Table 13. Move Triggers and Endpoint Indicators for Mt Vernon pastures

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Belshaw Creek, Belshaw Creek DMA[6], Belshaw Creek MSRA None	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Belshaw Riparian, Belshaw Creek DMA, Belshaw Creek MSRA-present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Bear Creek, DMA Site yet to be determined MSRA - none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.10 Murderers Creek Allotment

The Murderers Creek Allotment is located within the Upper John Day River subbasin. The pastures comprising the Murderers Creek Allotment lie within the Murderers Creek (HUC # 1707020103) and Middle South Fork John Day (HUC # 1707020102) watersheds. The allotment includes approximately 64,649 acres of MNF lands. Approximately 1,260 acres of private land, 1,432 acres of state land, and 326 acres of Bureau of Land Management lands are intermingled with NFS lands. Approximately 895 acres of private land and 792 acres of state land within the allotment are unfenced and management of these lands has not been waived to the MNF (see Map 12).

[6] During the comment period for this Opinion it was discovered that the DMA for the Belshaw Creek pasture is now within the Belshaw Riparian exclosure. The MNF agreed to establish a monitoring site for measuring Belshaw Creek indicators before monitoring is required for this pasture.

The Murderers Creek Allotment lies entirely within the Murderers Creek Wild Horse Territory. Under current management, the Forest Service seeks to maintain a herd of 50 to 140 horses with an average of 100 horses. Since 2007, 317 horses have been removed from the territory. The current population estimate is approximately 200 horses. The management of these wild horses is the subject of a separate ESA consultation.

The Murderers Creek Allotment is divided into 14 pastures: Frenchy Butte, Deer Creek, John Young Meadow, Redrocks, Martin Corrals, Dans Creek, Oregon Mine, Timber Mountain, Blue Ridge, Horse Mountain, Antelope Spring, South Fork Murderers Creek Gather Pasture, Murderers Creek Gather Pasture, Tex Creek Gather Pasture, and John Young Meadow Cow Camp Pasture.

The MNF proposes to authorize livestock grazing on the Murderers Creek Allotment for the next 5 years, 2012-2016. The Murderers Creek Allotment is currently permitted for 875 cow/calf pairs and 4 horses (for a total of 4,698 AUMs). The Murderers Creek Allotment will be managed under three permits grazing three separate herd areas as follows:

- The North Herd is authorized to graze the Red Rocks, Oregon Mine, Martin Corrals, Dans Creek, Tex Creek Gather, and Murderers Creek Gather pastures
- The Middle Herd is authorized to graze Timber Mountain, Blue Ridge, Antelope Spring, Horse Mountain, and South Fork Murderers Creek Gather pastures.
- The South Herd is authorized to graze the Frenchy Butte, Deer Creek, Watershed, John Young Meadow, and John Young Cow Camp pastures.
- Each herd will graze using a deferred rotation grazing system.

In addition to the PDCs that apply to all allotments, the MNF proposed the following measures to further minimize potential effects on MCR steelhead and their habitat:

- No grazing will occur in MSRA in the Horse Mountain and the Timber Mountain pastures.
- The South Herd employs a full time rider that lives on the allotment at John Young Cow Camp.
- Range Readiness and utilization levels may result in varying on/off dates and pasture rotations within the parameters of authorized use.
- Livestock grazing typically begins in mid-May with 175 cow/calf pairs for the North Herd; in early June with 200 cow/calf pairs in the Middle Herd; and 700 cow/calf pairs beginning July 1 in the South (400 cow/calf pairs) and Middle (300 cow/calf pairs) Herds.
- MSRA is designated in the Murderers Creek Gather, Deer Creek, Frenchy Butte, John Young Meadow, Blue Ridge, Dans Creek, Oregon Mine, Martin Corrals, Tex Creek Gather, and South Fork Murderers Creek Gather pasture. The required move triggers and endpoint indicators are summarized below.

Table 14. Move Triggers and Endpoint Indicators for Murderers Creek pastures

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Timber Mountain, DMA site yet to be determined MSRA - none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Murderers Creek Gather, Murderers Creek DMA, Murderers Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Red Rocks, DMA site yet to be determined MSRA - none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Deer Creek, (1) North Fork Deer Creek DMA, North Fork Deer Creek; (2) Deer Creek DMA, Deer Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Frenchy Butte, Deer Creek DMA, Deer Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
John Young Meadow, John Young Meadows DMA #1, South Fork Murderers Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Blue Ridge, DMA site yet to be determined MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Dans Creek, DMA site yet to be determined, Dans Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Oregon Mine, DMA site yet to be determined MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Martin Corrals, Thorn Creek DMA, Thorn Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Tex Creek Gather, DMA site yet to be determined MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
South Fork Murderers Creek Gather, DMA site yet to be determined MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.11 Blue Mountain Allotment

The Blue Mountain Allotment is located within the MFJDR subbasin. The pastures comprising the Blue Mountain Allotment are within the Bridge Creek-MFJDR (1707020301) watershed. The allotment encompasses approximately 22,708 acres and is divided into five pastures: Squaw, Crawford Creek, Idaho Creek, East Summit, and West Summit (see Map 14).

The MNF proposes to authorize livestock grazing on the Blue Mountain Allotment for the next 5 years, 2012-2016. The Blue Mountain Allotment is currently permitted for 163 cow/calf pairs (821 AUMs) from June 16 to October 9. The permit for this allotment is in the process of being waived back to the MNF. This allotment will be maintained for emergency use. The District IDT will determine whether grazing is appropriate based on conditions within the allotment and/or at what duration and levels of use. The Blue Mountain Allotment consists of four main pastures, when this allotment is authorized for use (emergency situations), it will be managed as follows:

- The Squaw Pasture will only be used to facilitate moves between the larger pastures.
- A rest-rotation grazing system will be implemented on the remaining pastures.
- Authorized use will be evaluated on an annual basis by the District IDT.
- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use.
- MSRA is designated in the Crawford Creek, West Summit, Idaho Creek, East Summit and Squaw pastures. The required move triggers and endpoint indicators are summarized below.

Table 15. Move Triggers and Endpoint Indicators for Blue Mountain pastures

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Crawford Creek/ Site yet to be determined/ Crawford Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
West Summit / West Summit DMA / MFJDR MSRA Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Idaho Creek / Site yet to be determined MSRA Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
East Summit / Site yet to be determined MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Squaw / Site yet to be determined MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

The Blue Mountain Allotment has been rested since 2003, so there is no recent Implementation Monitoring data.

1.3.2.12 Upper Middle Fork Allotment

The Upper Middle Fork Allotment is located within the MFJDR subbasin. The pastures comprising the allotment are located in (the Bridge Creek (HUC # 1707020301) and Camp Creek (HUC # 1707020302) watersheds (5th field HUCs (see Map 15). The Upper Middle Fork Allotment is divided into ten pastures: Austin Pasture, Lower Vinegar Pasture, Upper Vinegar Pasture, Caribou Pasture, Tin Cup Riparian Pasture, Shop Pasture, River Pasture, Tailings Pasture, Butte Pasture and Deerhorn Pasture.

The MNF proposes to authorize livestock grazing on the Upper Middle Fork Allotment for the next 5 years, 2012-2016. The Upper Middle Fork Allotment is currently permitted for 485 cow/calf pairs (for a total of 2,883 AUMs) from June 1-October 15. The Upper Middle Fork Allotment consists of six main pastures.

- Herd 1 (242 cow/calf pairs grazes Caribou, Upper Vinegar, Lower Vinegar and Austin pastures that are north of County Road 20.
- Herd 2 (243 cow/calf pairs) grazes Butte and Deerhorn pastures that are south of County Road 20.
- The Upper Middle Fork Allotment's grazing rotation system will continue to emphasize a deferred rotation with a staggered season of use entry system. Herd 1 will utilize a rest rotation grazing strategy. Example rotations are shown below.

Table 16. Examples of Pasture Rotation for Upper Middle Fork Allotment

Herd 1				
Pasture	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Tin Cup	1	rest	4	1
Caribou	2	1	rest	2
Lower Vinegar	rest	2	3	3
Upper Vinegar	3	4	2	rest
Austin	4	3	1	4
Herd 2				
Butte	1	2	1	2
Deerhorn	2	1	2	1

- MSRA is designated in the Lower Vinegar, Deerhorn, Caribou, and Butte pastures. The required move triggers and endpoint indicators are summarized below.

Table 17. Move Triggers and Endpoint Indicators for Upper Middle Fork pastures.

Pasture Name/DMA or Key Area Name/Creek Name	**Monitoring Attribute**	**Key Species**	**Move Trigger**	**Endpoint Indicator**
Upper Vinegar, DMA site yet to be determined MSRA - none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Lower Vinegar, Vinegar Creek MIM DMA MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Deerhorn, DMA site yet to be determined MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Butte (DMA site yet to be determined) MSRA-Present	Browse use		40%	50% (early season use) 40% (late season use)
	Greenline stubble	Deep-rooted Hydric spp	5 inches 7 inches	4 inch (early season use) 6 in (late season use)
	Streambank Alteration		10%	15%
Caribou, Cow Camp Meadow (until a new DMA site can be located on critical habitat) MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Tin Cup Riparian, DMA site yet to be determined MSRA - None	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use.

1.3.2.13 Lower Middle Fork Allotment

The Lower Middle Fork Allotment is located within the MFJDR subbasin The pastures that comprise this allotment are located in the Camp Creek (HUC # 1707020302) and Big Creek (HUC # 1707020303)watersheds (5th field HUCs) (see Map 16). The Lower Middle Fork Allotment is divided into eight pastures: Balance, Chicken House, Granite Boulder, Granite Boulder Exclosure, Mosquito Riparian, Pizer, Sunshine, and Susanville.

The MNF proposes to authorize livestock grazing on the Lower Middle Fork Allotment for the next 5 years, 2012-2016. The Lower Middle Fork Allotment is currently permitted for 549 cow/calf pairs (for a total of 3,646 AUMs) from June 1-October 31. The Lower Middle Fork Allotment will be managed under three permits grazing three separate herd areas as follows:

- Permit 01807 grazes the Susanville Pasture.
- Permit 01825 grazes the Chickenhouse and Pizer pastures.
- Permit 01728A grazes the Sunshine, Balance, and Granite Boulder pastures.
- Each herd will graze using a deferred rotation grazing system with a staggered season of use entry system.

In addition to the PDCs[7] that apply to all allotments, the MNF proposed the following measures to further minimize potential effects on MCR steelhead and their habitat:

- Permit 01807 will continue to utilize low-stress livestock management techniques on the Susanville Pasture. This pasture is managed in three unfenced areas, the Susanville area, the Big Boulder area, and the Dry Creek area.
- Range Readiness and utilization levels may result in varying on/off dates and pasture rotations within the parameters of authorized use.

[7] When livestock are driven through the Whiskey Riparian pasture they will not be allowed to linger and there wil be no overnight holding within the pasture.

Table 18. Move Triggers and Endpoint Indicators for Lower Middle Fork pastures.

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Pizer, Deadwood Creek DMA, Deadwood Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Chickenhouse, No riparian habitat MSRA - none	Browse Use		NA	NA
	Greenline Stubble	Deep-rooted Hydric spp.	NA	NA
	Streambank Alteration		NA	NA
Susanville, Dry Creek will be used until a new DMA site is located on critical habitat MSRA - none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Granite Boulder, Beaver Creek (DMA site yet to be determined) MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Sunshine, (DMA site yet to be determined) MSRA - none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.14 Long Creek Allotment

The Long Creek Allotment is located within the MFJDR subbasin. The pastures comprising the Long Creek Allotment are within the Camp Creek-MFJDR (HUC # 1707020302) and Long Creek (HUC # 1707020304) watersheds. The allotment encompasses approximately 49,000 acres and is divided into 10 pastures: Flat Camp, Flat Camp Cow Camp, Ladd, Lick Creek, Lick Creek Riparian, Hiyu, Flood Meadows, Keeney Meadow, Coxie Creek, and Camp Creek Riparian (see Map 18).

The MNF proposes to authorize livestock grazing on the Long Creek Allotment for the next 5 years, 2012-2016. The Long Creek Allotment is currently permitted for 967 cow/calf pairs (5,749 AUMs) from June 1 to October 15. The Long Creek Allotment consists of three main pastures that will be managed as follows:

- The Long Creek Allotment's grazing rotation system will continue to emphasize a deferred rotation with a staggered season of use entry system.
- Flat Camp and Lick Creek pastures will continue to be grazed first and second, alternating years.
- Ladd Pasture will be used as an overnight stop or for unloading when bringing livestock onto the MNF.
- Camp Creek and Lick Creek Riparian pastures will be used for gathering.
- Flat Camp Cow Camp Pasture will continue to house the full-time riders and provide pasture for stock horses.
- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use.

Table 19. Move Triggers and Endpoint Indicators for Long Creek pastures.

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Flat Camp MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Lick Creek, West Fork Lick Creek DMA MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Hiyu MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Camp Creek Riparian Camp Creek DMA MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Lick Creek Riparian, Lick Creek DMA MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Flood Meadows, Flood Meadows DMA MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.15 Fox Allotment

The Fox Allotment is located within the Middle Fork John Day, North Fork John Day, and Upper John Day subbasins. The pastures comprising this allotment are found in the Long Creek (1707020304), Cottonwood Creek (1707020209) and Beech Creek watersheds (1707020109). The allotment includes approximately 26,085 acres and is divided into four pastures: Upper Fox, Lower Fox, South Fork, and Wiley Creek (Map 11).

The MNF proposes to authorize livestock grazing on the Fox Allotment for the next 5 years, 2012-2016. The Fox Allotment is currently permitted for 293 cow/calf pairs (1,425 AUMs) from June 11 to September 30.

- The Fox Allotment will continue to be managed using a deferred rotation grazing system.
- Livestock grazing typically begins in mid-June with 168 cow/calf pairs on the Wiley Creek Pasture and 125 cow/calf pairs on the Upper Fox Pasture.
- In August, both herds are combined and moved into the South Fork Pasture until the end of the grazing season; usually September 30 depending on weather conditions and move indicators.
- Under this grazing system, the Lower Fox Pasture and South Fork Pasture will receive some rest over the five years.
- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use.

Table 20. Move Triggers and Endpoint Indicators for Fox pastures.

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Upper Fox MSRA - none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Lower Fox, Fox Creek DMA, Fox Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Wiley MSRA - none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
South Fork, Site yet to be Determined, South Fork Long Creek MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.16 Camp Creek Allotment

The Camp Creek Allotment is located at the confluence of the MFJDR and Camp Creek, northeast of the town of John Day, Oregon. Elevations within the allotment average 3,600 feet. The allotment encompasses approximately 600 acres. The MFJDR runs the length (east/west) of the allotment, as does County Road 20. Camp Creek and the 36 road also run the length of the allotment (north/south). Private land adjacent to the allotment is excluded by fencing. (see Map 17). This allotment consists of seven pastures: Lower Camp Creek, Middle Camp Creek, North, Road, Gibbs, Campground, and Upper Camp.

The MNF proposes to authorize livestock grazing for the next five seasons, 2012-16, on the Camp Creek Allotment. The Camp Creek Allotment is permitted for 50 cow/calf pairs from June 1 to October 30, equaling 330 AUMs.

- The Lower Pasture will be used early in the grazing season to allow for continued riparian shrub recovery.
- Beginning in 2012, the Campground Pasture will not be grazed as part of the annual authorization. Cattle will only be driven through to access and leave the Upper Camp Pasture.
- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use.

Table 21. Move Triggers and Endpoint Indicators for Camp Creek pastures.

Pasture Name/DMA or Key Area Name/Creek Name	**Monitoring Attribute**	**Key Species**	**Move Trigger**	**Endpoint Indicator**
Lower Camp/ MFJDR MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.17 Slide Creek Allotment

The Slide Creek Allotment is located within the MFJDR subbasin. The pastures comprising this allotment are found in the Camp Creek (HUC # 1707020302) and Big Creek (HUC # 1707020303) watersheds (5th field HUCs), (see Map 19). The Slide Creek Allotment is divided into eight pastures: Camp Riparian Pasture, East Pasture, Hog Pasture, Sale Area Pasture, West Pasture, Whiskey Riparian Pasture, Slide Holding Pasture, and Slide Riparian Pasture.

The MNF proposes to authorize livestock grazing on the Slide Creek Allotment for the next 5 years, 2012-2016. The Slide Creek Allotment is currently permitted for 777 cow/calf pairs (for a total of 4,620 AUMs) from June 1-October 15.

- The Slide Creek Allotment will continue to emphasize a deferred rotation with a staggered season of use
- This allotment is managed through a grazing association with full-time riders.

- Slide Creek Riparian, Camp Creek Riparian, and Slide Holding pastures will continue to be used for gathering purposes or to trail through when moving from one pasture to another during the season.
- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use.

Table 22. Move Triggers and Endpoint Indicators for Slide Creek pastures

Pasture Name/DMA or Key Area Name/Creek Name	**Monitoring Attribute**	**Key Species**	**Move Trigger**	**Endpoint Indicator**
West MSRA - none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Slide Riparian Slide Creek DMA MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Camp Creek Riparian MSRA - present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
East MSRA - none	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		15%	20%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.18 York On/Off Allotment

The York On/Off Allotment is located within the Big Creek-MFJDR (HUC 5# 1707020303) watershed in the MFJDR subbasin, and is northeast of the town of John Day, Oregon. The allotment encompasses approximately 780 acres and is divided into two pastures: Slide and East.

The MNF proposes to permit 12 cow/calf pairs from June 1 through October 31, equaling 79 AUMs annually on this allotment from 2012 through 2016.

Table 23. Move Triggers and Endpoint Indicators for York On/Off pastures.

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Slide/DMA site yet to be determined/Slide Creek MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.19 Donaldson Allotment

The Donaldson Allotment is located within the North Fork John Day subbasin. The two pastures comprising the Donaldson Allotment lie within the Cottonwood Creek (17070202) watershed. The Donaldson Allotment is located at the southwest end of Fox Valley (see Map 21). The allotment includes approximately 8,000 acres of MNF lands with 4,000 acres being located within each pasture. The Donaldson Allotment is divided into two pastures: Glade and Hinton.

The MNF proposes to authorize livestock grazing for the next 5 years, 2012-2016 for the Donaldson Allotment. The Donaldson Allotment is currently permitted for 100 cow/calf pairs (599 AUMs) from June 15 to October 30.

Grazing System:

- The Donaldson Allotment consists of two main pastures.
- The Donaldson Allotment will be managed using a deferred rotation grazing system.
- Range Readiness and utilization levels may vary on/off dates within the parameters of authorized use.

Table 24. Move Triggers and Endpoint Indicators for Donaldson pastures.

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Glade Pasture/Suitable monitoring location not yet identified MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.20 Deer Creek Allotment

The Deer Creek Allotment is located North Fork John Day subbasin. The Deer Creek Allotment lies within the Lower North Fork John Day (HUC # 1707020210) and Cottonwood Creek (HUC # 1707020209) watersheds. The Deer Creek Allotment is located between the Fox and Long Creek valleys and is surrounded by mostly private lands (see Map 22). The allotment encompasses approximately 2,100 acres. Private land within the allotments consists of 800 acres. The allotment contains one pasture: Deer Creek.

The MNF proposes to authorize livestock grazing for the next 5 years, 2012-2016 for the Deer Creek Allotment. The Deer Creek Allotment is currently permitted for 88 cow/calf pairs (371 AUMs) from June 11 to September 15.

- The Deer Creek Allotment's grazing rotation system will be a rest rotation.
- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorized use.

Table 25. Move Triggers and Endpoint Indicators for Deer Creek pastures

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Deer Pasture, DMA yet to be determined MSRA-Present	Browse Use		40% 30%	50% (early season use) 40% (late season use)
	Greenline Stubble	Deep-rooted Hydric spp.	5 inches 7 inches	4 in. (early season use) 6 in. (late season use)
	Streambank Alteration		10%	15%
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.3.2.21 Indian Ridge Allotment

The Indian Ridge Allotment is located within the North Fork John Day subbasin within the Long Creek (1707020304) and Cottonwood Creek (1707020209) watersheds. The Indian Ridge Allotment is located in Fox Valley, about 3 miles northwest of the town of Fox, Oregon (see Map 21). The allotment encompasses approximately 4,000 acres of National Forest System Lands and has five pastures: Boothill, West, East, Ridge and Highway. The allotment contains known MCR distribution only in the East Pasture for approximately 300 feet in Indian Creek. However, no designated critical habitat exists within the Indian Ridge Allotment (see Map 23).

The MNF proposes to authorize livestock grazing for the next 5 years, 2012-2016 for the Indian Ridge Allotment. The Indian Ridge Allotment is currently permitted for 94 cow/calf pairs (396 AUMs) from June 11 to September 15.

Grazing System:

- The Indian Ridge Allotment consists of five pastures.
- The Indian Ridge Allotment grazing rotation system will be deferred rotation using the four larger pastures.
- Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorized use.

Table 26. Move Triggers and Endpoint Indicators for Indian Ridge pastures

Pasture Name/DMA or Key Area Name/Creek Name	Monitoring Attribute	Key Species	Move Trigger	Endpoint Indicator
Upland Sites (All Pastures)	% Utilization	Upland Grass Species	35%	45%
Riparian Areas (All Pastures)	% Utilization	Riparian Grass Species	35%	45%

1.4 Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

The action area for this consultation includes MCR steelhead critical habitat encompassed by the MNF allotments as well as Indian Creek on the Indian Ridge allotment which is not designated critical habitat but has been identified as occupied by MCR steelhead by the MNF. The BAs did not identify any other stream reaches that were occupied by MCR steelhead but are not designated as critical habitat.

Allotments primarily within the range of the UJDR MCR steelhead population's critical habitat shown in Map 1 are summarized in Table 27 and shown in Maps 2-11.

Allotments primarily within the range of SFJDR MCR steelhead population's critical habitat shown in Map 1 are summarized in Table 28 and shown in Map 5 and Map 12.

Allotments that primarily fall within the MFJDR MCR steelhead critical population's critical habitat shown in Map 13 are summarized in Table 29 and shown in Maps 14-19.

Allotments primarily within the range of NFJDR MCR steelhead population's critical habitat shown in Map 20 are summarized in Table 30 and shown in Map 11 and Maps 21-23.

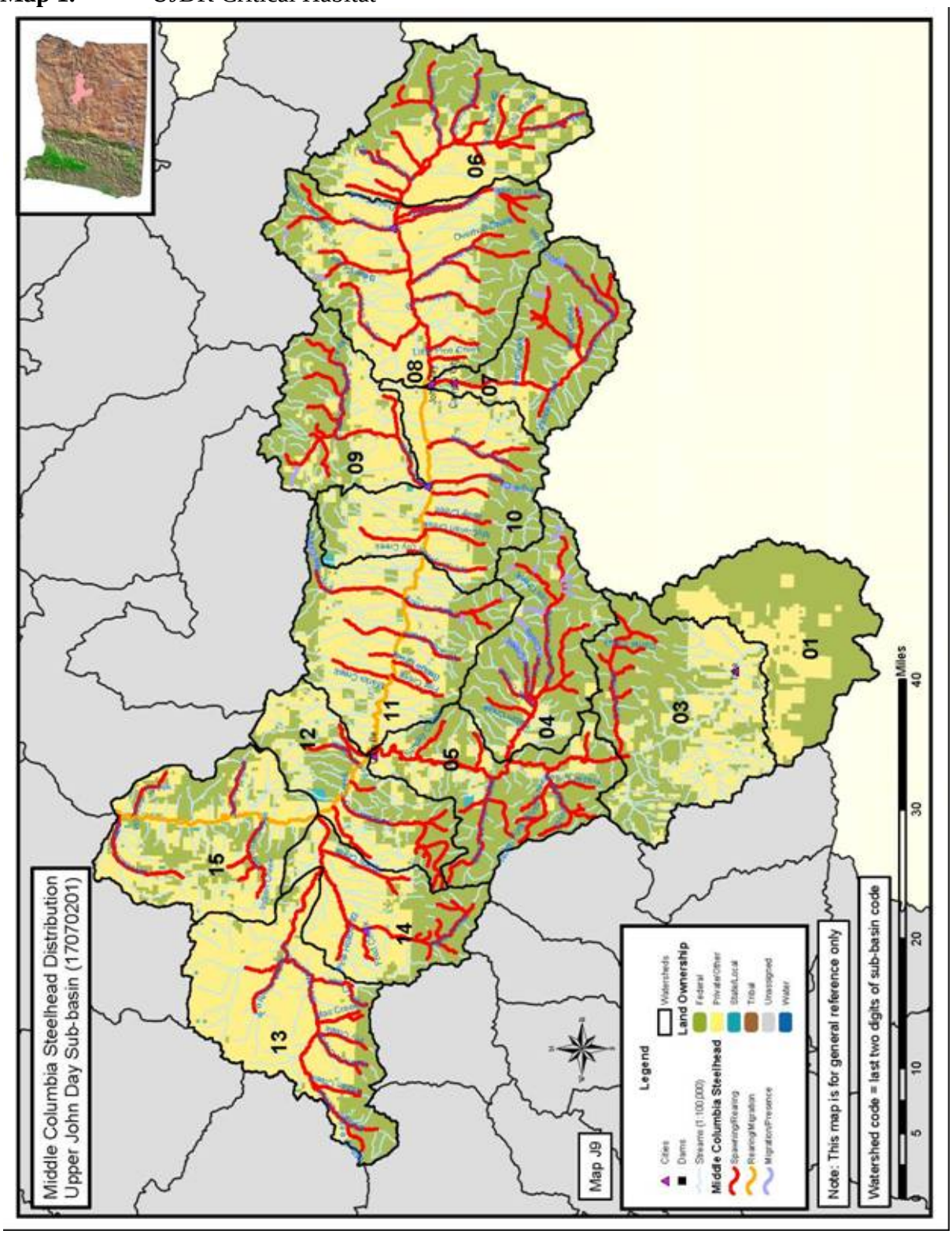
Table 27. Miles of Critical Habitat for UJDR Population in MNF Allotments

Stream	Tributary	Dark Canyon	Fawn Spring	Hanscomb	Fields Peak	Dixie	Roundtop	John Day	Beech Creek	Mt Vernon	Fox
Canyon Creek		5.28									
	Crazy Creek	1.91									
	Middle Fork Canyon Creek	5.61									
	East Fork Canyon Creek		0.58								
	Wall Creek	1.77	1.74								
	Unnamed Trib	0.8									
	Vance Creek										
Laycock Creek				1.48							
	Hanscomb Creek			0.39							
Fields Creek					5.1						
	Buck Cabin Creek				2.3						
	Wickiup Creek				0.9						
Belshaw Creek										3.6	
Standard Creek*						3.51					
Dixie Creek*						5.2					
Bear Creek						1.7					
	Hall Creek*					2.59					
East Fork Camp Creek						0.38					
Grub Creek							1.16				
Beech Creek								0.2		0.18	
	Tinker Creek						2.34				
	East Fork Beech Creek						3.57	0.6	1.4		
	McClellen Creek							3.5			
	Clear Creek							3.3			
	Ennis Creek							1.3			
	Hog Creek							0.4			
	Johnson Creek							0.3			

Stream	Tributary	Dark Canyon	Fawn Spring	Hanscomb	Fields Peak	Dixie	Roundtop	John Day	Beech Creek	Mt Vernon	Fox
	Bear Creek									1.2	
	Cottonwood Creek										1.41

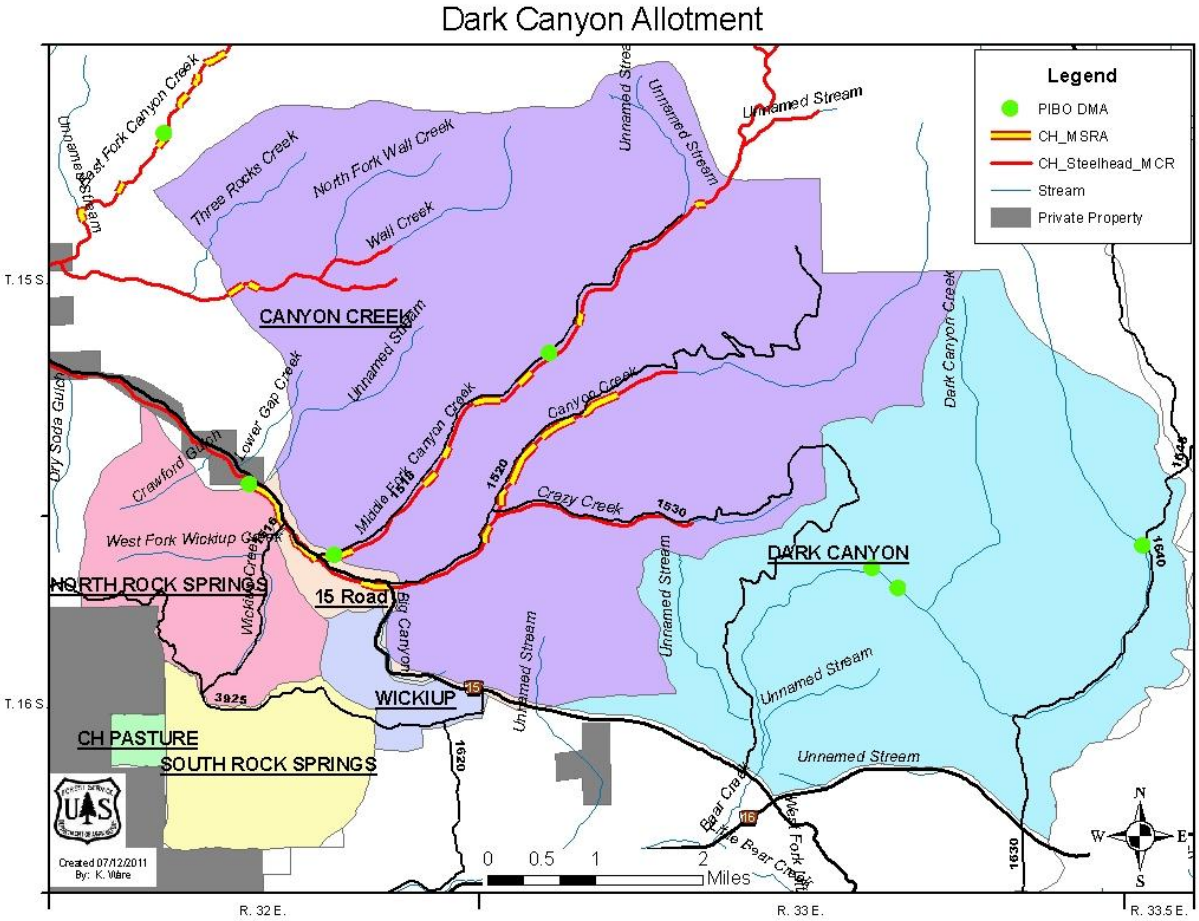
* The amount of critical habitat identified for these streams includes a portion on USDI Bureau of Land Management lands and/or private lands. There is critical habitat in each stream on the Dixie Allotment and although the amount is smaller than displayed in this table. This does not change the results of our analysis

Map 1.[8] UJDR Critical Habitat

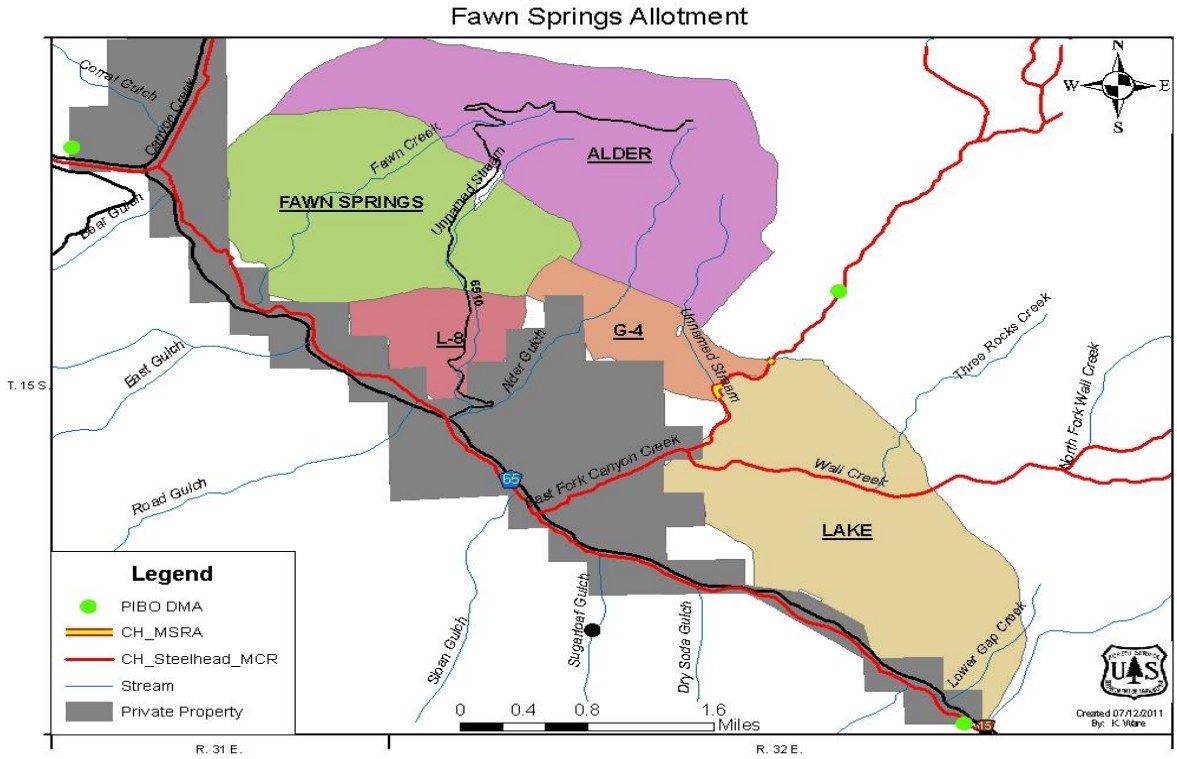


[8] John Day River Basin critical habitat maps are copied from NMFS (2004). Allotment maps are copied from the Biological Assessments.

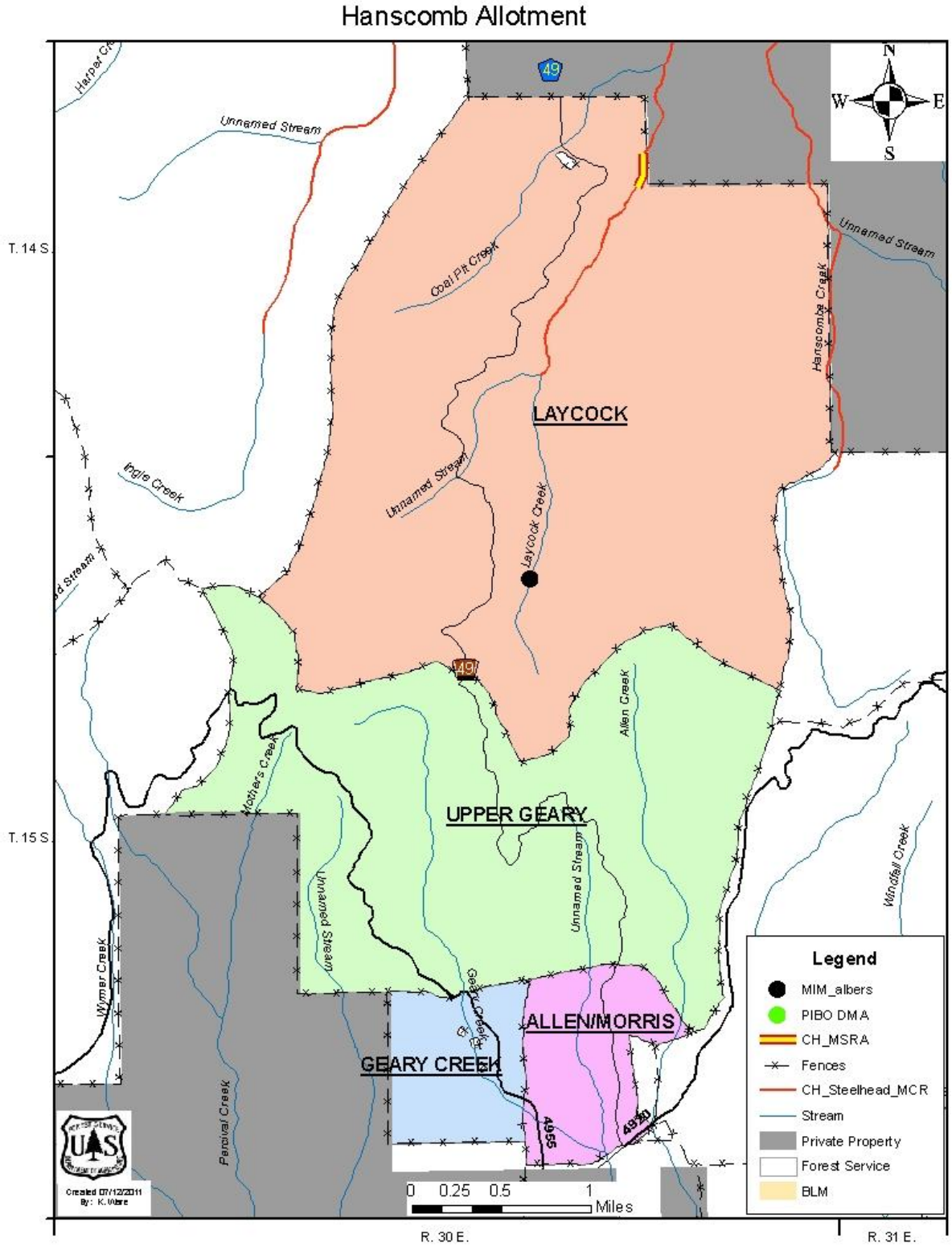
Map 2. Dark Canyon Allotment Critical Habitat and MSRA



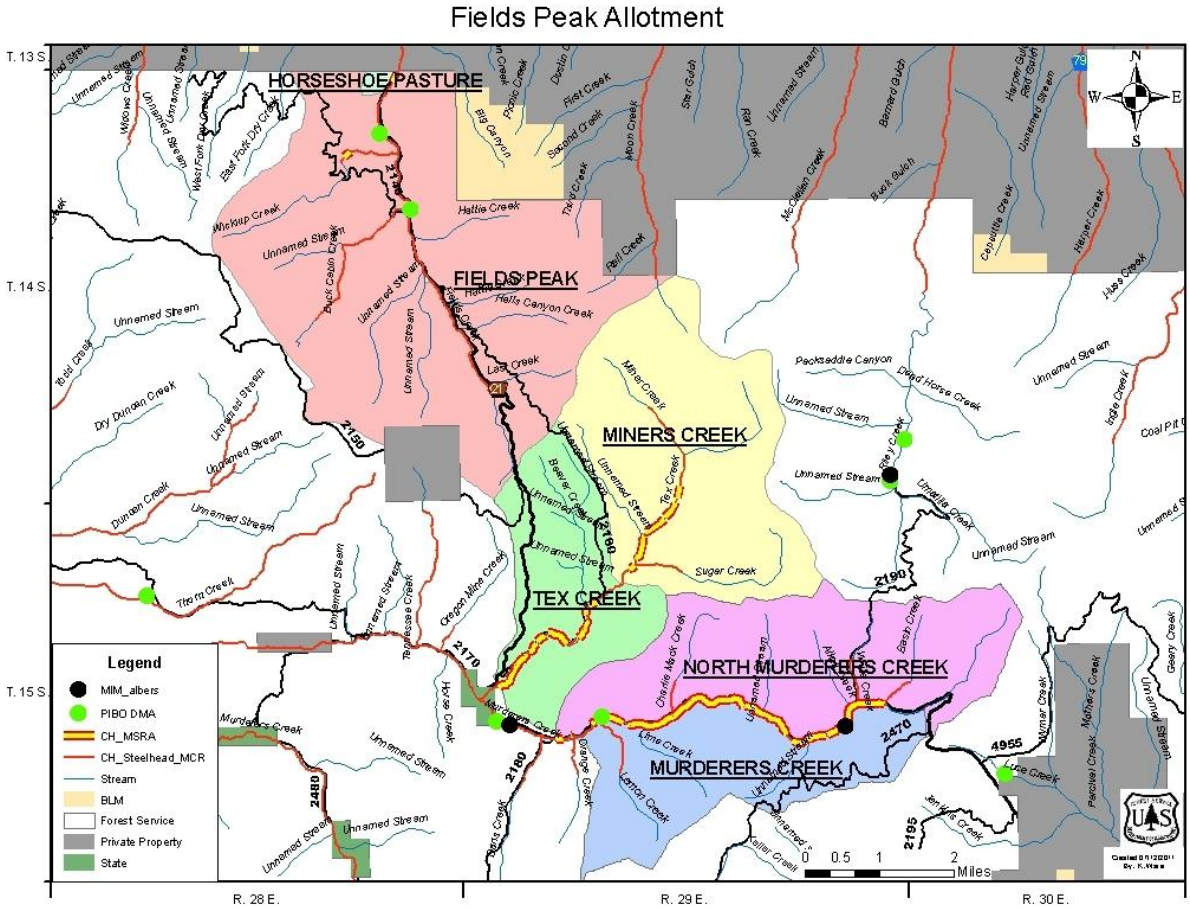
Map 3. Fawn Springs Allotment Critical Habitat and MSRA



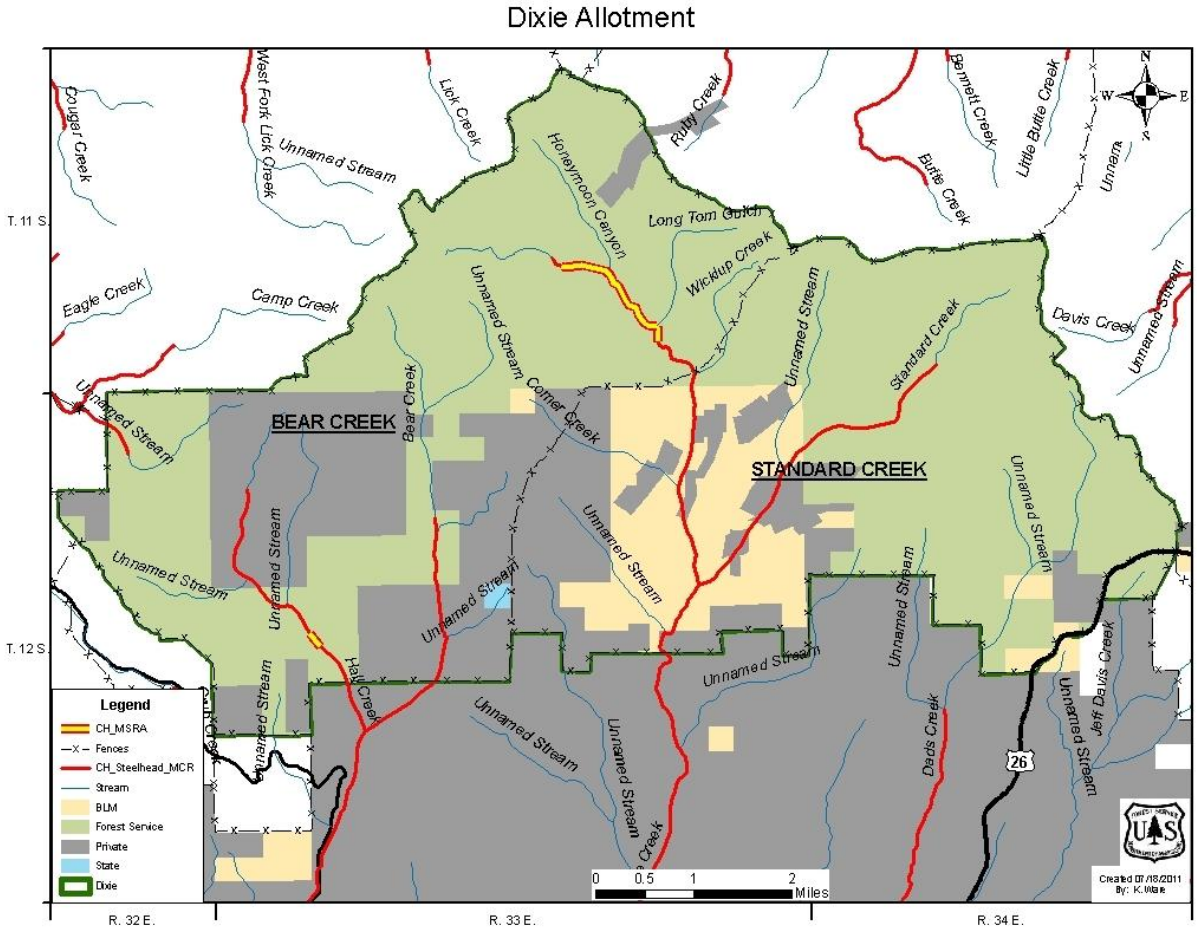
Map 4. Hanscomb Allotment Critical Habitat and MSRA



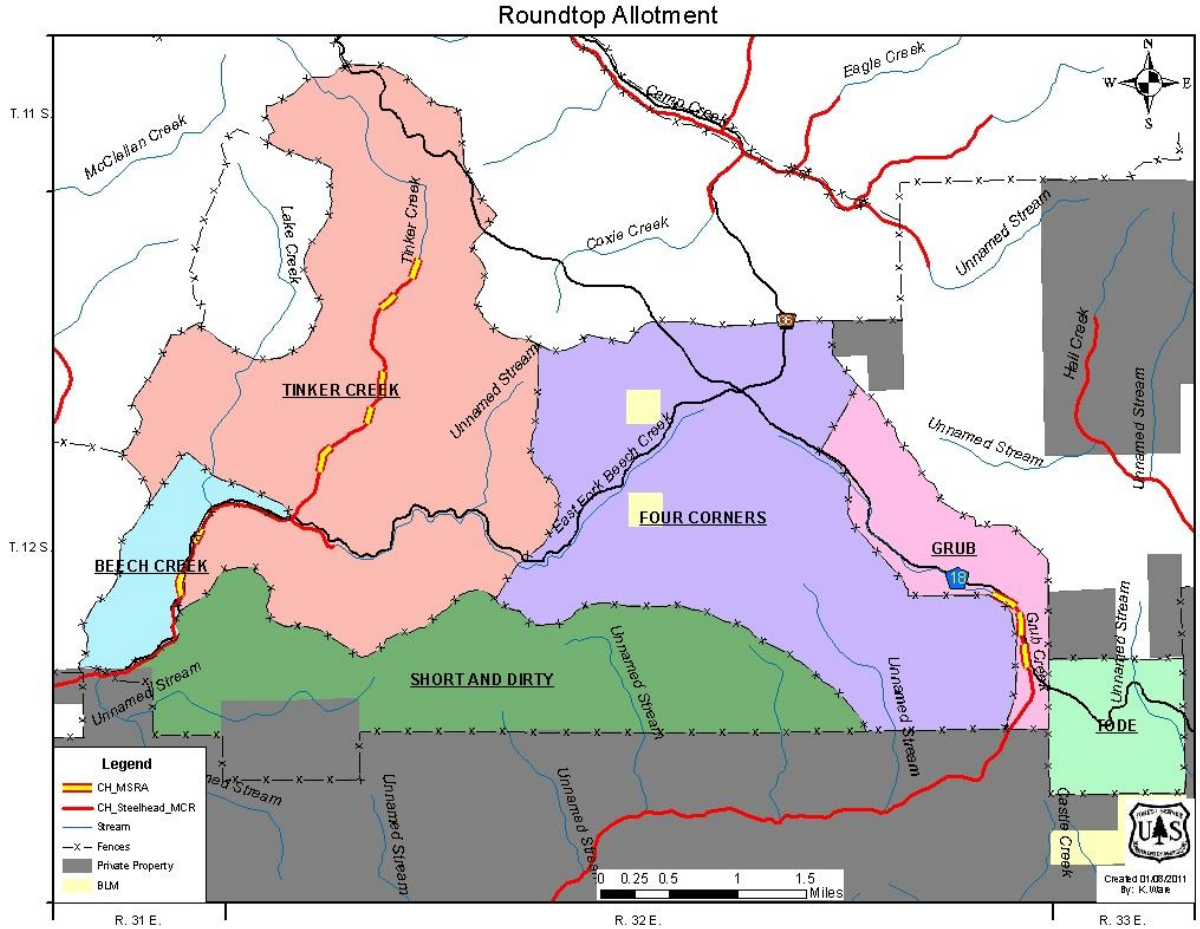
Map 5. Fields Peak Allotment Critical Habitat and MSRA



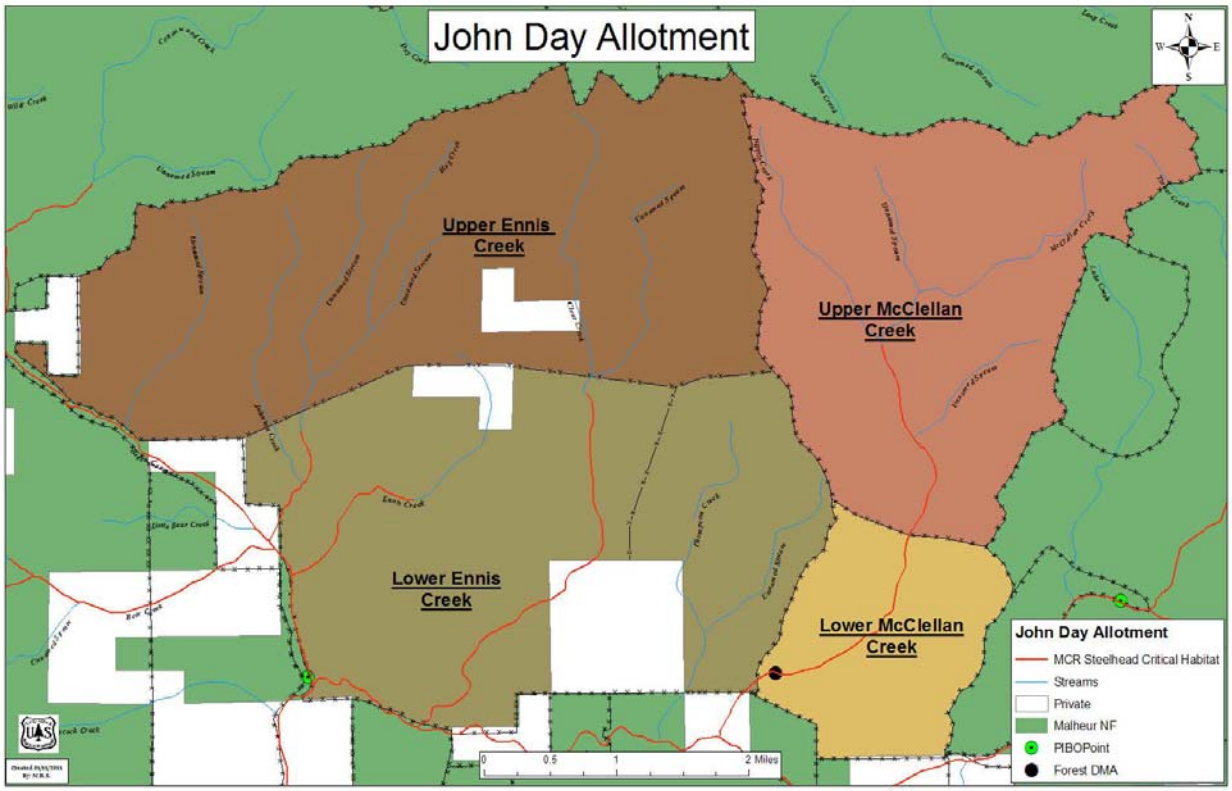
Map 6. Dixie Allotment Critical Habitat and MSRA



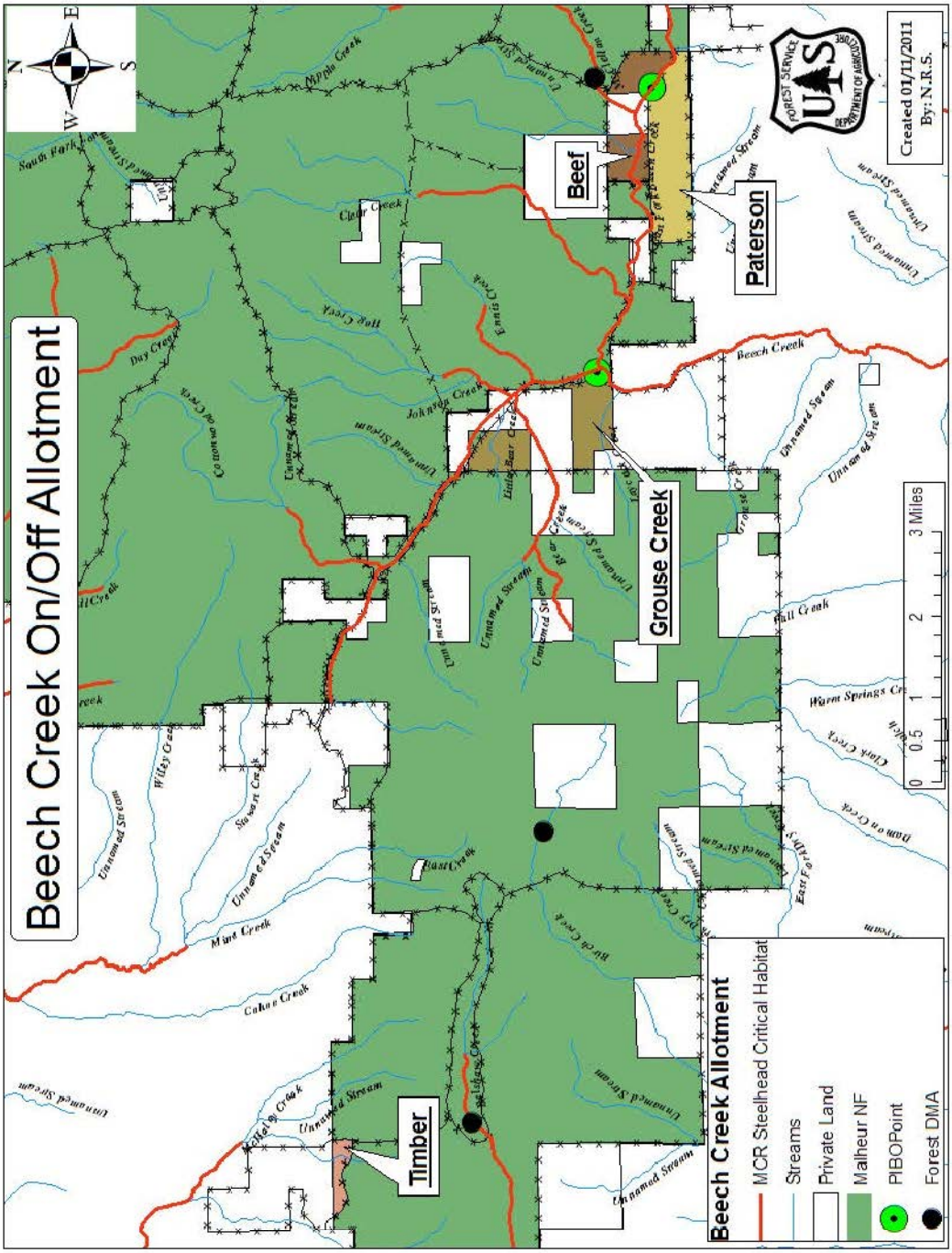
Map 7. Roundtop Allotment Critical Habitat and MSRA



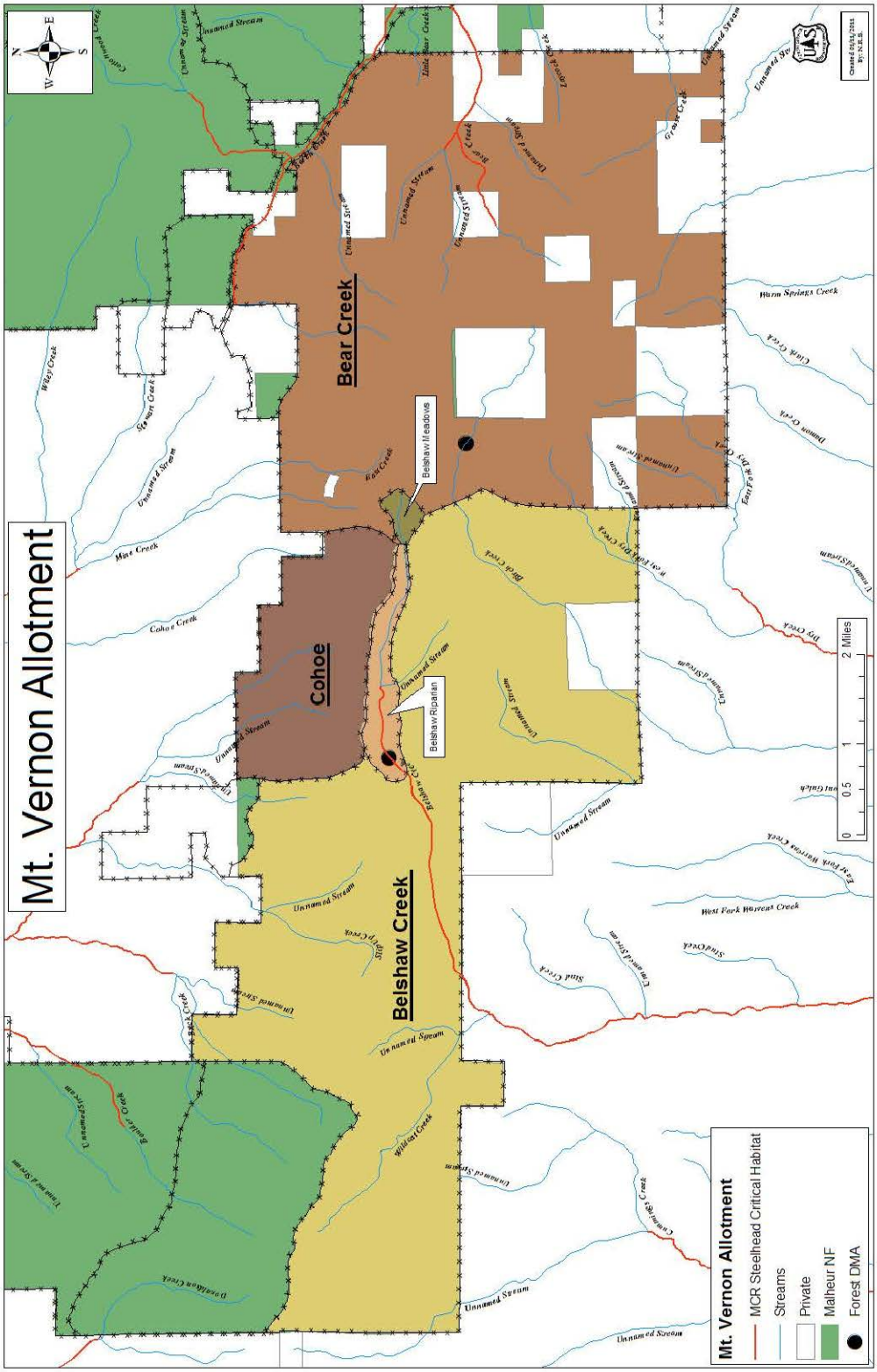
Map 8. John Day Allotment Critical Habitat



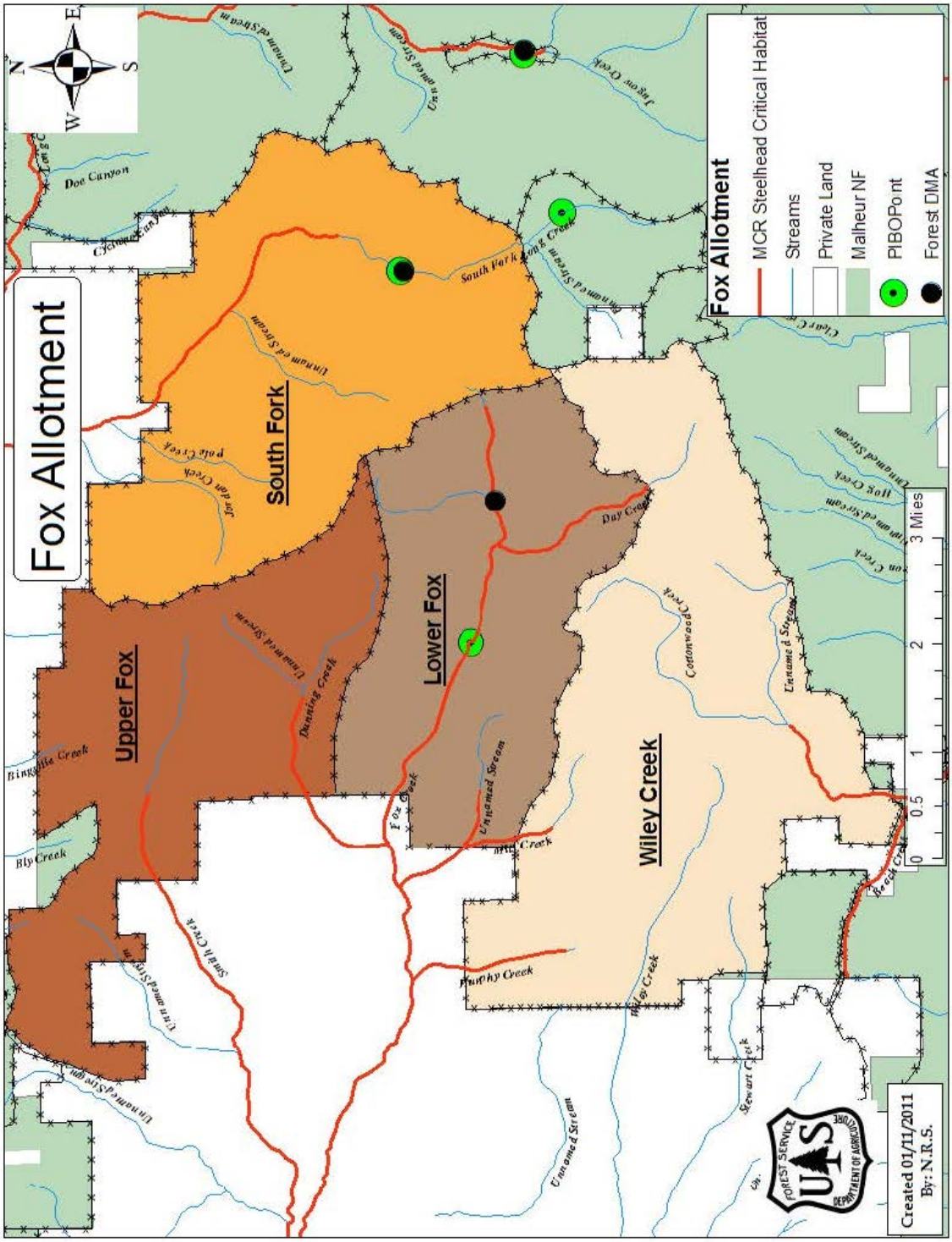
Map 9. Beech Creek Allotment and Critical Habitat (The Forest DMA site shown on Birch Creek no longer exists).



Map 10. Mt Vernon Allotment and Critical Habitat (The Forest DMA site shown on Birch Creek no longer exists).



Map 11. Fox Allotment Critical Habitat (The Forest DMA site shown on South Fork Long Creek no longer exists).

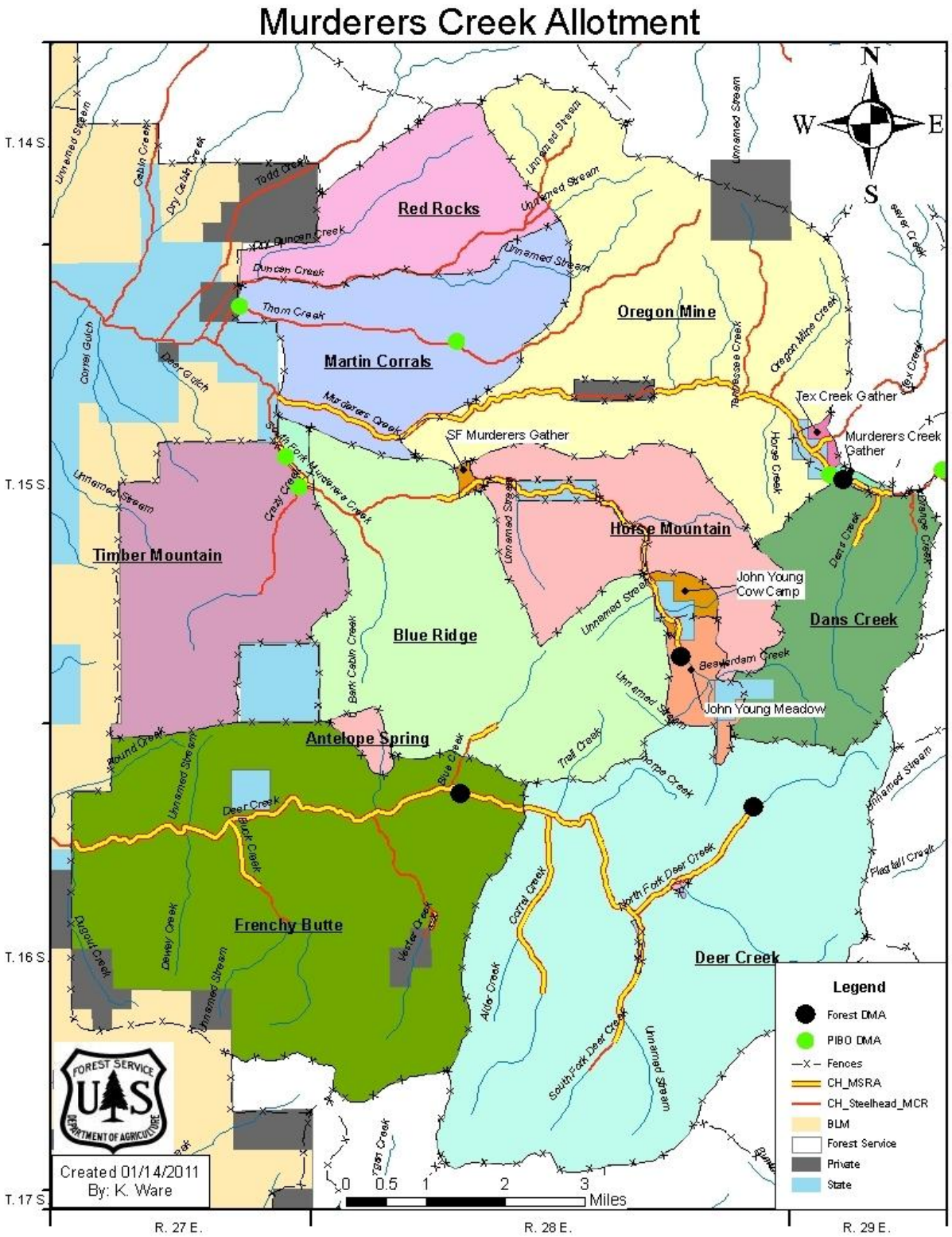


Allotments primarily within the range of SFJDR MCR steelhead population's critical habitat shown in Map 1 are summarized in Table 28 and shown in Map 5 and Map 12.

Table 28. Distribution of SFJDR Population Critical Habitat

Major Stream	Tributary	Murderers Creek Critical Habitat	Fields Peak Critical Habitat
Murderers Creek		7.49	5.33
	Basin Creek		0.48
	White Creek		0.67
	Charlie Mack Creek		0.51
	Lemon Creek		0.89
	Orange Creek	0.6	
	Dans Creek	0.81	
	Tex Creek	0.9	4.68
	Minor Creek		0.83
	Sugar Creek		0.67
	Oregon Mine Creek	0.41	
	Tennessee Creek	2.04	
	South Fork Murderers Creek	5.38	
	Bark Cabin Creek	0.72	
	Crazy Creek	1.64	
	Thorn Creek	6.96	
	Duncan Creek	5.44	
	Trib	0.75	
	Trib	0.13	
Deer Creek		9.08	
	North Fork Deer Creek	2.22	
	South Fork Deer Creek	2.22	
	Corral Creek	2.51	
	Blue Creek	1.06	
	Vester Creek	1.84	
	Buck Creek	1.57	

Map 12. Murderers Creek Allotment Critical Habitat and MSRA



Allotments that primarily fall within the MFJDR MCR steelhead critical population's critical habitat shown in Map 13 are summarized in Table 29 and shown in Maps 14-19.

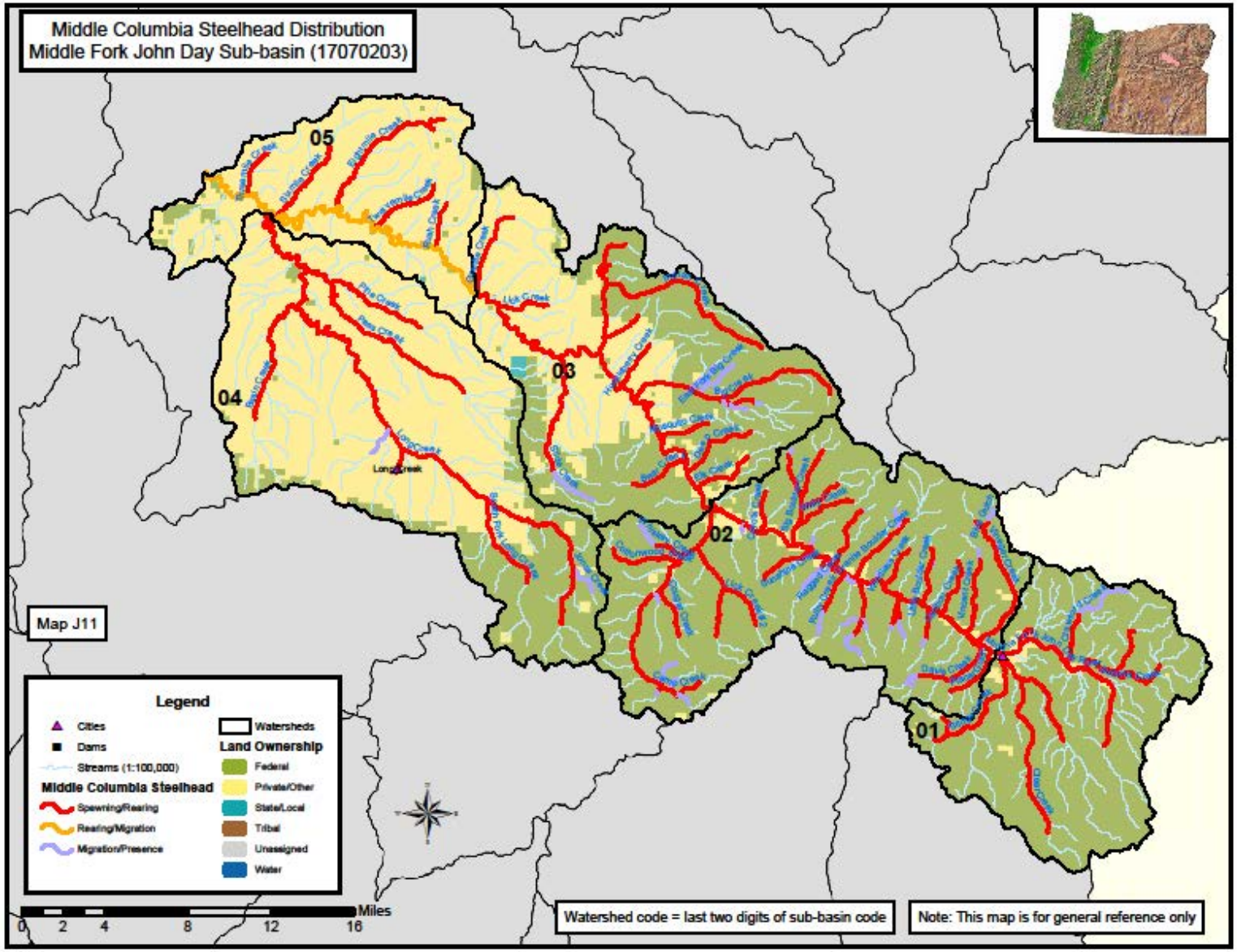
Table 29. Miles of Critical Habitat for MFJDR Population in MNF Allotments

Stream	**Tributary**	**Blue Mountain critical habitat**	**Upper Middle Fork critical habitat**	**Lower Middle Fork critical habitat**	**Long Creek critical habitat**	**Camp Creek critical habitat**	**Slide Creek critical habitat**	**York critical habitat**	**Fox critical habitat**
MFJDR		2.3	3.61			1.29			
Summit Creek		4.88							
	North Fork Summit Creek	0.38							
	Idaho Creek	2.49							
	Fly Creek	0.23							
	Squaw Creek	0.77							
	Crawford Creek	5.92							
Clear Creek		0.5							
(Bridge Creek)									
	North Fork Bridge Creek		0.21						
Placer Gulch			2.71						
Vinegar Creek			7.06						
	Blue Gulch		1.16						
Davis Creek			4.24						
	Trib		0.62						
Vincent Creek			4.32						
Caribou Creek			3						
Dearhorn Creek			1.91						
Little Boulder Creek			2.89						
	Trib		0.24						
Little Butte Creek			1.72						
	Trib		1.66						
Windlass Creek			2.25						
Tin Cup Creek			0.37						

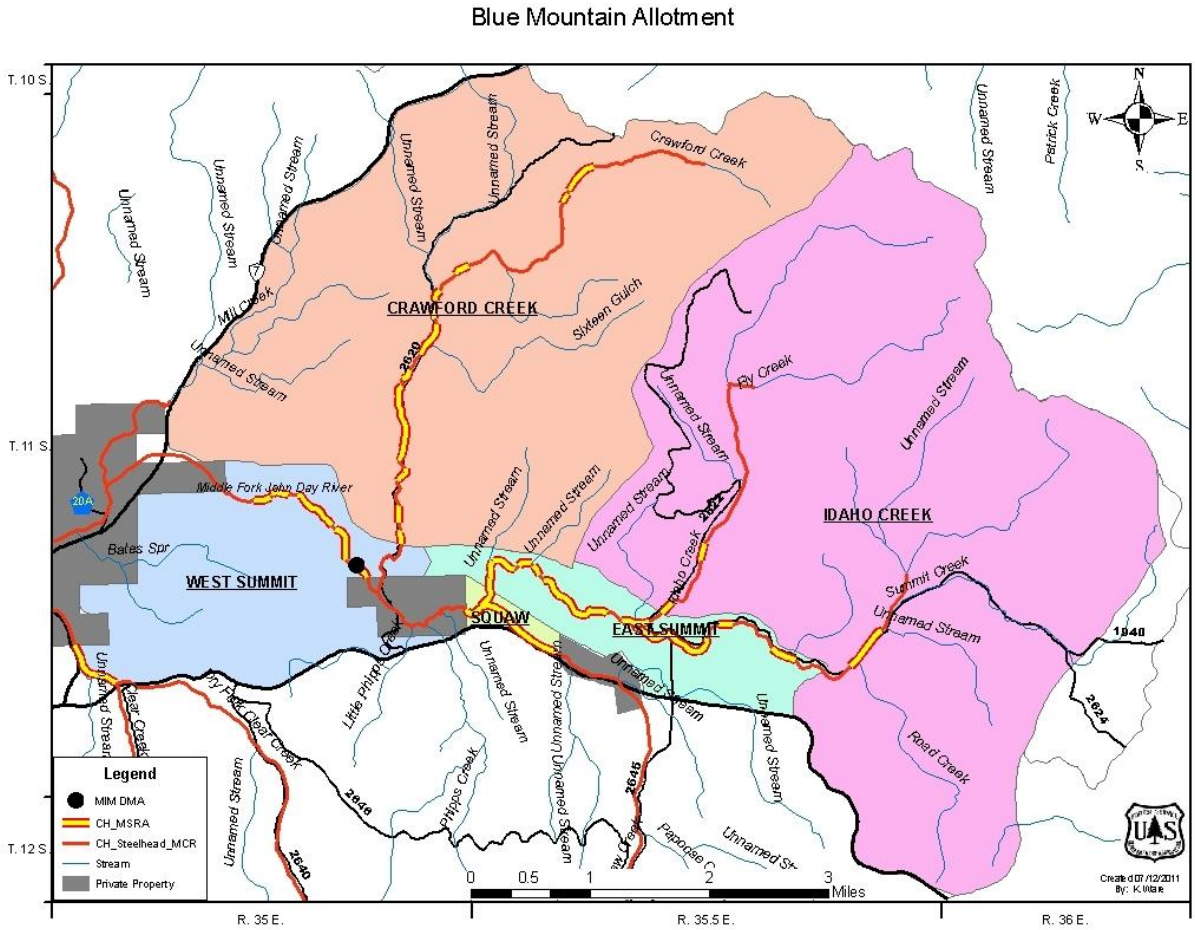
Stream	Tributary	Blue Mountain critical habitat	Upper Middle Fork critical habitat	Lower Middle Fork critical habitat	Long Creek critical habitat	Camp Creek critical habitat	Slide Creek critical habitat	York critical habitat	Fox critical habitat
Butte Creek			4.29						
	Bennett Creek		0.49						
	Sulphur Creek		1.06						
Granite Boulder Creek			2.07	1.72					
	Lemon Creek			1.05					
Ruby Creek			3.15						
Beaver Creek				3.46					
Mill Creek			0.2						
Ragged Creek			1.43						
Sunshine Creek				2.88					
Dry Creek				0.52					
Big Boulder Creek				3.98					
	Myrtle Creek			2.59					
	Badger Creek			2.29					
	Wray Creek			3.03					
Coyote Creek				1.12					
Camp Creek					11.2	0.88	1.3		
	Lick Creek				4.9		0.05		
	West Fork Lick Creek				2.4				
	Coxie Creek				0.5				
	Eagle Creek				0.7				
	Trail Creek				0.4				
	Trib				0.8				
	Charlie Creek				1.5				
	Cougar Creek				2.6				
	Cottonwood Creek				3.8				
	Whiskey Creek						2.6		
Elk Creek				1.12					
	North Fork Elk Creek			0.03					

Stream	Tributary	Blue Mountain critical habitat	Upper Middle Fork critical habitat	Lower Middle Fork critical habitat	Long Creek critical habitat	Camp Creek critical habitat	Slide Creek critical habitat	York critical habitat	Fox critical habitat
Deep Creek				3.23					
Mosquito Creek				0.85					
Big Creek				8.27					
	Swamp Gulch			0.71					
	Deadwood Creek			2.33					
	Onion Gulch			0.29					
	East Fork Big Creek			2.34					
	Pizer Creek			0.7					
	Lost Creek			1.13					
Bear Creek							2.3		
Slide Creek							2.9	0.88	
Long Creek					6.9				
	Jonas Creek				1.6				
	South Fork Long Creek								2.6

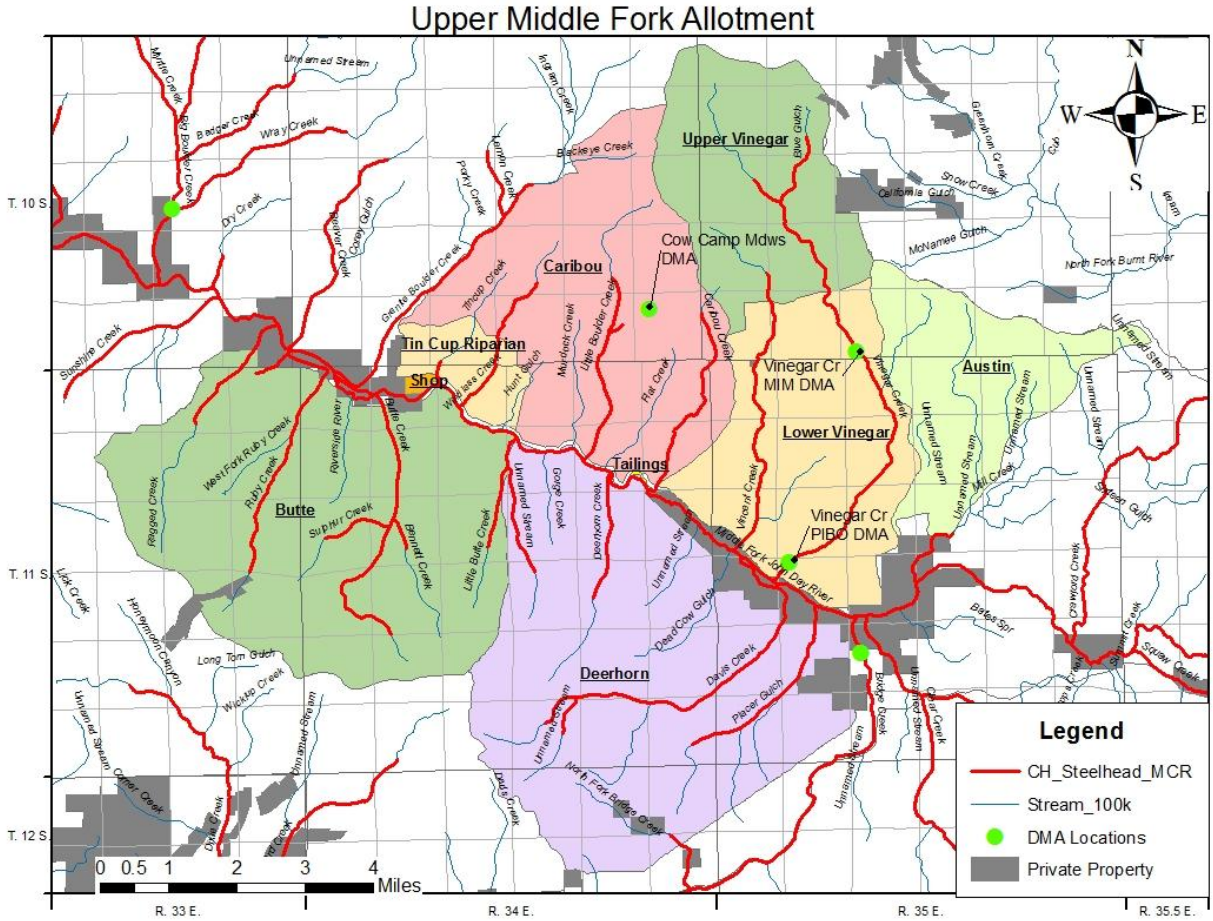
Map 13. MFJD Critical Habitat



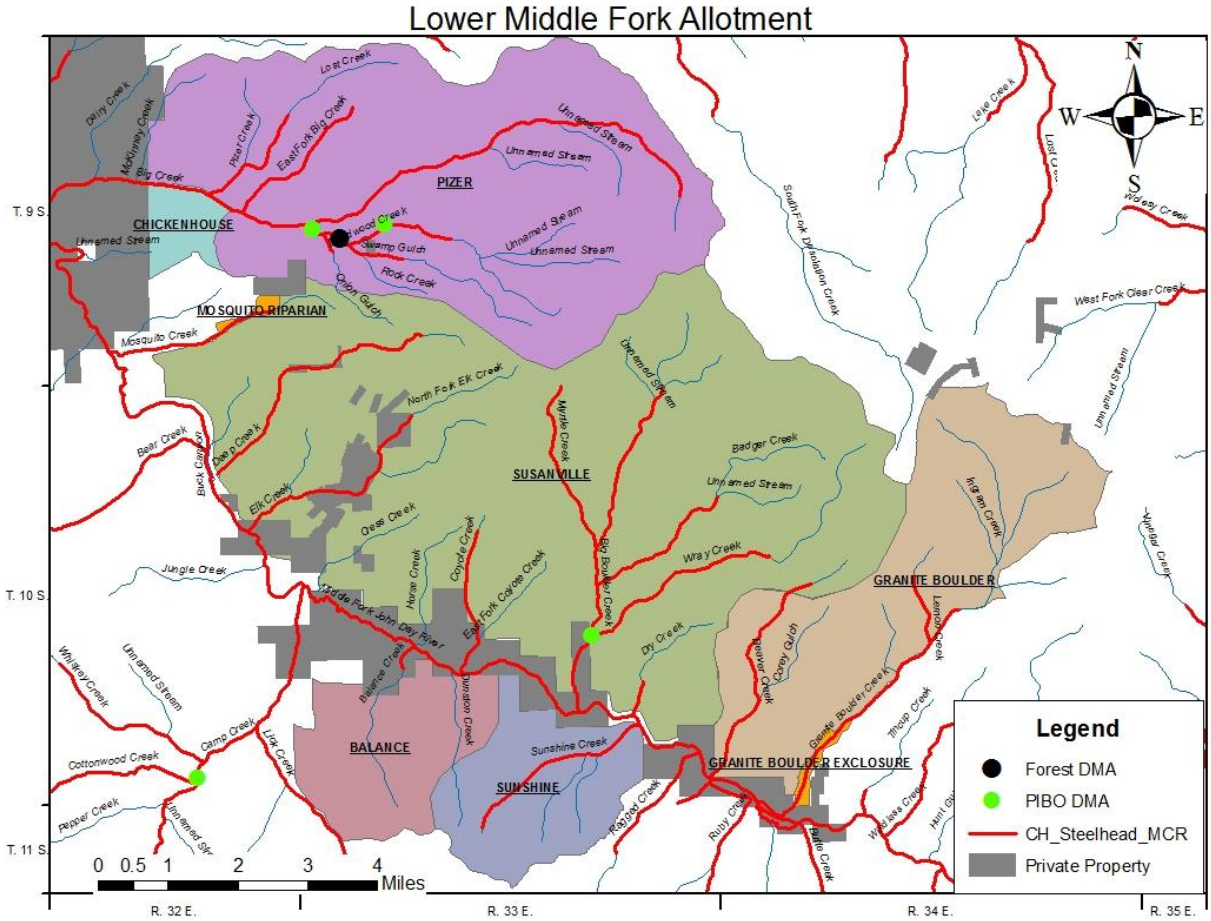
Map 14. Blue Mountain Allotment Critical Habitat and MSRA



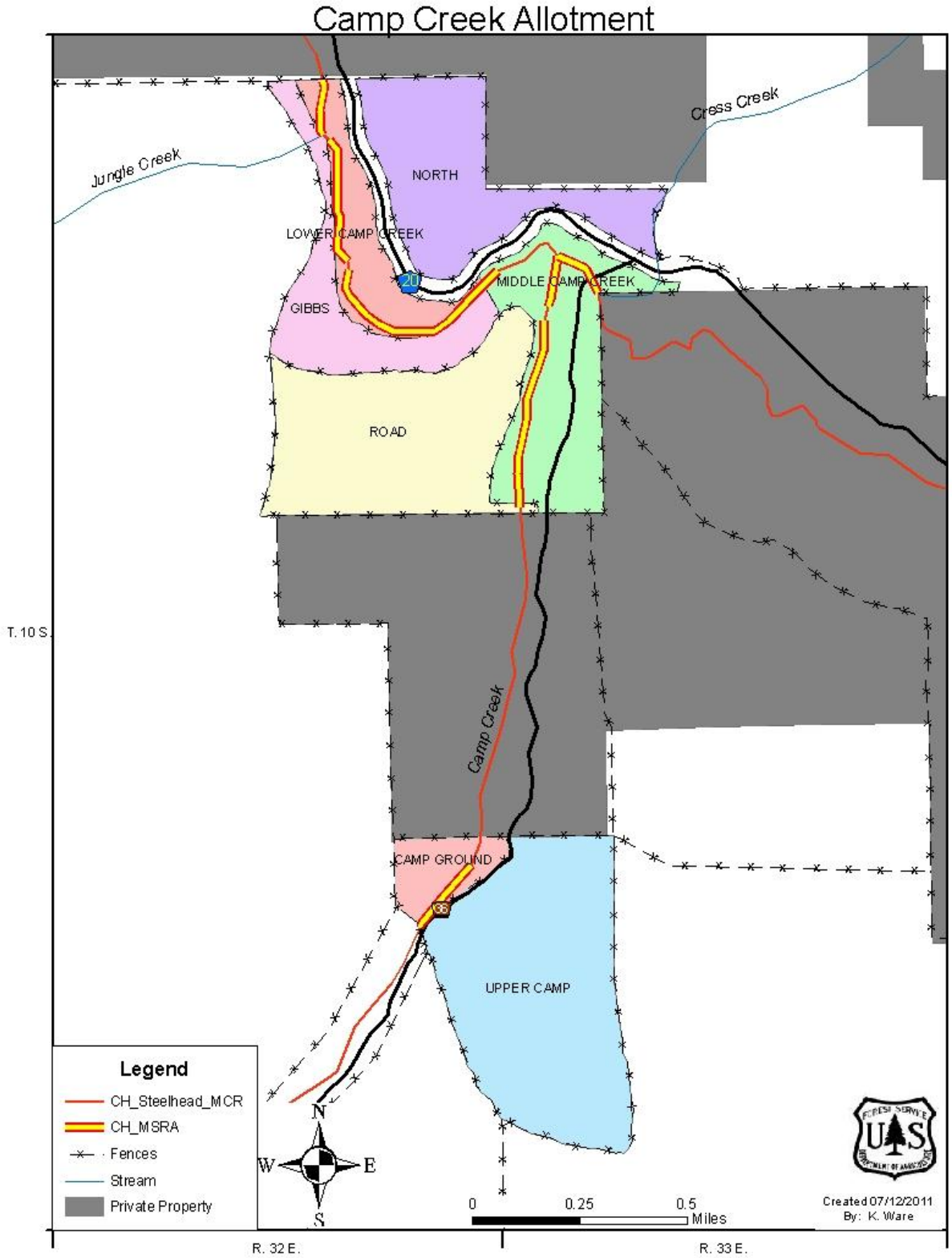
Map 15. Upper Middle Fork Allotment Critical Habitat



Map 16. Lower Middle Fork Allotment Critical Habitat

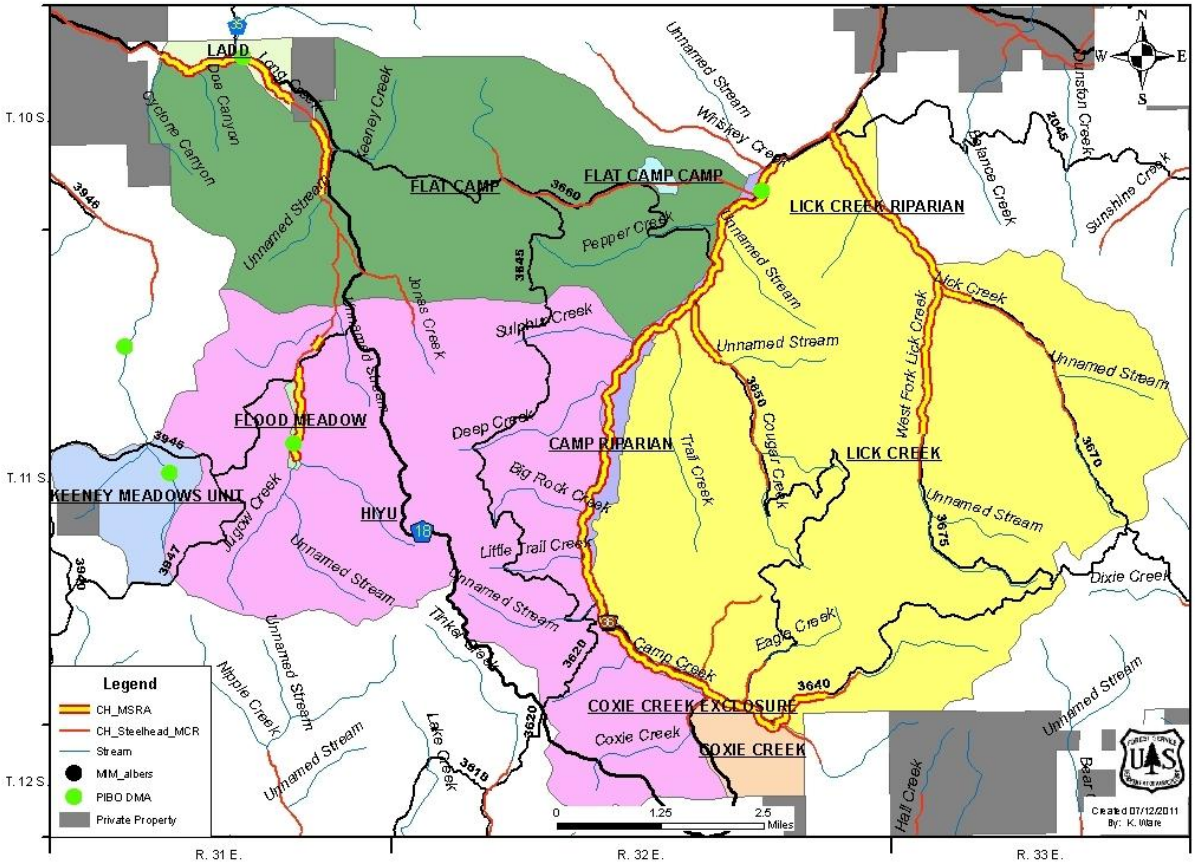


Map 17. Camp Creek Allotment Critical Habitat and MSRA

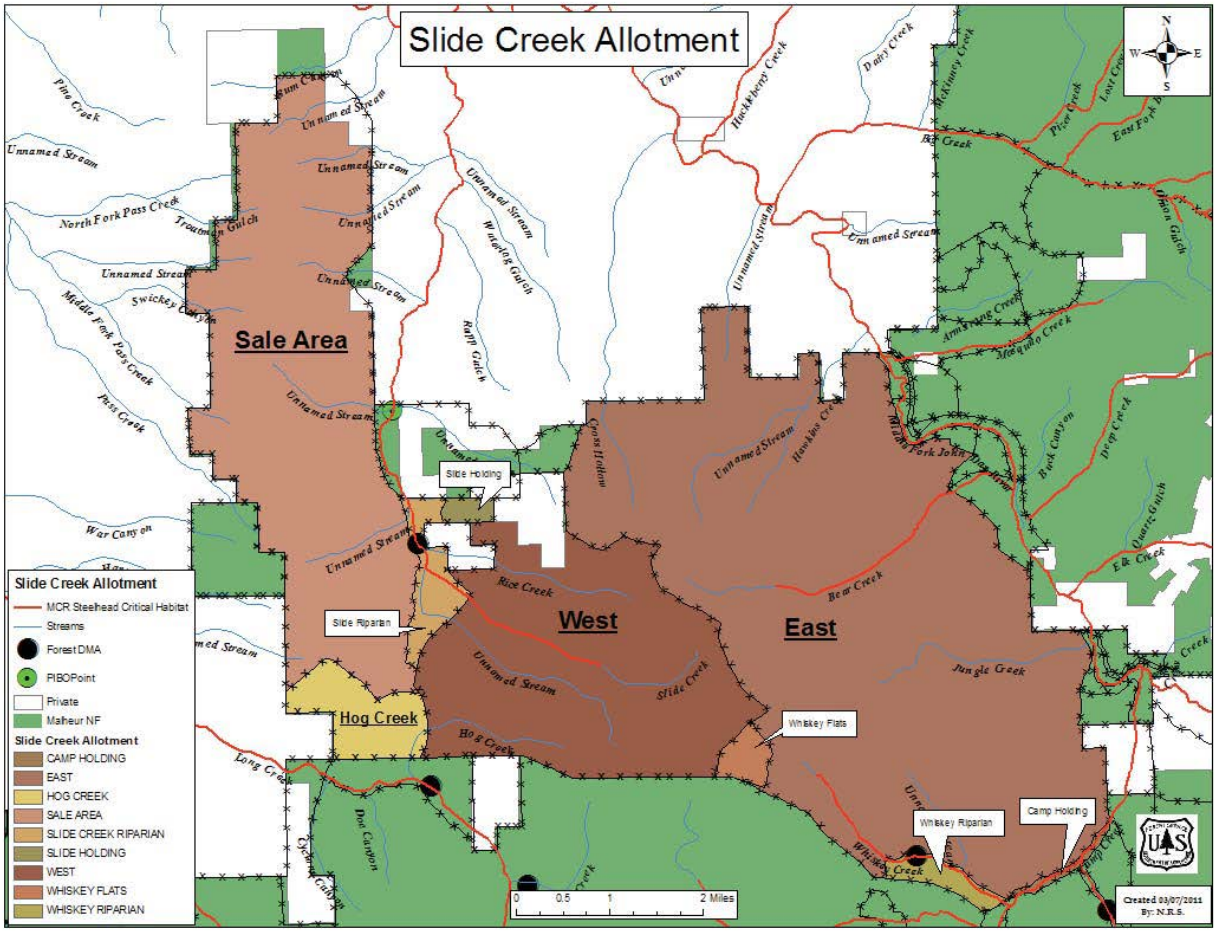


Map 18. Long Creek Allotment Critical Habitat and MSRA

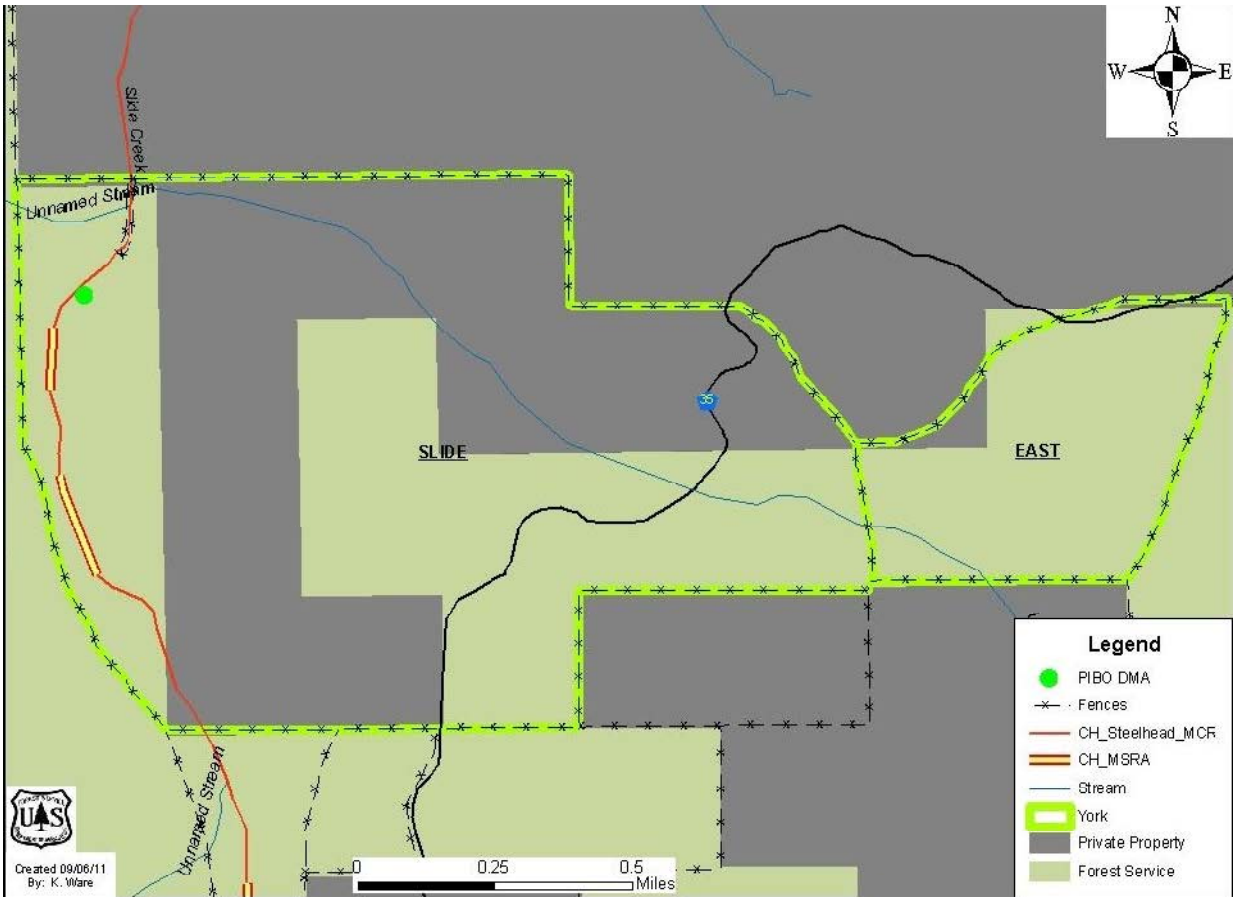
Long Creek Allotment



Map 19. Slide Creek Allotment Critical Habitat and MSRA



Map 20. York Allotment Critical Habitat and MSRA



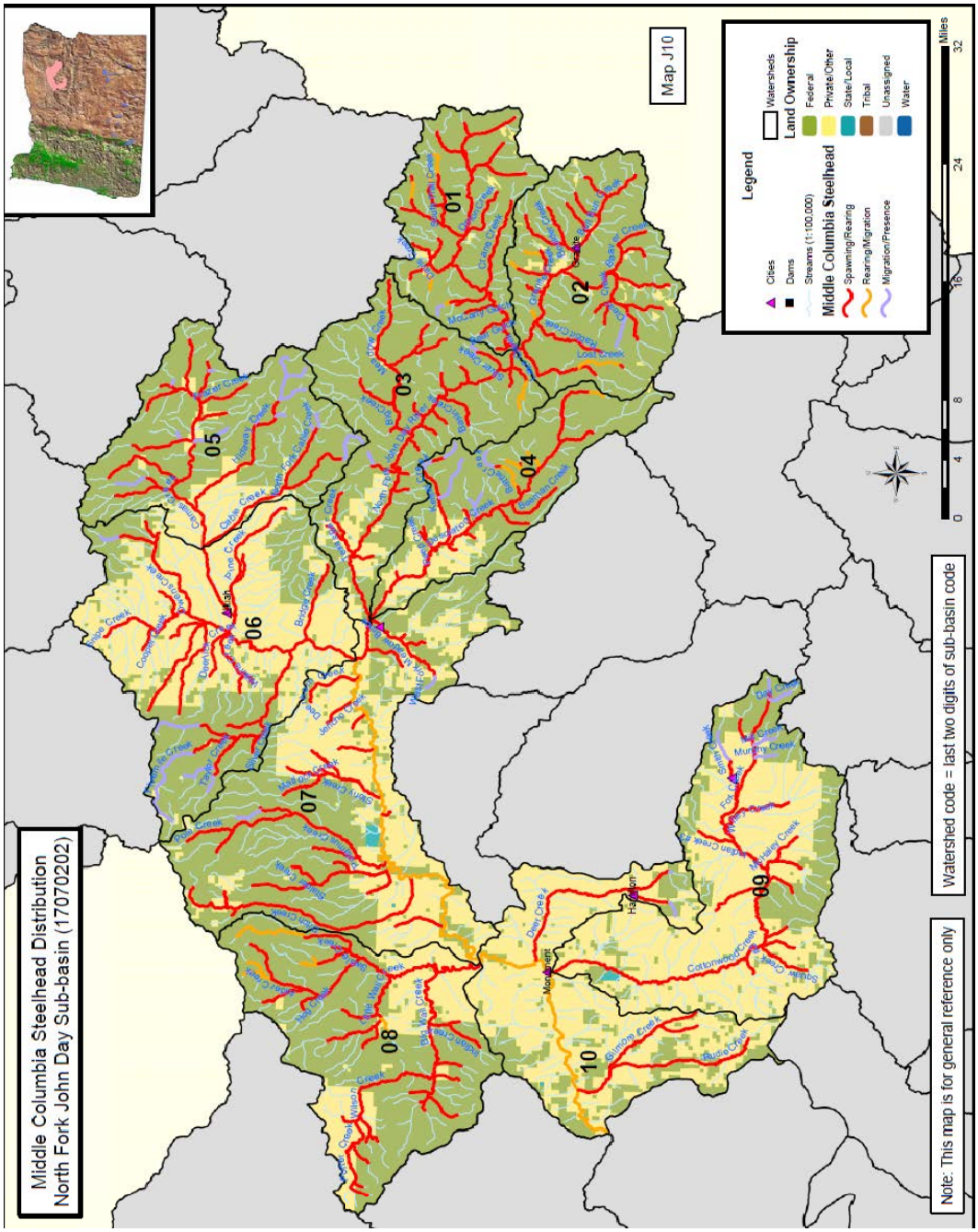
Allotments primarily within the range of NFJDR MCR steelhead population's critical habitat shown in Map 21 are summarized in Table 30 and shown in Map 11 and Maps 22-24.

Table 30. Miles of Critical Habitat for NFJDR Population in MNF Allotments

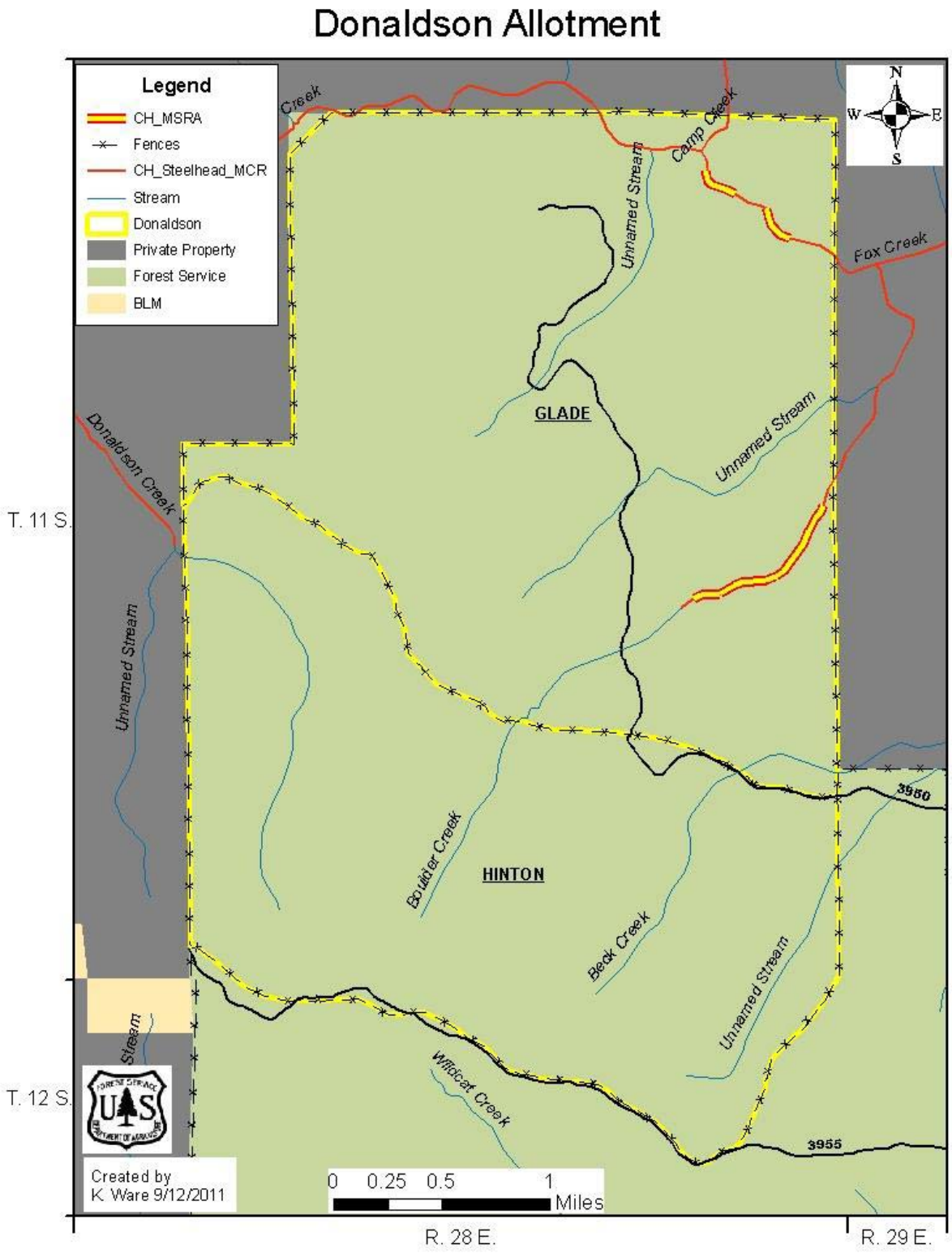
Stream	**Tributary**	**Tributary**	**Fox critical habitat**	**Donaldson critical habitat**	**Deer Creek critical habitat**	**Indian Ridge critical habitat**
Fox Creek			4.03			
	Day Creek		1.64			
	Mill Creek and tributary		1.43			
	Dunning Creek		.98			
	Murphy Creek		.96			
	Smith Creek		.85			
Cottonwood Creek				.6		
	Camp Creek			.2		
	Fox Creek			.8		
		Boulder Creek		1.0		
		Indian Creek				Approximately 300 feet*
Deer Creek						
	West Fork Deer Creek				1.22	

*Although Indian Creek on the Indian Ridge Allotment is not designated as critical habitat, the BA for this allotment states that first 300 feet of this creek past the MNF boundary is occupied by MCR steelhead.

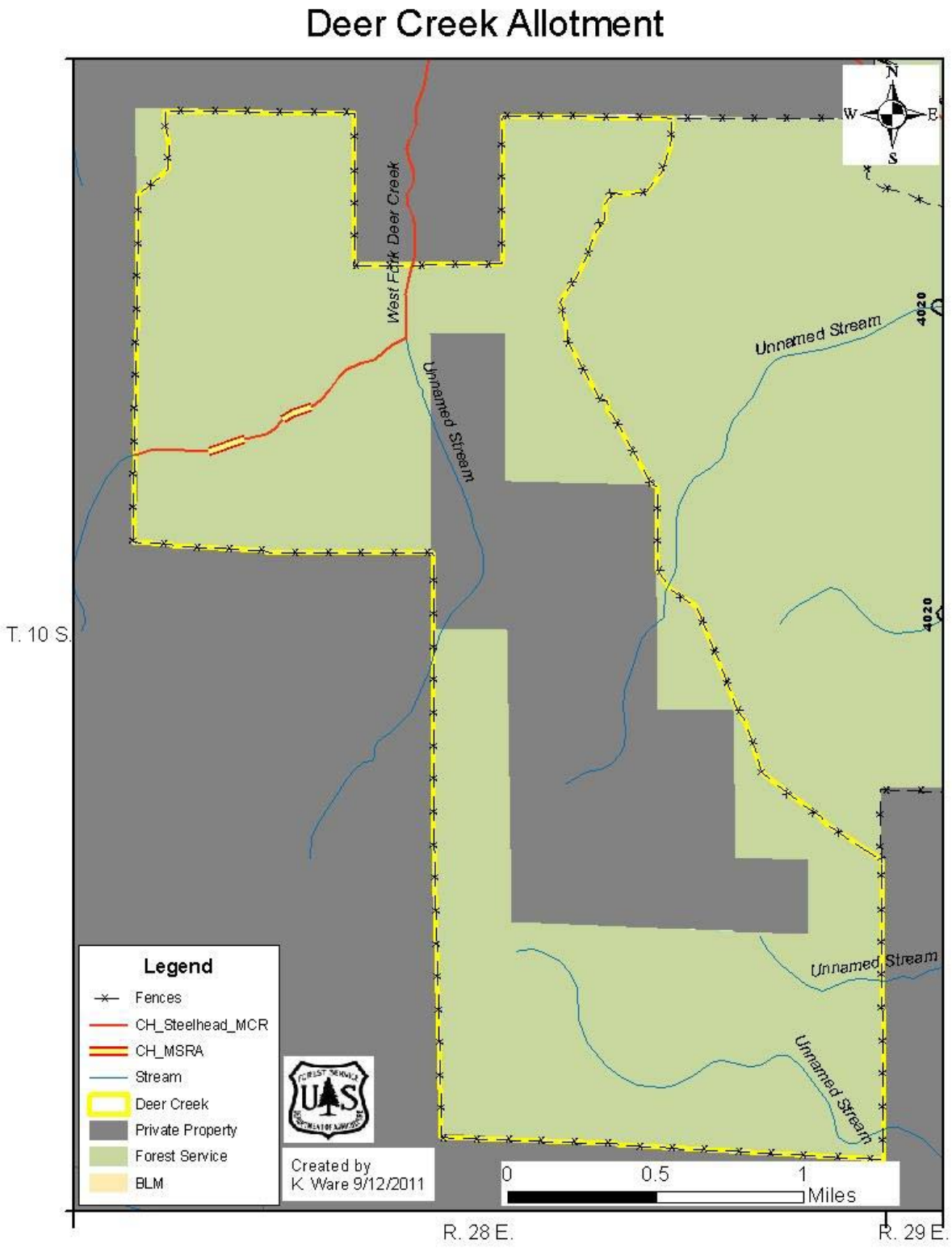
Map 21. NFJD Critical Habitat



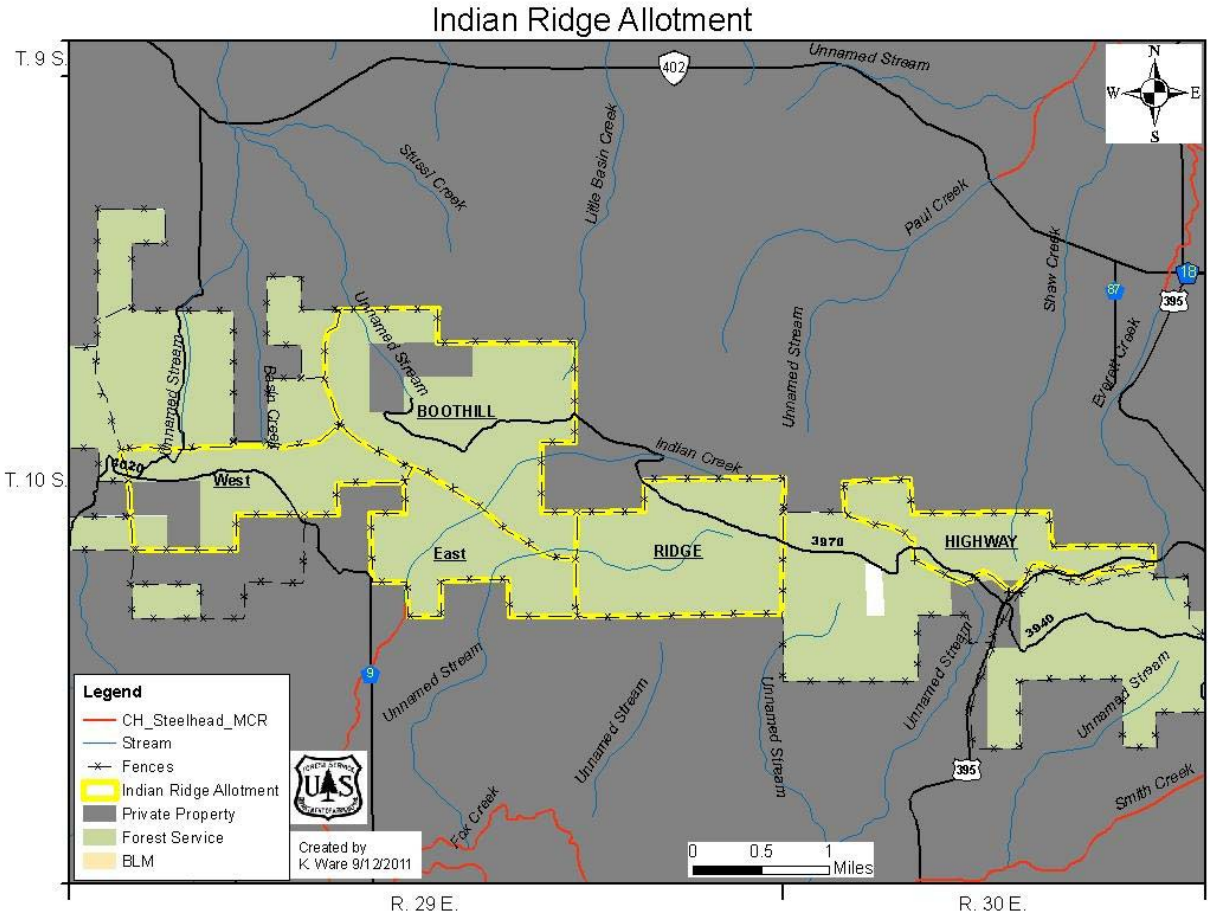
Map 22. Donaldson Allotment Critical Habitat and MSRA



Map 23. Deer Creek Allotment Critical Habitat and MSRA



Map 24. Indian Ridge Allotment Critical Habitat and MSRA



MCR steelhead were listed as threatened under the ESA on March 25, 1999 (64 FR 14517), confirmed as threatened on January 5, 2006 (71 FR 834), and a 5-year status review was completed on August 15, 2011 (76 FR 50448), confirming they should remain listed as threatened. Protective regulations for MCR steelhead were issued under section 4(d) of the ESA on June 28, 2005 (70 FR 37160). Critical habitat was designated for MCR steelhead on September 2, 2005 (70 FR 52630). Designated EFH for Chinook salmon occurs within the project area.

2. ENDANGERED SPECIES ACT BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

Section 7(a)(2) of the ESA requires Federal agencies, in consultation with NMFS, to insure 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 jeopardy analysis considers both survival and recovery of the species. The adverse modification analysis considers the impacts to the conservation value of the designated critical habitat.

"To jeopardize the continued existence of a listed species" means to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02).

This opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.[9]

We will use the following approach to determine whether the proposed action described in Section 1.3 is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- *Identify the rangewide status of the species and critical habitat likely to be adversely affected by the proposed action*. This section describes the current status of each listed species and its critical habitat relative to the conditions needed for recovery. For listed salmon and steelhead, NMFS has developed specific guidance for analyzing the status of the listed species' component populations in a "viable salmonid populations" paper (VSP; McElhany *et al*. 2000). The VSP approach considers the abundance, productivity, spatial structure, and diversity of each population as part of the overall review of a species' status. For listed salmon and steelhead, the VSP criteria therefore encompass the species' "reproduction, numbers, or distribution" (50 CFR 402.02). In describing the range-wide status of listed species, we rely on viability assessments and criteria in technical recovery team documents and recovery plans, where available, that describe how VSP criteria are applied to specific populations, major population groups, and species. We determine the rangewide status of critical habitat by examining the condition of its physical or biological features (also called "primary constituent elements" or PCEs in some designations) – which were identified when the critical habitat was designated. Species and critical habitat status are discussed in Section 2.2.
- *Describe the environmental baseline for the proposed action*. The environmental baseline includes the past and present impacts of Federal, state, or private actions and other human activities *in the action area*. It includes the anticipated impacts of proposed Federal projects that have already undergone formal or early section 7 consultation and the impacts of state or private actions that are contemporaneous with the consultation in process. The environmental baseline is discussed in Section 2.3 of this opinion.

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

- *Analyze the effects of the proposed actions*. In this step, NMFS considers how the proposed action would affect the species' reproduction, numbers, and distribution or, in the case of salmon and steelhead, their VSP characteristics. NMFS also evaluates the proposed action's effects on critical habitat features. The effects of the action are described in Section 2.4 of this opinion.
- *Describe any cumulative effects.* Cumulative effects, as defined in NMFS' implementing regulations (50 CFR 402.02), are the effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area. Future Federal actions that are unrelated to the proposed action are not considered because they require separate section 7 consultation. Cumulative effects are considered in Section 2.5 of this opinion.
- *Integrate and synthesize the above factors to assess the risk that the proposed action poses to species and critical habitat.* In this step, NMFS adds the effects of the action (Section 2.4) to the environmental baseline (Section 2.3) and the cumulative effects (Section 2.5) to assess whether the action could reasonably be expected to: (1) appreciably reduce 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 (Section 2.2). Integration and synthesis occurs in Section 2.6 of this opinion.
- *Reach jeopardy and adverse modification conclusions*. Conclusions regarding jeopardy and the destruction or adverse modification of critical habitat are presented in Section 2.7. These conclusions flow from the logic and rationale presented in the Integration and Synthesis section (2.6).
- *If necessary, define a reasonable and prudent alternative to the proposed action.* If, in completing the last step in the analysis, NMFS determines that the action under consultation is likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat, NMFS must identify a reasonable and prudent alternative (RPA) to the action. The RPA must not be likely to jeopardize the continued existence of ESA-listed species nor adversely modify their designated critical habitat and it must meet other regulatory requirements.

2.2 Rangewide Status of the Species and Critical Habitat

The summaries that follow describe the status of the MCR steelhead, and their designated critical habitats 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 (including 71 FR 834, 70 FR 52630, and 76 FR 50448).

Climate change is likely to 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. These changes will not be spatially homogeneous across the Pacific Northwest. Areas with elevations high enough to maintain temperatures well below freezing for most of the winter and early spring would be less affected. Low-lying areas that historically have received scant precipitation contribute little to total streamflow and are likely to be more affected.

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).

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).

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, variation in quality and quantity of tributary rearing habitat, 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).

One of the likely effects on MCR steelhead and their associated aquatic habitat throughout the John Day River basin 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.

There is still a great deal of uncertainty associated with likely changes in timing, location and magnitude of future climate change, and what that means for the John Day watershed. 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 Oregon (ISAB 2007, Battin *et al*. 2007; Rieman *et al*. 2007)

2.2.1 Status of the Species

Climate change, as described in Section 2.2, is likely to adversely affect the size and distribution of populations of ESA-listed anadromous fish in the Pacific Northwest. The size and distribution of the populations considered in this opinion generally have declined over the past few decades 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 (Ford *et al*. 2010).

When NMFS began recovery planning for salmon and steelhead in the Interior Columbia Basin, we convened a technical recovery team (IC-TRT) comprised of Federal, state, and tribal biologists as well as scientists from private consulting firms and academia. This team assisted NMFS in developing information on historical population structure and also produced ESA technical products to support development of ESA recovery criteria. As part of this effort, the IC-TRT identified independent populations for each Interior Columbia Basin ESA-listed species, and grouped them together into genetically similar major population groups (MPGs). Most evolutionarily significant units (ESUs) and distinct population segments (DPSs) are made up of several MPGs.

The IC-TRT also recommended population-specific biological viability criteria for each of the individual populations for each ESU and DPS. These criteria are integrated to develop a total population viability rating. The population viability ratings, in order of increasing risk, are highly viable, viable, moderate risk and high risk. A further bifurcation occurs at the moderate risk rating. Populations rated at moderate risk are candidates for achieving a “maintained” status. Additional criteria to be identified in the Recovery Plan must be met before a population at moderate risk can be considered “maintained.” Populations that do not meet these additional criteria would remain rated at moderate risk and would generally not contribute to viability at the MPG level.

MCR steelhead. This species includes all naturally-spawned steelhead populations below natural and artificial impassable barriers in streams from above the Wind River, Washington, and the Hood River, Oregon (exclusive), upstream to, and including, the Yakima River, Washington, excluding steelhead from the Snake River basin; and progeny of seven artificial propagation programs (71 FR 834; January 5, 2006). On August 15, 2011, NMFS announced the results of an ESA 5-year review for MCR steelhead (76 FR 50448). After reviewing new information on the viability of this species, ESA section 4 listing factors, and efforts being made to protect the species, NMFS concluded that this DPS should retain its threatened listing classification.

The IC-TRT identified 17 extant populations in this DPS (IC-TRT 2003). The populations fall into four major population groups: the Yakima River basin (four extant populations), the Umatilla/Walla-Walla drainages (three extant and one extirpated populations); the John Day River drainage (five extant populations) and the Eastern Cascades group (five extant and two extirpated populations) (NMFS 2009, Ford *et al.* 2010). The John Day River (JDR) has the largest naturally spawning, native stock of steelhead in the region.

The factors limiting recovery as stated in the Middle Columbia River Steelhead Recovery Plan (NMFS 2009) for the John Day River 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 2007, 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 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 2007) (NMFS 2009). For the John Day MPG to reach viable status, the Lower Mainstem John Day River, North Fork John Day River (NFJD), and either the Middle Fork John Day (MFJD) or Upper John Day River (UJDR) populations should achieve viable status, with one achieving "highly viable" status. The South Fork John Day (SFJD) population must achieve a maintained status.

According to the most resent status review (Ford *et al*. 2010), the only two populations ranked at the desired status for recovery are: the NFJD population which is considered highly viable, while the SFJD population is rated at a maintained status. The other three populations are ranked at a maintained status. The MPG-level recovery criteria call for the Lower John Day population to reach a viable status and either the MFJD or the UJDR to reach viable status (Ford *et al*. 2010, NMFS 2009).

Steelhead typically migrate to marine waters after spending two years in fresh water. They reside in marine waters for two or three years prior to returning to natal streams to spawn as 4- or 5-year-olds. Steelhead adults typically spawn between December and June. Depending on water temperature, steelhead eggs may incubate in redds for 1.5 to four months before hatching as alevins. Following yolk sac absorption, young juveniles emerge from the gravel and begin actively feeding. Juveniles rear in fresh water from one to four years, and then migrate to the ocean as "smolts."

2.2.2 Status of the Critical Habitat

The physical or biological features of freshwater spawning and incubation sites, include water flow, quality and temperature conditions and suitable substrate for spawning and incubation, as well as migratory access for adults and juveniles. These features are essential to conservation because without them the species cannot successfully spawn and produce offspring. The physical or biological features of freshwater migration corridors associated with spawning and incubation sites include water flow, quality and temperature conditions supporting larval and adult mobility, abundant prey items supporting larval feeding after the yolk sac is depleted, and free passage (no obstructions) for adults and juveniles. These features are essential to conservation because they allow adult fish to swim upstream to reach spawning areas and they allow larval fish to proceed downstream and reach the ocean.

The status of critical habitat was based primarily on a watershed-level analysis of conservation value that focused on the presence of listed ESA-listed species and physical features (*i.e*., the primary constituent elements [PCEs]) that are essential to their conservation. The analysis for the 2005 designations of salmon and steelhead species was completed by Critical Habitat Analytical Review Teams (CHARTs) that focused on large geographical areas corresponding approximately to recovery domains (NOAA Fisheries 2004). The CHARTs completed assessed factors of PCEs for 12 species of ESA-listed salmon and steelhead in the Puget Sound, Willamette-Lower Columbia, and Interior Columbia recovery domains.

Each watershed was ranked using a conservation value attributed to the quantity of stream habitat with PCEs, the present condition of those PCEs, the likelihood of achieving PCE potential (either naturally or through active restoration), support for rare or important genetic or life history characteristics, support for abundant populations, and support for spawning and rearing populations. In some cases, our understanding of these interim conservation values has been further refined by the work of TRTs and other recovery planning efforts that have better explained the habitat attributes, ecological interactions, and population characteristics important to each species.

Climate change, as described in Section 2.2, is likely to reduce the conservation value of designated critical habitats in the Pacific Northwest. Other influences on the conservation value of critical habitat in the various recovery domains are discussed below.

Status of Critical Habitat in the Interior Columbia Basin. Critical habitat has been designated in the Interior Columbia Basin for MCR steelhead. Major tributary river basins in the Interior Columbia basin include the Klickitat, Deschutes, Yakima, John Day, Umatilla, and Walla Walla rivers.

Migratory habitat quality in this area has been impacted by the development and operation of the Federal Columbia River Power System dams in the mainstem Columbia River and privately owned dams in the Snake and Upper Columbia River basins. Hydroelectric development has modified natural flow regimes, resulting in higher water temperatures, changes in fish community structure leading to increased rates of piscivorous and avian predation on juvenile salmonids, and delayed migration time for both adult and juvenile salmonids. Physical features of dams such as turbines also kill migrating fish. In-river survival is inversely related to the number of hydropower projects encountered by emigrating juveniles.

In addition to the development and operation of the dams in the mainstem rivers, development and operation of irrigation systems and hydroelectric dams for water withdrawal and storage in tributaries have altered hydrological cycles, causing a variety of adverse impacts to salmon and steelhead spawning and rearing habitat. Condit Dam on the White Salmon River has extirpated a population of MCR steelhead from the Cascades Eastern Slope MPG (this dam was recently removed). In the Umatilla River subbasin, the Bureau of Reclamation developed the Umatilla Project in 1906, effectively eliminating over 108 miles of historically highly productive tributary habitat for MCR steelhead in upper McKay Creek due to construction of the McKay Dam and Reservoir in 1927.

Habitat quality in tributary streams in the Interior Columbia basin varies from excellent in wilderness and roadless areas to poor in areas subject to heavy agricultural and urban development (Overton *et al.* 1995; Wissmar *et al.* 1994; and McIntosh *et al.* 1994). Lack of summer stream flows, impaired water quality, and reduction of habitat complexity are common problems for critical habitat in developed areas. Critical habitat throughout the Interior Columbia River basin has been degraded by several management activities, including agriculture, alteration of stream morphology (*i.e.*, channel modifications and diking), riparian vegetation disturbance, wetland draining and conversion, livestock grazing, dredging, road construction and maintenance, timber harvest, mining, and urbanization (Lee *et al.* 1997). Changes in habitat quantity, availability, diversity, flow, temperature, sediment load and channel instability are common symptoms of ecosystem decline in areas of critical habitat. Large-scale habitat assessments in the Interior Columbia basin indicate that in-watersheds managed for natural resources extraction, the number of large pools has decreased from 20 to 87% (McIntosh *et al.* 1994).

Areas where habitat is still largely functioning appropriately include the South Fork Walla Walla, portions of the Deschutes Basin, and portions of the North Fork John Day River. Most of these areas are in designated wilderness or roadless areas.

Many stream reaches designated as critical habitat in the Interior Columbia basin are over allocated under state water law, with more allocated water rights than existing streamflow conditions can support. Irrigated agriculture is common throughout this region and withdrawal of water increases summer stream temperatures, blocks fish migration, strands fish, and alters sediment transport (Spence *et al.* 1996). Continued operation and maintenance of large water reclamation systems such as the Umatilla Basin and Yakima Projects have disrupted riverine ecosystems. Reduced tributary stream flow has been identified as a limiting factor for all listed salmon and steelhead species in this area except SR fall-run Chinook salmon and SR sockeye salmon. (NMFS 2007b, NOAA Fisheries 2011).

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 Upper John Day River, the Lower John Day River, and the North, South, and Middle Forks of the John Day River. The Middle Fork, North Fork and Upper John Day subbasins provide freshwater spawning, rearing, and migration PCEs for MCR steelhead.

Table 31. 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

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. The following watersheds are within the action area for the proposed action:

Upper John Day - Lower South Fork John Day River (1707020105). The CHART report[10] 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] 2005) 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 –Canyon Creek (1707020107). The CHART report indicates that the Canyon Creek watershed contains the following PCEs: 51.1 miles of spawning/rearing and 5.4 miles of migration/presence**.** The CHART report rates Canyon Creek as having a high conservation value. The John Day River Subbasin Plan (NPCC 2005) identified the following

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

limiting factors in the Canyon Creek: channel stability, competition with other species, flow, habitat diversity, obstructions, predation, sediment load, temperature, and key habitat quantity.

Upper John Day –Fields Creek (1707020111). The CHART report indicates that the Fields Creek watershed contains the following PCEs: 45.4 miles of spawning/rearing, 20.2 miles of rearing/migration, and 3.7 miles of migration/presence**.** The CHART report rates Fields Creek as having a medium conservation value. The John Day River Subbasin Plan (NPCC 2005) identified the following limiting factors in the Fields Creek: temperature, sediment load, habitat diversity and flow.

Upper John Day –Beech Creek (1707020109). The CHART report indicates that the Beech Creek watershed contains the following PCEs: 44.5 miles of spawning/rearing and 1.8 miles of migration/presence**.** The CHART report rates Beech Creek as having a high conservation value. The John Day River Subbasin Plan (NPCC 2005) identified the following limiting factors in the Beech Creek: temperature, sediment load, habitat diversity and flow.

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 Plan (NPCC 2005) 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 Middle John Day (1707020112). The CHART report indicates that the Upper Middle 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 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 – Murderers Creek (1707020104). The CHART report indicates that the Murderers Creek watershed contains 52.4 miles of the spawning/rearing PCE and 15.6 miles of the migration/presence PCE. The CHART report rates Murderers Creek as having a high conservation value. The John Day River Subbasin Plan (NPCC 2005) identified the following limiting factors in the Murderers Creek: habitat diversity, predation, sediment load, 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 Plan (NPCC 2005) 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.

North Fork John Day – Upper North Fork John Day River (1707020201). The CHART report indicates that the Upper North Fork John Day River watershed contains the following PCEs: 74.4 miles of spawning/rearing, 6.1 miles of rearing/migration, and 1.1 miles of migration/presence**.** The CHART report rates the Upper North Fork John Day River as having a high conservation value. The John Day River Subbasin Plan (NPCC 2005) identified the following limiting factors in the Upper North Fork John Day River: channel stability, flow, habitat diversity, sediment load, temperature, pathogens, and key habitat quantity.

Middle Fork John Day- Upper Middle Fork John Day River (HUC 1707020301). The CHART report indicates that the Upper Middle Fork John Day River watershed contains 44.5 miles of the spawning/rearing PCE and 3.2 miles of the migration/presence PCE. The CHART report rates the Upper Middle Fork John Day River as having a high conservation value. The John Day River Subbasin Plan (NPCC 2005) identified the following limiting factors in the Upper Middle Fork John Day River: key habitat quantity and sediment load.

Middle Fork John Day- Camp Creek (HUC 1707020302). The CHART report indicates that the Camp Creek watershed contains 112.0 miles of the spawning/rearing PCE and 19.0 miles of the migration/presence PCE. The CHART report rates Camp Creek as having a high conservation value. The John Day River Subbasin Plan (NPCC 2005) identified the following limiting factors in Camp Creek: key habitat quantity, habitat diversity, sediment load, and temperature.

Middle Fork John Day- Long Creek (HUC 1707020304). The CHART report indicates that the Long Creek watershed contains 66.0 miles of the spawning/rearing PCE and 3.1 miles of the migration/presence PCE. The CHART report rates Long Creek as having a high conservation value. The John Day River Subbasin Plan (NPCC 2005) identified the following limiting factors in Long Creek: key habitat quantity, sediment load, habitat diversity and flow.

Middle Fork John Day- Lower Middle Fork John Day River (HUC 1707020305). The CHART report indicates that the Lower Middle Fork John Day River watershed contains 22.3 miles of the spawning/rearing PCE and 25.2 miles of rearing/migration PCE. The CHART report rates Lower Middle Fork John Day River as having a low conservation value. The John Day River Subbasin Plan (NPCC 2005) identified the following limiting factors in the Lower Middle Fork John Day River: key habitat quantity, habitat diversity, sediment load, and temperature.

2.3 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).

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. Each listed species considered in this Opinion resides in or migrates through the

action area. Thus, for this action area, the biological requirements for salmon and steelhead are the habitat characteristics that support successful completion of spawning, rearing, and freshwater migration.

2.3.1 Wild Ungulates

Wild ungulates have lived in the action area since time immemorial. The ODFW has influenced elk and deer populations through regulated hunting for many decades. Elk and deer utilize streamside vegetation differently. Both eat riparian vegetation, but have different forage preferences. The diets of elk, deer and cattle are very different during early summer and become increasingly similar during late summer. Cattle diets have more grasses, deer diets have more shrubs and forbs, and elk diets are intermediate between those of cattle and deer. There is overlap between what each species will eat depending upon season and availability. Cattle tend to displace elk, and elk tend to displace deer. Except in uncommon times and places when elk are concentrated, elk and deer grazing do not approach cattle grazing in magnitude of ground cover removed or mechanical hoof perturbation of soils. In some limited circumstances, elk and deer browsing can significantly inhibit establishment and growth of shrubs and small trees.

2.3.2 Roads and Sediment

Many scientific studies have documented the impacts of roads on to fish, fish habitat, and watershed function. Effects of roads on fish, fish habitat and watershed function include habitat fragmentation from stream crossing structures that block migration, increases in peak flows from high road density, increased sedimentation and isolating streams from their floodplains (USDA Forest Service 2001). Road densities greater than 2.0 miles per square mile have high levels of sediment delivery from road surfaces and the relative instability of the hill slopes. Most road prism erosion is associated with unvegetated cut slopes and stream crossings. While road prism erosion displaces soil particles, this material must be delivered to a stream to affect water quality. This delivery generally occurs where roads are either close to or cross a stream. When roads are not close to the stream, fine gravel and sand gets trapped on the hillslopes while silts and finer particles are delivered further downslope during high flow storm events that keep the sediment suspended as it moves downstream until it settles in low gradient reaches. Road crossings at streams are the primary mechanism for rainfall runoff intercepted by roads to enter stream channels. Roads tend to concentrate runoff, resulting in higher peak flows than would occur without roads. Fine sediments from road surfaces also enter stream channels at road crossings, increasing turbidity, substrate embeddedness and substrate composition.

Roads under Forest Service jurisdiction are assigned a maintenance level from 1 to 5. These maintenance levels are defined as follows:

1. Level 1. These are intermittent service roads during the time they are closed to motorized traffic. The closure period must exceed one year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Roads receiving level 1 maintenance may be of any type, class, or construction standard.

2. Level 2. Roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor.
3. Level 3. Roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material.
4. Level 4. Roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated.
5. Level 5. Roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. Some may be aggregate surfaced and dust abated.

The MNF assessed the risk of roads on 6th field HUC watershed function from: Total road density (roads in management levels 1-5); Road density (roads in management levels 1 and 2); Total road density within 200 feet of perennial and intermittent streams; Density within 200 feet of perennial and intermittent streams (roads in management levels 1 and 2); Total road-stream crossing density (crossings/square mile); Geologic Sensitivity; Soil Sensitivity. Ranges of values for each element were assigned a risk rating of low, moderate, high or extreme and assigned a numeric ranging from 1 for a rating of low to 4 for a rating of extreme. The individual element numeric scores were then added for a total score. Total scores exceeding 23 were given an overall watershed risk rating of extreme, scores in the 17-23 range were given a high rating, scores from 11-17 were given a moderate rating and scores less than 11 were given a rating of low. Streams/watersheds that scored in the extreme and high categories are noted in its baseline narrative. In watersheds with high road density or roads close to streams, some aspects of lotic habitat quality may remain degraded even if all other management activities within that watershed cease. The MNF presented the road analysis in the BA to illustrate that some streams will not fully recover until road issues are addressed regardless of how livestock grazing is managed.

2.3.3 Temperature

Water temperature in streams is influenced by a variety of human activities. These include land and water uses associated with forestry, agriculture, transportation, recreation, and urban and rural development and activities. The principal causes of stream heating in the basin are near-stream vegetation removal, and channel reconfiguration and instream flow loss, primarily due to irrigation. Stream water temperature is also influenced by a number of other factors including elevation, topographic aspect, and stream channel morphology.

Section 303(d) of the Clean Water Act calls for the development of a list of water quality limited waters. The term water quality limited is applied to streams, lakes and estuaries where treatment requirements are met where applicable and violations of State water quality standards continue to occur. With a few exceptions, such as in situations where violations are due solely to natural causes, the State must establish a total maximum daily load (TMDL) for any waterbody designated as water quality limited.

Loading capacity is defined as the greatest amount of loading that a water body can receive without violating water quality standards. The loading capacity is allocated to point, nonpoint, background, and future sources of pollution, along with a margin of safety to account for uncertainty. Nonpoint sources are diffuse sources such as field runoff or excess solar radiation.

The temperature standard for evaluating whether a stream should be included on the 303(d) lists based on fisheries as the most sensitive beneficial use of waters of the state. Cold water fish such as salmon and trout are particularly sensitive to temperature. Substantial stream heating occurs each year due to human related landscape modifications. Healthy concentrations of dissolved oxygen are difficult to maintain at high temperatures and dissolved oxygen concentrations range to dangerously low levels in the presence of excess algae associated with high heat and nutrient loading.

The role of vegetation in maintaining a healthy stream condition and water quality is well documented and accepted in scientific literature. Vegetation impacts the stream and the surrounding environment in the following ways: (1) Vegetation plays an important role in regulating radiant heat in stream thermodynamic regimes; (2) channel morphology is often highly influenced by vegetation type and condition by affecting flood plain and instream roughness, contributing coarse woody debris, and influencing sedimentation, stream substrate compositions and streambank stability; (3) vegetation creates a thermal microclimate that generally maintains cooler air temperatures, higher relative humidity and lower wind speeds along stream corridors; and (4) riparian and instream nutrient cycles are affected by vegetation. (ODEQ 2010).

2.3.4 Environmental Baseline for UJDR Population Allotments

2.3.4.1 Dark Canyon Allotment

The MCR steelhead in this allotment are part of the UJDR population. Elevations within the allotment range from 4,300 feet along Canyon Creek to 7,000 feet in the Strawberry Mountain Wilderness. The Dark Canyon Allotment is bordered by the Prairie City Ranger District to the east and contains a portion of the Strawberry Mountain Wilderness to the north. County Road 65/Forest Road 15 and Canyon Creek bisect the allotment. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation.

Allotment Pastures

The Dark Canyon Allotment consists of seven pastures. The Canyon Creek Pasture contains five streams that include designated MCR steelhead critical habitat: Canyon Creek, Middle Fork Canyon Creek, Crazy Creek, Wall Creek and an unnamed tributary of Wall Creek. The entire length of Middle Fork Canyon Creek in the pasture is critical habitat. MSRAs are designated on Middle Fork Canyon Creek, Canyon Creek and Wall Creek in the Canyon Creek Pasture. The Wickiup, North Rock Springs, South Rock Springs, and CH pastures do not have any streams containing steelhead critical habitat within their boundaries. The 15 Road Pasture is a 490-acre riparian pasture that is used as a short-term holding pasture for moves between larger pastures.

The 15 Road Pasture contains designated MCR steelhead critical habitat in Canyon Creek and the confluence of Canyon Creek and Middle Fork Canyon Creek. MSRAs are designated in both streams in this pasture. No other streams are known to be occupied by steelhead on the allotment.

Activities

In the past, the land contained within the Dark Canyon Allotment was run in conjunction with the Seneca Allotment, creating what was called the Sugarloaf and Seneca allotments in the 2007-2011 opinion. In 2007, the permit holder divided his estate and created three new grazing permits. Each new permittee was authorized to graze individual pastures in the Sugarloaf and Seneca allotments. Following the 2010 grazing season, the Seneca and Sugarloaf allotments were split back out, eliminating the Sugarloaf Allotment and returning the Dark Canyon Allotment to its former boundaries, creating the Dark Canyon/Hunter Cabin/Seneca allotments. The 15 Road Pasture in the Dark Canyon Allotment was created in 2011 by the construction of a new fence in the Wickiup Pasture. It contains Canyon Creek and it is the confluence with Middle Fork Canyon Creek. Canyon Creek is heavily wooded, with alder and some dogwood. The 15 Road Pasture was built to exclude livestock access to Canyon Creek when they are grazing the Wickiup Pasture.

Compliance and Resource Condition Issues

Table 32 summarizes implementation monitoring data for the Canyon Creek Pasture from 2007 through 2011. The implementation monitoring endpoints for the allotment were 20% bank alteration, 5-inch stubble height and 40% woody browse. Implementation monitoring was done at the Canyon Creek DMA in 2007. In 2008, Canyon Creek formed a new channel leaving the channel segment with the DMA dry and the implementation monitoring was moved to a representative key area downstream from the DMA. In 2009, the Canyon Creek Pasture was grazed first in rotation because prescribed burning in the North Rock Springs and South Rock Springs pastures made them unavailable. Cattle congregated in Canyon Creek and the permittee was unable to keep them out. A 72-hour notice to remove cattle from the pasture was issued following an inspection of move triggers. Cattle were removed from the pasture but later in the season cattle were found back in the pasture. The permittee was also unable to remove his cattle from the allotment by the permit off date. The permittee was issued a warning notice for the same issue in 2008. The stubble height endpoint was exceeded in 2009. Upland and riparian endpoints in the Dark Canyon and CH pastures were also exceeded but these pastures do not contain critical habitat and are not within the John Day Basin. The permittee received a Notice of Non Compliance for failure to follow Forest Service instructions. Canyon Creek Pasture was rested in 2010, but cattle from the Fawn Springs Allotment and the Dark Canyon Pasture strayed onto and used the Canyon Creek Pasture. In 2011, grazing was not authorized on the Dark Canyon Allotment at the request of the permittee.

Table 32. MIM Monitoring Results for the Dark Canyon Allotment, 2008 - 2011 (NM= Not Monitored, blank cells indicate no data reported)

Location and Indicators Monitored	Year				
	2007	2008	2009	2010 (non-use)	2011 (non-use)
Canyon Creek					
Bank Alteration (%)	1	8	16	8	NM
Stubble Height (inches)	5.75	5	4	11	NM
Woody Browse (%)	Light	None	Slight to Light	None to Slight	NM
Bank Stability (%)	NM	NM	32	NM	NM
Covered Banks (%)	NM	NM	40	NM	NM

Steelhead Habitat Condition and Trends

There is an effectiveness monitoring DMA in the Canyon Creek Pasture on Middle Fork Canyon Creek approximately 3.2 miles upstream from the confluence with Canyon Creek. There is also a effectiveness monitoring integrator site on Middle Fork Canyon Creek at the confluence with Canyon Creek. Both sites were monitored for the first time in 2006. There is a Canyon Creek integrator DMA just outside of the Fawn Springs Allotment that was monitored by the effectiveness monitoring team in 2001 and 2006. The data at this site reflects the influence of Dark Canyon Allotment management on peak flows and sediment supply. This site appears to be recovering with decreasing width to depth ratio, increasing bank stability and increasing percent pools. Canyon Creek has a large supply of spawning gravels, with most good spawning habitat in upper meadow reaches.

Table 33. Environmental Baseline Habitat Parameters for Dark Canyon Allotment.

Stream	Allotment	Year	Rosgen Channel Type or gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Canyon Creek	Fawn Springs	2001	B4C	30.8	39.6	80	Gravel	
Canyon Creek	Fawn Springs	2006	C4	57.6	28.4	98	Gravel	8
Middle Fork Canyon Creek	Dark Canyon	2006	B4c/C4	28.9	23.6	100	Gravel	37
Middle Fork Canyon Creek	Dark Canyon	2006	B4C			83		6

Roads and Temperature

The Dark Canyon Allotment Canyon Creek Pasture encompasses the Upper Canyon Creek watershed. This watershed received a high road risk rating in the report. Middle Fork Canyon Creek and Canyon Creek exceed the 7-day mean maximum of 64.4 degrees and are on the State of Oregon 303d list for water temperature.

2.3.4.2 Fawn Springs Allotment

The MCR steelhead in this allotment are part of the UJDR population. Elevations within the allotment range from 4,100 feet to 6,200 feet. The Fawn Springs Allotment is bordered by the Strawberry Wilderness on the north and east and private property on the west. This allotment is primarily west- and south-facing slopes. Terrain tends to gently slope downward towards Canyon Creek. Overstory vegetation in the allotment consists of Ponderosa pine, Douglas-fir, and Western larch. Dominant grass species throughout the allotment are bluebunch wheatgrass, Idaho fescue, elk sedge, and pine grass. Riparian overstory vegetation generally consists of a mix of hardwood and conifer species along the stream with alder being the dominant species.

Allotment Pastures

The Fawn Springs Allotment is divided into five pastures: Lake, G-4, L-8, Alder, and Fawn Springs. The entire length of Wall Creek in the Lake Pasture is designated MCR steelhead critical habitat. No MSRA is designated on Wall Creek. East Fork Canyon Creek is MCR steelhead critical habitat. It forms the boundary between the Lake Pasture and the G-4 Pasture and is in the G-4 Pasture. This section of East Fork Canyon Creek is partially confined by nearly vertical canyon walls comprised of columnar granite. MSRA is designated on East Fork Canyon Creek in this pasture. The three other pastures in the allotment are L-8, Alder, and Fawn Springs. They do not contain MCR steelhead or their critical habitat. No other streams are known to be occupied by steelhead on the allotment.

Activities

Grazing in the Fawn Springs Allotment was under the May 7, 2007 Letter of Concurrence in 2007 through 2011.

Compliance and Resource Condition Issues

Recent implementation monitoring information for end of season indicators is presented in Table 34. This information is from the BA and MNF EOY reports for the Fawn Springs Allotment. The G-4 Pasture contains the East Fork Canyon Creek. The District Wildlife Biologist and Range Specialist concluded that it is not accessible to cattle in this pasture due to sheer canyon walls. In 2008, the permittee complied with the grazing schedule and the utilization of grass and non-hydrophytic plant species standard was met but there was not a DMA or key area on Wall Creek in the Lake Pasture until 2009. Wall Creek is heavily armored by vegetation and downed logs making it largely inaccessible to cattle. In 2009, allotment clearing was a problem at the end of the grazing season and there were numerous occasions when cattle were witnessed on the

allotment after the off date. Management ordered post turn off monitoring to make sure cattle removal was on schedule in 2010. In 2010, cattle from the Fawn Springs Allotment were found in the (then Sugarloaf Allotment) Canyon Creek Pasture because the allotment boundary fence was down in several areas. Range personnel inspected the fence between Fawn Springs and Sugarloaf and required the permittee to perform maintenance before 2011 turnout. In 2011 the allotment was grazed with no reported problems. The Lake Pasture will be rested in 2012.

Table 34. MIM Monitoring Results for the Fawn Springs Allotment, 2004-2011 (NM- Not Monitored, blank cells indicate no data reported).

Location and Indicators Monitored	Year			
	2008	2009	2010	2011
Fawn Springs Monitoring Site (Lake Pasture)				
Bank Alteration (%)	NM	6	NM	NM
Stubble Height (inches)	NM	12	NM	NM
Woody Browse	NM	Moderate	Slight to Light	NM
Bank Stability (%)	NM	40	NM	NM
Covered Banks (%)	NM	47	NM	NM

Steelhead Habitat Condition and Trends

There is a Canyon Creek integrator DMA just off of and upstream from the Fawn Springs Allotment that was monitored by the effectiveness monitoring team in 2001 and 2006. This site appears to be recovering with decreasing width to depth ratio, increasing bank stability and increasing percent pools.

Table 35. Environmental Baseline Habitat Parameters for Fawn Springs Allotment.

Stream	**Year**	**Rosgen Channel Type or gradient**	**Percent Pools**	**Bankfull W/D**	**Percent Stable**	**Median Particle Size (mm)**	**Greenline Woody Cover**
Canyon Creek	2001	B4C	30.8	39.6	80	Gravel	ND
Canyon Creek	2006	C4	57.6	28.4	98	Gravel	8

ND=No data

Roads and Temperature

The Fawn Springs Allotment G-4 Pasture encompasses the part of the East Fork Canyon Creek watershed. This watershed received a low road risk rating in the MNF road report. Wall Creek does not have temperature data but East Fork Canyon Creek exceeds the 7-day mean maximum of 64.4 degrees and is on the State of Oregon 303d list for water temperature.

2.3.4.3 Hanscomb Allotment

The MCR steelhead in the Hanscomb Allotment are part of the UJDR population. The Hanscomb Allotment is located within the Upper John Day River (HUC # 17070201) and Silvies (HUC # 17120002) subbasin. The pastures comprising the Hanscomb Allotment lie within the Headwaters Silvies River (HUC # 1712000201) and Laycock Creek-John Day River (HUC # 1707020109) watersheds, mostly within T 14 and 15 S and R 30 E. The allotment includes approximately 9,102 acres of National Forest System (NFS) Lands. Elevations within the allotment range from approximately 4,500 feet in Laycock Creek to 6,700 feet on Coal-Pit Mountain.

Allotment Pastures

The Hanscomb Allotment is divided into four pastures: Laycock, Upper Geary, Geary Meadows and Allen Morris. The Laycock Pasture contains MCR steelhead critical habitat in Laycock Creek and Hanscomb Creek. MSRA is designated on Laycock Creek. The Laycock Pasture is the only pasture in this allotment that provides critical habitat for MCR steelhead. No other streams are known to be occupied by steelhead on the allotment.

Activities

In 2008, a new permittee took over management of the Deadhorse, Hanscomb, and Fields Peak allotments who elected to take Non-Use on a majority of the units with MCR steelhead critical habitat in these allotments. The BA states that no carry over effects from 2007 grazing on the Laycock Pasture were detected during a pre-season inspection on August 7, 2008. For 2008 - 2011, the Laycock Pasture was rested.

Steelhead Habitat Conditions and Trends

Streams containing MCR steelhead critical habitat within the Laycock Pasture are Laycock and Hanscombe creeks. A 1995 level II team surveyed 3.3 miles of Laycock Creek starting from the MNF boundary. There are no known fish barriers on Laycock Creek but upstream fish habitat was severely limited by sedimentation from a landslide/debris torrent from a slump above a clearcut in 1983. This landslide added sediment directly to 1.7 miles of the stream. Numerous log weirs filled with sediment no longer created pool habitat. Blue Mountain Ranger District fishery biologists suspected that low juvenile numbers could be attributed to poor spawning success because of high substrate embeddedness, abundance of fines, and calcification of fines. Livestock grazing was reported to be contributing to sedimentation (MNF 1995d). Habitat parameters are summarized in Table 36. There is no more current habitat data on Laycock Creek.

Table 36. Environmental Baseline Habitat Parameters for Hanscomb Allotment Streams

Stream	Pasture	Year	Rosgen Channel Type or Gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Laycock Creek Reach 2	Laycock	1995	6.5	16.7	12.1	54	Sand	26
Laycock Creek Reach 3	Laycock	1995	6.5	1.2	12.1	47	Sand	21

Roads and Temperature

The Hanscomb Allotment Laycock Pasture encompasses part of the Laycock Creek watershed. This watershed received a moderate road risk rating in the MNF road report. Laycock Creek and Hanscomb Creek are not on the State of Oregon 303d list for water temperature.

2.3.4.4 Dixie Allotment

The MCR steelhead in this allotment are part of the UJDR and MFJDR populations. Elevations within the allotment range from 4,100 feet where Hall Creek leaves the allotment to 7,500 feet at Dixie Butte. Throughout this allotment, livestock have varying levels of access to streams and the associated riparian communities. Parameters such as gradient, valley form, geologic substrate, vegetative structure, and forage availability can greatly influence livestock movement, use patterns, and distribution relative to streams. Other factors, such as the presence of downed trees, may also influence livestock accessibility to streams and riparian communities. Stream shade is provided by grass and grass-like species, riparian hardwood species and conifer species along the stream. Historically, riparian areas were logged by conventional tractor yarding. Mining and railroad logging also occurred in and along many of the streams within the Dixie Allotment. The combination of logging, insect epidemic, and valley bottom roads has reduced shading from conifer species. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation.

Allotment Pastures

The Dixie Allotment is divided into two pastures: Bear Creek and Standard Creek. Streams containing MCR steelhead critical habitat in the Bear Creek Pasture are Hall Creek, Bear Creek, Dixie Creek and East Fork Camp Creek. MSRA is designated on Hall Creek and Dixie Creek. Stream containing MCR steelhead critical habitat in the Standard Pasture are Dixie Creek and Standard Creek. No other streams are known to be occupied by steelhead on the allotment.

Activities

MNF range personnel visited the Standard Pasture repeatedly to locate a suitable riparian monitoring site but were unable to locate one because Standard Creek is largely inaccessible to cattle due to steep terrain and heavy timber and a large portion of the pasture is on private property. Range personnel determined that the Hall Creek key area did not meet MIM criteria for a monitoring site because it was not representative of cattle use in the Bear Creek pasture and discontinued annual endpoint monitoring there.

Compliance and Resource Condition Issues

Recent implementation monitoring information for end of season indicators is presented in Table 37. This information is from the BA and MNF EOY reports for the Dixie Allotment. In 2008, the Standard Pasture was grazed first in the rotation to accommodate a random spawning survey in Dixie Creek in the Bear Creek Pasture. In 2009, MNF hydrology personnel noted that Standard Creek has been altered by ATV users driving directly up the stream channel. In 2010, the permittee had difficulty clearing the Bear Creek pasture because cool, wet summer conditions made it difficult to locate the cattle. Range personnel inspected the pasture and did not find cattle in Hall Creek, Bear Creek, or Dixie Creek past the scheduled move date. Several gates on the boundary fence with the Long Creek Allotment were opened at some point and cattle from the Dixie Allotment strayed onto the Long Creek Allotment. The permittee retrieved his cattle from the Lick Creek and Camp Creek pastures. A spawning survey found four redds in Dixie Creek in the Bear Creek Pasture and cattle were kept out of the Dixie Creek area until the end of spawning season. In 2011, the allotment was grazed but end of season monitoring did not occur due to inclement weather. On September 30 stubble heights were estimated to range from 7-9 inches.

Table 37. MIM Monitoring Results for the Dixie Allotment, 2004-2011 (NM= Not Monitored, blank cells indicate no data reported)

Location and Indicators Monitored	**Year**				
	2007	**2008**	**2009**	**2010**	**2011**
Dixie Creek, Forest MIM DMA (Bear Creek Pasture)					
Bank Alteration (%)		NM	6	8	NM
Stubble Height (inches)		NM	9	10	NM
Woody Browse (%)		NM	15	13	NM
Bank Stability (%)		NM	93	91	NM
Covered Banks (%)		NM	100	91	NM

Steelhead Habitat Conditions and Trends

A survey of Standard Creek was conducted May 21, 2001, proceeding upstream from the MNF boundary for 1.5 miles. Pockets of steelhead spawning habitat and one potential steelhead redd were found. The steeply incised valley form and numerous downed trees in the riparian zone limited livestock access to the stream. On July 5, 2000, a MNF fisheries biologist surveyed Dixie

Creek in the Bear Creek Pasture. Several salmonids were seen in the upper section near the headwaters but little steelhead spawning gravel was identified in the Rosgen B channel and the substrate was greater than 40% embedded. Fair to good steelhead spawning gravel was observed downstream in the Rosgen C channel where the meadow is at least 300 feet wide. Cattle were present in the unit at the time of the survey but streambanks were stable and there was no sign of cattle use in the meadow. Livestock access is limited by steep and rugged terrain and dense hardwood overstory except at a few places where the road crosses the creek. Logjams were fish barriers even during high flows. Habitat parameters are summarized in Table 38.

Table 38. Environmental Baseline Habitat Parameters for Dixie Allotment

Stream	Pasture	Year	Rosgen Channel Type or gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Standard Creek Reach 1	Standard Creek	1994	5	32.8	16.6	99	Sand	34
Standard Creek Reach 2	Standard Creek	1994	10		10.9	95	Sand	67.3
Dixie Creek Reach 1	Standard Creek	1994	2	24.2	10.9	99.8	Cobble	63.4
Dixie Creek Tributary Reach 1	Bear Creek	1994	3	35.8	19.7	99.8	Gravel	50.5
Dixie Creek Reach 2	Standard Creek	1994	3	35.5	8	99.4	Gravel	50.8
Dixie Creek Reach 2	Bear Creek	1994	3	35.5	8	99.4	Gravel	50.8
Hall Creek Reach 1	Bear Creek	1994	4	29.6	9.7	98	Gravel	58
Hall Creek Reach 2	Bear Creek	1994	7	13.6	6.5	98	Gravel	68
East Fork Camp Creek Reach 1	Bear Creek	1994	2.8	32.8	9.4	99	Sand	34
East Fork Camp Creek Reach 1	Bear Creek	2004	3.3		10.8	95	Sand	67.2

Roads and Temperature

The Dixie Allotment Bear Creek Pasture encompasses part of the Dixie Creek watershed. This watershed received a high road risk rating in the MNF road report. Bear Creek exceeds the 7-day mean maximum of 64.4 degrees and is on the State of Oregon 303d list for water temperature.

2.3.4.5 Fields Peak Allotment

The Fields Peak Allotment contains streams that provide critical habitat for the UJDR population and the SFJD population of MCR steelhead. The Fields Peak Allotment is located within the Upper John Day River (HUC # 17070201) subbasin. The pastures comprising the Fields Peak Allotment lie within the Murderers Creek (HUC # 1707020103), Fields Creek-John Day River (HUC # 1707020110), and Laycock Creek-John Day River (HUC # 1707020109) watersheds. The allotment includes approximately 30,718 acres. Approximately 272 acres of private land are intermingled with NFS lands. The private lands are unfenced and management of these lands has not been waived to the Forest Service. Elevations within the allotment range from approximately 3,200 feet in Fields Creek to 7,300 feet.

Allotment Pastures

The Fields Peak Allotment is divided into five pastures: Fields Peak, Tex Creek, Miners Creek, North Murderers Creek, and Murderers Creek. Streams containing MCR steelhead critical habitat in the Fields Peak Pasture are Fields Creek, Buck Cabin Creek and Wickiup Creek. MSRA is designated on Wickiup Creek. The only stream containing MCR steelhead critical habitat in the Tex Creek Pasture is Tex Creek. MSRA is designated on most of the length of Tex Creek in this pasture. MCR steelhead critical habitat in the Miners Creek Pasture are Tex Creek and Sugar Creek. MSRA is designated on Tex Creek. MCR steelhead critical habitat in the North Murderers Creek Pasture are Charlie Mack Creek, White Creek and Basin Creek. MCR steelhead critical habitat in the Murderers Creek Pasture are Murderers Creek and Lemon Creek. MSRA is designated on Murderers Creek. The streams used by the UJDR population are Fields Creek, Buck Cabin Creek and Wickiup Creek. The streams used by the SFJD population are Tex Creek, Miner Creek, Sugar Creek, Basin Creek, White Creek, Charlie Mack Creek, Lemon Creek, and Murderers Creek. No other streams are known to be occupied by steelhead on the allotment.

Activities

In 2008, a new permittee took over the permit for the Deadhorse, Hanscomb, and Fields Peak allotments and elected to take Non-Use of the majority of pastures with MCR steelhead critical habitat including the Fields Peak pasture. In 2009 and 2010, the Fields Peak Pasture was again not used. In 2009, the North Murderers Creek Pasture was created when a new fence was constructed along Murderers Creek and FS Road 21. The fence was constructed to provide for additional protection to Murderers Creek and allow for greater management flexibility and grazing rotations.

Compliance and Resource Condition Issues

The North Murderers Creek pasture was grazed in 2010 and 2011. The pasture contains critical habitat on Charlie Mack Creek, White Creek and Basin Creek. The fence that created the North Murderers Creek pasture severed the pasture from the DMA on Murderers Creek and a new DMA has not been established for the North Fork Murderers Creek Pasture. The rest of the Fields Peak Allotment pastures containing critical habitat were not grazed from 2008-2011, so recent implementation monitoring data is not available.

Steelhead Habitat Conditions and Trends

There are two effectiveness monitoring sites on Fields Creek in the Fields Creek Pasture and one effectiveness monitoring site on Murderers Creek in the Murderers Creek Pasture. Fields Creek is likely the only stream with steelhead spawning habitat within the Fields Creek Pasture. Wickiup Creek and Buck Cabin Creek provide steelhead rearing habitat. A 2000 survey estimated substrate embeddedness was less than 25% in the lower section of Fields Creek from the MNF boundary upstream beyond Buck Cabin Creek. Streambanks were greater than 90% stable and woody vegetation provided excellent shade. It was also noted that cattle had spotty access to Fields Creek due to dense vegetation and entrenched riparian zones. Spawning surveys in 2000 and 2004 indicate Fields Creek has adequate flow to pass adult salmonids during spring flows and contains isolated pockets with fair to good anadromous spawning gravel. Time series data summarized below shows an improvement in Fields Creek width to depth ratio and a decrease in greenline woody cover between 2003 and 2008.

Table 39. Environmental Baseline Habitat Parameters for Fields Peak Allotment Streams.

Stream	Pasture	Year	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Fields Creek I	Fields Peak	2003	33.2	29.5	95	Gravel	98
Fields Creek I	Fields Peak	2008	32.1	23.1	95	Gravel	74
Fields Creek K	Fields Peak	2003			98		96
Fields Creek K	Fields Peak	2008	20.2	21.3	97		80
Murderers Creek K	Murderers Creek	2003			95		9
Murderers Creek K	Murderers Creek	2008	49.4	18.1	85		8

Roads and Temperature

The Fields Peak Allotment Fields Peak Pasture encompasses part of the Fields Creek watershed. This watershed received a high road risk rating in the MNF road report. Fields Creek and Tex Creek exceeds the 7-day mean maximum of 64.4 degrees and are on the State of Oregon 303d list for water temperature.

2.3.4.6 Roundtop Allotment

The Roundtop Allotment is located within the Upper John Day (HUC # 17070201) subbasin. The pastures comprising the Roundtop Allotment lie within the Grub Creek – John Day River (HUC # 1707020106) and Beech Creek (HUC # 1707020108) watersheds. The MCR steelhead in this allotment are part of the UJDR population. Elevations within the allotment range from 4,100 feet where at the MNF boundary to 5,500 feet in the northern portion of the Tinker Creek Pasture. Terrain in this pasture is generally open, rolling hills with the steepest terrain in the Tinker Creek Pasture. Historically, riparian areas were logged by conventional tractor yarding. Mining and railroad logging also occurred in and along many of the streams within the Roundtop Allotment. The combination of logging, insect epidemic, and valley bottom roads has reduced shading from conifer species. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation.

Allotment Pastures

The Roundtop Allotment is divided into six pastures: Tinker Creek, Beech Creek, Grub, Tode, Four Corners, and Short and Dirty. Streams containing MCR steelhead critical habitat in the Tinker Creek Pasture are Tinker Creek and East Fork Beech Creek. MSRA is designated on Tinker Creek. The only stream containing MCR steelhead critical habitat in the Grub Creek Pasture is Grub Creek. MSRA is designated on Grub Creek in this pasture. The only MCR steelhead critical habitat stream in the Beech Creek Pasture is East Fork Beech Creek. MSRA is designated on East Fork Beech Creek in this pasture. Tode, Four Corners, and Short and Dirty pastures do not contain MCR steelhead critical habitat. No other streams are known to be occupied by steelhead on the allotment.

Activities

District range and hydrology personnel concluded that the Grub pasture does not have any riparian areas that meet MIM criteria for riparian monitoring. The channel substrate is characterized by angular, cobble size material and is not suitable for spawning habitat. There is a well-established beaver dam complex on private land downstream.

Compliance and Resource Condition Issues

In 2008, the Roundtop Allotment was placed in Non-Use at the request of the permittee but there were several documented instances of unauthorized use in the Grub Pasture by cattle that had access from open gates and fence breaks in neighboring Long Creek Allotment, Dixie Allotment and private land. Owners removed their cattle quickly and repaired the fences. The unauthorized cattle did not create adverse impacts. In 2009, the Roundtop Allotment was grazed after three years of rest. The cattle were kept distributed across the pasture. Cattle tend to trail along Tinker Creek at the monitoring site and bank alteration was 13%, but there is an abundance of rock just below the soil’s surface stabilizing the streambanks and livestock grazing did not adversely impact steelhead habitat. The Beech Creek Pasture was only used a few days. Recent

implementation monitoring information for end of season indicators is presented in Table 40. This information is from the BA and MNF EOY reports for the Roundtop Allotment.

Table 40. MIM Monitoring Results for the Roundtop Allotment, 2007-2011 (NM= Not Monitored, blank cells indicate no data reported)

Location and Indicators Monitored	**Year**				
	2007 (non-use)	**2008 (non-use)**	**2009**	**2010 (non-use)**	**2011 (non-use)**
Tinker Creek (Tinker Creek Pasture)					
Bank Alteration (%)		NM	13	NM	
Stubble Height (inches)		NM	5	NM	
Woody Browse (%)		NM	None Present	NM	
Bank Stability (%)		NM	95	NM	
Covered Banks (%)		NM	100	NM	

Steelhead Habitat Conditions and Trends

Effectiveness monitoring data collected on East Fork Beech Creek in the Roundtop Allotment as part of a special study is presented below. There are now long-term effectiveness monitoring sites within the allotment and there are no plans to re-measure data at this special site.

Table 41. Environmental Baseline Habitat Parameters for Roundtop Allotment.

Stream	**Pasture**	**Year**	**Percent Pools**	**Bankfull W/D**	**Percent Stable**	**Median Particle Size (mm)**	**Greenline Woody Cover**
East Fork Beech Creek	Tinker Creek	2006	39	29	100	31	22

Roads and Temperature

The Roundtop Allotment Grub Pasture encompasses part of the Grub Creek watershed. This watershed received an extreme road risk rating in the MNF road report. The Beech Creek Pasture encompasses part of the East Fork Beech Creek watershed and this watershed also received an extreme road risk rating in the MNF road report. Grub Creek exceeds the 7-day mean maximum of 64.4 degrees and is on the State of Oregon 303d list for water temperature.

2.3.4.7 John Day Allotment

The John Day Allotment is located within the Upper John Day subbasin (4th Field HUC); the Beech Creek watershed (5th Field HUC); and the Upper Beech Creek and East Fork Beech

Creek sub-watersheds (6th Field HUCs). The allotment is approximately 18,621 acres. Elevations range from approximately 3,600 feet to 6,100 feet.

Allotment Pastures

The John Day Allotment is divided into four pastures: Lower Ennis Creek, Lower McClellan Creek, Upper McClellan Creek, and Upper Ennis Creek. Streams containing MCR steelhead critical habitat in the Lower Ennis Creek Pasture are Beech Creek, East Fork Beech Creek, Clear Creek, Johnson Creek, Hog Creek, and Ennis Creek. MSRA is designated on Clear Creek and East Fork Beech Creek. The only stream containing MCR steelhead critical habitat in the Lower McClellan Creek Pasture is McClellan Creek. MSRA is designated on McClellan Creek in this pasture. The only MCR steelhead critical habitat stream in the Upper McClellan Creek Pasture is McClellan Creek. Upper Ennis Creek Pasture does not contain MCR steelhead critical habitat. No other streams are known to be occupied by steelhead on the allotment.

Activities

Clear Creek is only accessible to livestock in one area that is approximately 200 yards long. This area has been identified as needing increased management and has been intensely managed by the permittee by increased riding and herding. There are a variety of potential fish passage barriers in pasture streams. A series of log weirs in Clear Creek and East Fork Beech Creek may be barriers for juvenile steelhead passage at certain flows. A stream survey identified a culvert in Hog Creek that may prevent all fish passage upstream. There is also one unscreened diversion in this reach. There is a juvenile fish passage barrier culvert in Ennis Creek at low flows. A spawning survey was conducted on Ennis Creek in July of 2000. No physical barriers were found, but only a minimal amount of poor anadromous spawning habitat was observed. Substrate was too large and too embedded to be steelhead spawning habitat. It is possible this stream could be used for steelhead rearing. Steelhead redds have consistently been identified in McClellan Creek.

Compliance and Resource Condition Issues

As of 2008, there is an abundance of down trees in the McClellan unit that make cattle management difficult. The public left the gate between the Upper and Lower McClellan pastures open and allowed the cattle to access the lower pasture earlier than scheduled. The permittee returned the cattle to the Upper Pasture but the stubble height endpoint was exceeded. The 10% bank alteration standard was exceeded in the Ennis units but adaptive management was not initiated because the remaining endpoints were met and there was evidence that bank alteration could have been between 3 to 8% before turnout. In 2009 and 2010, the Upper McClellan Pasture was rested.

Recent implementation monitoring information for end of season indicators is presented in Table 42. This information is from the BA and MNF EOY reports for the John Day Allotment.

Table 42. MIM Monitoring Results for the John Day Allotment, 2004-2011 (NM- Not Monitored, blank cells indicate no data reported)

Location and Indicators Monitored	Year				
	2007	2008	2009	2010	2011
McClellan Creek MIM monitoring site (Lower McClellan Creek Pasture)					
Bank Alteration (%)		15	4	3	4
Stubble Height (inches)		2.9	12.8	15.3	9
Woody Browse (%)		28.1	26.3	38.6	Light
Bank Stability (%)		NM	100	100	90
Covered banks (%)		NM	100	100	98

Steelhead Habitat Conditions and Trends

Effectiveness monitoring for this allotment is site at the confluence of Beech Creek and East Fork Beech Creek. The data shows decreasing width to depth ratio and stable streambanks.

Table 43. Environmental Baseline Habitat Parameters for John Day Allotment Streams.

Stream	Pasture	Year	Rosgen Channel Type	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Beech Creek	Lower Ennis Creek	2001	F4b	33	24	100	58	
Beech Creek	Lower Ennis Creek	2006	B4	20	14	100	47	75

Roads and Temperature

The John Day Allotment Ennis Creek Pasture encompasses part of the Clear Creek watershed. This watershed received a high road risk rating in the MNF road report. None of the streams in the John Day Allotment are on the State of Oregon 303d list for water temperature.

2.3.4.8 Beech Creek Allotment

The MCR steelhead in the Beech Creek Allotment are part of the NFJD and UJDR populations. The Beech Creek On/Off Allotment is located within the North Fork John Day and Upper John Day subbasins (4th Field HUC); the Beech Creek and Cottonwood Creek watersheds (5th Field HUC); and the Upper Beech Creek, Lower Beech Creek, East Fork Beech Creek and McHaley Creek sub-watersheds (6th Field HUCs). No other streams are known to be occupied by steelhead on the allotment.

Allotment Pastures

The Beech Creek On/Off Allotment is divided into four pastures: Beef Pasture, Paterson Pasture, Timber Pasture, and Grouse Creek Pasture. The Beef Pasture contains the only MCR steelhead critical habitat in the allotment in East Fork Beech Creek with the exception of a water gap in the Patterson Pasture. All of East Fork Beech Creek in the Beef Pasture is designated MSRA.

Activities

A series of log weirs, downstream of the Beef Pasture, in reach 1 of East Fork Beech Creek, may be barriers for juvenile steelhead passage. The Beef Pasture is approximately 360 acres of Forest Service land and 160 acres of private land. This pasture is run congruent with the private land owned by the permittee, including holding/loading corrals. East Fork Beech Creek was surveyed for steelhead spawning during 2005 and 2006. The Blue Mountain Ranger District fishery biologist surveyed the stream on July 13, 2005. The BA reports that there did not appear to be any suitable spawning substrate downstream from the Forest Service Road 3600-052 spur to the private land but several locations providing good spawning gravel were noted upstream for the Forest Service Road 3600-052 spur. On May 23, 2006, the MNF senior aquatic biologist and riparian ecologist surveyed 0.75 mile upstream from the 3600-052 spur and noted suitable spawning gravel was approximately 300 feet upstream from the culvert. Channel substrate was predominately cobble size, with angular formation, and embedded. Riparian vegetation was predominately early seral, with some areas trending toward mid-seral. Predominant hydrophytic species were early to early-mid colonizing species such as *Carex linticularis* and *Carex microcarpus*, and some mid and even late seral species were observed. The entire reach, with the exception of the lowest 600 feet is well armored with alder and a variety of willow species. Habitat condition data is summarized in Table 44, below.

Compliance and Resource Condition Issues

Recent implementation monitoring information for end of season indicators is presented in Table 44. This information is from the BA and MNF EOY reports for the Beech Creek Allotment.

Table 44. MIM Monitoring Results for the Beech Creek Allotment, 2004-2011 (NM- Not Monitored, blank cells indicate no data reported)

Location and Indicators Monitored	**Year**				
	2007	**2008**	**2009**	**2010**	**2011**
Beech Creek MIM monitoring site					
Bank Alteration (%)		9	2	3	6
Stubble Height (inches)		4.8	11.5	11.4	10
Woody Browse (%)		15.5	5.4	14.4	Light
Bank Stability (%)		NM	76	100	NM96%
Covered banks (%)		NM	100	95	NM100

Steelhead Habitat Conditions and Trends

An effectiveness monitoring site is located on Beech Creek in the Beef Pasture. Monitoring data shows that bankfull width to depth ratio decreased substantially between 2001 and 2006.

Table 45. Environmental Baseline Habitat Parameters for Beech Creek Allotment Streams.

Stream	Pasture	Year	Rosgen Channel Type	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
East Fork Beech Creek	Beef	2001	F4b	33	24	100	58	ND
East Fork Beech Creek	Beef	2006	B4	24	14	100	47	75

Roads and Temperature

The Beech Creek Allotment Grouse Creek Pasture encompasses part of the Lower Beech Creek watershed. This watershed received a low road risk rating in the MNF road report. None of the streams in the Beech Creek Allotment are on the State of Oregon 303d list for water temperature.

2.3.4.9 Mt Vernon Allotment

The MCR steelhead in the Mt Vernon Allotment are part of the NFJD and UJDR populations. The Mt Vernon Allotment is located within the North Fork John Day and Upper John Day subbasins (4th Field HUC); the Laycock Creek, Fields Creek, Cottonwood Creek and Beech Creek watersheds (5th Field HUC); and the Upper Beech Creek, Lower Beech Creek, Belshaw Creek, Cummings Creek, Birch Creek, Dry Creek, McHaley Creek and Wiley Creek sub-watersheds (6th Field HUCs). The watersheds encompassing the Mt Vernon Allotment support a mix of National Forest System and private lands. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, water diversions, prescribed and natural fire, noxious weed treatment, and recreation.

Allotment Pastures

The Mt Vernon Allotment is divided into five pastures: Belshaw Creek, Belshaw Riparian, Cohoe, Belshaw Meadows, and Bear Creek. The Belshaw Pasture contains MCR steelhead critical habitat on Belshaw Creek. The Belshaw Riparian Pasture also contains MCR steelhead critical habitat in Belshaw Creek. MSRA is designated on Belshaw Creek in this pasture. Bear Creek Pasture contains MCR steelhead critical habitat in Bear Creek, an unnamed tributary to Bear Creek and Beech Creek. The Cohoe and Belshaw Meadow pastures do not contain any fish-bearing streams.

No other streams are known to be occupied by steelhead on the allotment.

Activities

For the last two years, weekly inspections have been conducted on the Bear Creek Pasture when cattle have been grazing the Bear Creek Pasture. These inspections indicate that livestock access to Bear Creek is limited to only a few places where the road crosses the creek. The remainder of Bear Creek has limited livestock use due to the steep, rugged terrain and a dense hardwood overstory of alder, hawthorn, and dogwood. Beech Creek runs between Highway 395 and the Bear Creek Pasture fence for approximately 3 miles. Due to rock bluffs and the entrenched condition (in places 20 vertical feet) of Beech Creek cattle have very limited access to the stream. Access to the Belshaw Creek in the Belshaw Creek Pasture is limited by a heavy shrub over story with increasingly limited access as the creek heads West through Forest Service land then South as it exits onto private land. The Belshaw Riparian pasture is 500 acres and was constructed to aid the permittees by increasing uniformity in grazing of the allotment while not jeopardizing the riparian area around Belshaw Creek. Unlike the lower reach of Belshaw Creek, which is heavily covered by large wood and shrubs with very little access by cattle, Belshaw Creek within the riparian pasture is more open and susceptible to the impacts of grazing. The riparian pasture is used by a limited number of cattle for a short duration and is mainly used to facilitate moves between pastures.

Compliance and Resource Condition Issues

In 2008, the Belshaw Riparian Pasture stubble height and bank alteration endpoints were exceeded. There was unauthorized use of the Belshaw Creek Pasture. The owner was notified and he removed his cattle. The 10% bank alteration endpoint was exceeded in the Bear and Cohoe pastures but adaptive management was not initiated because the remaining endpoints were met and there was evidence that bank alteration could have been between 3 to 8% before turnout.

In 2009, riparian utilization standards were reached well before the upland utilization standard in the Bear Creek and Cohoe pastures because the abundance of upland forage made it difficult to locate and remove cattle and the Birch Creek bank alteration endpoints were exceeded in the Bear Creek Pasture. A Notice of Non-Compliance was issued to the permittee and the rotation schedule was changed so that the Bear Creek Pasture was grazed last in 2010 to rest the Birch Creek riparian area. In 2010, the Belshaw Riparian Pasture was in non-use and cattle were excluded from the Birch Creek in the Bear Creek Pasture but the 10% bank alteration standard was exceeded in both pastures by wildlife.

Recent implementation monitoring information for end of season indicators is presented in Table 46. This information is from the BA and MNF EOY reports for the Mt Vernon Allotment.

Table 46. MIM Monitoring Results for the Mt Vernon Allotment, 2004-2011 (NM- Not Monitored, blank cells indicate no data reported)

Location and Indicators Monitored	Year				
	2007	2008	2009	2010	2011 (rested)
Belshaw Creek MIM monitoring site (Belshaw Riparian Pasture)					
Bank Alteration (%)		18	6	6	
Stubble Height (inches)		3.1	13.5	10.9	
Woody Browse (%)		12.1	5	37.6	
Bank Stability (%)		NM	83	88	
Covered banks (%)		NM	100	92	
Birch Creek MIM monitoring site (Bear Creek Pasture)					
Bank Alteration (%)		17	29	15	
Stubble Height (inches)		4.7	6.7	13.1	
Woody Browse (%)		NM	25.8	25.6	
Bank Stability (%)		NM	83	82	
Covered banks (%)		NM	100	98	

Roads and Temperature

The Mt Vernon Allotment Belshaw Creek Pasture encompasses part of the Belshaw Creek watershed. This watershed received a high road risk rating in the MNF road report. None of the streams in the Mt Vernon Allotment are on the State of Oregon 303d list for water temperature.

2.3.5 Environmental Baseline for SFJDR Population Allotments

2.3.5.1 Fields Peak Allotment

See Section 2.3.4.5 for information on the Fields Peak Allotment.

2.3.5.2 Murderers Creek Allotment

The MCR steelhead in this allotment are part of the SFJD population. The Murderers Creek Allotment is located within the Upper John Day River (HUC # 17070201) subbasin. The pastures comprising the Murderers Creek Allotment lie within the Murderers Creek (HUC # 1707020103) and Middle South Fork John Day (HUC # 1707020102) watersheds. The allotment includes approximately 64,649 acres of National Forest System lands. Approximately 1,260 acres of private land, 1,432 acres of state land, and 326 acres of Bureau of Land Management lands are intermingled with NFS lands. Approximately 895 acres of private land and 792 acres of state land within the allotment are unfenced and management of these lands has not been waived to the Forest Service. Elevations within the allotment range from approximately 3,700 feet at the western boundary to 6,500 feet at the south-eastern boundary of the allotment. Activities that have occurred or continue to occur within these watersheds include historic mining, timber

harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation.

Allotment Pastures

The Murderers Creek Allotment is divided into 14 pastures: Frenchy Butte, Deer Creek, John Young Meadow, Redrocks, Martin Corrals, Dans Creek, Oregon Mine, Timber Mountain, Blue Ridge, Horse Mountain, South Fork Murderers Creek Gather Pasture, Murderers Creek Gather Pasture, Tex Creek Gather Pasture, and John Young Meadow Cow Camp Pasture.

Streams in the Frenchy Butte Pasture containing MCR steelhead critical habitat are Vester Creek, Buck Creek, Blue Creek, and, Deer Creek. MSRA is designated on Vester Creek, Buck Creek and Deer Creek. The MSRA on Vester Creek has been fenced off from cattle.

Streams in the Deer Creek Pasture containing MCR steelhead critical habitat are Corral Creek, South Fork Deer Creek, North Fork Deer Creek, and Deer Creek. MSRA is designated on North Fork Deer Creek, South Ford Deer Creek, Deer Creek and Corral Creek.

The only stream in John Young Meadow Pasture containing MCR steelhead critical habitat is the South Fork Murderers Creek and the entire length is MSRA in this pasture.

Streams in the Oregon Mine Pasture containing MCR steelhead critical habitat are Duncan Creek, unnamed Eastern and Western tributaries to Duncan Creek, Thorn Creek, Tennessee Creek, Oregon Mine Creek, and, Murderers Creek. MSRA is designated on Murderers Creek in this pasture.

The only stream in the Timber Mountain Pasture with MCR steelhead critical habitat is Crazy Creek.

Streams in the Blue Ridge Pasture containing MCR steelhead critical habitat are South Fork Murderers Creek, Blue Creek, and Bark Cabin Creek with MSRA designated on South Fork Murderers Creek and Blue Creek in the pasture.

The only stream in Horse Mountain Pasture containing MCR steelhead critical habitat is the South Fork Murderers Creek which is all a MSRA in this pasture.

South Fork Murderers Creek Gather Pasture contains MCR steelhead critical habitat in South Fork Murderers Creek which is MSRA. Murderers Creek Gather Pasture contains Murderers Creek MCR steelhead critical habitat which is MSRA.

Tex Creek Gather Pasture contains MCR steelhead critical habitat in Murderers Creek and Tex Creek which is MSRA.

John Young Cow Camp contains South Fork Murderers Creek critical habitat which is MSRA.

No other streams are known to be occupied by steelhead on the allotment.

Activities

In the Frenchy Butte Pasture, the steelhead critical habitat on Vester Creek is located in a steep, heavily vegetated drainage except for one segment that has been excluded from livestock grazing with exclosure fencing completed in July 2011. Deer Creek has riparian areas with thick alder and dogwood stands. PFC assessment in 2004 rated Deer Creek Reach 1 as functioning at risk with no apparent trend. Grazing was not a limiting factor, but structures placed in the channel were preventing the channel from narrowing. PFC assessment in 2004 rated Buck Creek Reach 1 as properly functioning with no apparent trend. Approximately 0.7 mile of South Fork Deer Creek has been fenced to exclude cattle. PFC assessment in 2004 rated Deer Creek Reaches 2 and 3 and Corral Creek Reach 1 as functioning at risk with an upward trend. North Fork Deer Creek Reaches 1 and 2 were properly functioning with no apparent trend. North Fork Deer Creek Reach 1a was properly functioning with an upward trend. All but 500 feet of South Fork Murderers Creek critical habitat is excluded from cattle use in the John Young Meadows Pasture. PFC assessment in 2004 rated South Fork Murderers Creek Reach 1 as functioning at risk with an upward trend. In 2010, a fence was constructed along the South Fork of Murderers Creek excluding it from the Timber Mountain Pasture. The construction of this fence also excluded all MSRA from the pasture. Crazy Creek is now the only stream in the Timber Mountain Pasture containing steelhead critical habitat. Crazy Creek streambanks are armored by large rocks. There is a livestock trail that runs along the Eastern ridge of the Bark Cabin Creek drainage in the Blue Ridge Pasture approximately 0.5 mile above Bark Cabin Creek. This trail stays off the stream and ends near the confluence of Bark Cabin Creek and the South Fork of Murderers Creek. Livestock access to the South Fork Murderers Creek in the Horse Mountain Pasture is limited to two water gaps by the August 2011 construction of a riparian corridor exclusion fence running the full length of the stream. This fence also excludes access to MSRA within the pasture except at the water gaps. There are no other streams containing steelhead critical habitat within the pasture. South Fork Murderers Creek Gather Pasture, Murderers Creek Gather Pasture, Tex Creek Gather Pasture, and John Young Meadow Cow Camp Pasture have been historically used for gathering and short-term holding of cattle as they are moved between pastures or in the process of being removed from the allotment. All of these pastures are meadow complexes with willow and/or alder, sedges and rushes dominating the riparian area. South Fork Murderers Creek Gather Pasture will be used on a very limited basis (generally less than 24 hours). Electric fencing will be used to exclude livestock access to the South Fork Murderers Creek if overnight use is expected to occur. A water gap would be necessary if electric fencing is used. Murderers Creek Gather Pasture will be used on a very limited basis, generally less than 24 hours to wean calves and facilitate moves to the next pasture. Tex Creek Gather Pasture is approximately 180 acres of State Lands and 20 acres of Forest Service land. Management of the remaining 160 acres has not been waived to the Forest Service. The MNF will pursue opportunities with ODFW to provide protection for critical habitat when this pasture is authorized for use. South Fork Murderers Creek within John Young Meadow Cow Camp is excluded from livestock grazing with the exception of a water gap.

Compliance and Resource Condition Issues

In 2008, all livestock grazing in all units was enjoined by the District Court of Oregon. Monitoring to determine the impacts of wild horses revealed concentrated use in the Dans Creek,

Deer Creek, and Frenchy Butte pastures. Utilization levels were high enough to limit or preclude cattle grazing on these pastures.

In 2009, only the John Young Meadows and Timber Mountain pastures were grazed. Wild ungulate bank alteration on Blue Ridge Pasture reached 20% before turnout. Cattle grazed the John Young Meadows Pasture for four days. The Timber Mountain Pasture Crazy Creek riparian greenline is comprised of rock that makes it unsuitable for stubble height monitoring. Ninety-seven wild horses were removed from the territory.

In 2010, the Dayville Grazing Association waived their permit to members Loren and Piper Stout and Chet Hettinga. Preseason monitoring on Frenchy Butte, Deer Creek, and Blue Ridge showed considerably less wild horse concentration areas than in previous years but a concentration areas on Vester Creek in the Frenchy Butte Pasture and South Fork Deer Creek in the Deer Creek Pasture required electric fencing to exclude wild horses and cattle. Wild horse use sites in the Blue Creek drainage and Bark Cabin Creek required the permittee to keep cattle out of these areas. A fence was constructed along the South Fork of Murderers Creek excluding it from the Timber Mountain Pasture. The construction of this fence also excluded all MSRA from the pasture. Crazy Creek is now the only stream in the Timber Mountain Pasture containing steelhead critical habitat. Crazy Creek streambanks are armored by large rocks. No suitable locations for riparian monitoring have been identified in the Blue Ridge Pasture. Bark Cabin Creek is heavily protected by shrubs that limit access to crossings. Mid-season and end-of-season streambank alteration in the Deer Creek Pasture at DMA 2 measured 11% which is greater than the 10% standard. All other standards were met at the site and streambank stability measured 90%. The site was re-measured and streambank alteration measured 6%. The fraction of three trail crossings within the DMA transect spanned by the monitoring frame account for the different measurements. This DMA is dominated by thick stands of alder so water access for cattle, wildlife and wild horses is limited to the crossings. The bank alteration standard was determined to not have been exceeded by cattle.

In 2011, grazing on the Murderers Creek Allotment for the season was enjoined by the District Court on December 30, 2010. On March 16, 2011, the District Court modified its injunction allowing grazing to occur on the Frenchy Butte, Deer Creek, and John Young Meadows pastures; however the permittee elected to not graze. Grazing was not authorized on the Murderers Creek Allotment. Monitoring reported here was conducted by Tim Burton of Riparian Management Services LLC.

Recent implementation monitoring information for end of season indicators is presented in Table 47. This information is from the BA and MNF EOY reports for the Murderers Creek Allotment.

Table 47. MIM Monitoring Results for the Murderers Creek Allotment, 2004-2011 (NM-Not Monitored, blank cells indicate no data reported).

Location and Indicators Monitored	Year							
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Thorn Creek PIBO Integrator Site (Martin Corrals Pasture)								
Bank Alteration (%)					5			
Stubble Height (inches)					18			
Woody Browse (%)					7			
Thorn Creek DMA Site (Martin Corrals Pasture)								
Bank Alteration (%)					12			
Stubble Height (inches)					12			
Woody Browse (%)					5			
Murderers Creek Forest MIM DMA (Murderers Creek Holding Pasture)								
Bank Alteration (%)	13			8	2			
Stubble Height (inches)	16			12	18			
Woody Browse (%)	15			18	6			
Bank Stability (%)	56			NM	NM			
Covered Banks (%)	90			NM	NM			
North Fork Deer Creek Forest MIM DMA (North Fork Deer Creek Pasture)								
Bank Alteration (%)	13			7	15	3	1	
Stubble Height (inches)	16			12	12	14	15	
Woody Browse (%)	18			20	6	Slight to light (0-40)	10	
Bank Stability (%)	92			NM	NM	NM	100	
Covered Banks (%)	89			NM	NM	NM	100	
Deer Creek PIBO DMA (Deer Creek Pasture)								
Bank Alteration (%)	14	20		10	13	10	11	
Stubble Height (inches)	18	14		8	14	17	22	
Woody Browse (%)	6	25		20	11	Slight to light (0-40)	8	
Bank Stability (%)	57	NM		NM	NM	NM	90	
Covered Banks (%)	84	NM		NM	NM	NM	90	
Deer Creek Forest MIM DMA (Frenchy Butte Pasture)								
Bank Alteration (%)	11	8		14	4	8	6	
Stubble Height (inches)	12	12		8	11	14	NM	
Woody Browse (%)	6	6		18	7	None to slight (<20)	NM	
Bank Stability (%)	46	NM		NM	NM	NM	88	
Covered Banks (%)	84	NM		NM	NM	NM	93	
South Fork Murderers Creek Forest MIM DMA (John Young Meadows Pasture)								
Bank Alteration (%)	11	8		14	4	8	6	19
Stubble Height (inches)	17	18		16	16	18	20	
Woody Browse (%)	11	7		35	8	None to slight	8	

Location and Indicators Monitored	Year							
	2004	2005	2006	2007	2008	2009	2010	2011
						(<20)		
Bank Stability (%)	76	NM		NM	NM	NM	96	
Covered Banks (%)	94	NM		NM	NM	NM	98	
Crazy Creek PIBO DMA (Timber Mountain Pasture)								
Bank Alteration (%)						3		
Stubble Height (inches)						NM		
Woody Browse (%)						Light (21-40)		
Bank Stability (%)						NM		
Covered Banks (%)						NM		

Steelhead Habitat Conditions and Trends

In the Murderers Creek Allotment there are effectiveness monitoring integrator sites on Thorn Creek, South Fork Murderers Creek and Murderers Creek that were evaluated in 2003 and 2008. There are also DMA sites on Thorn Creek and Crazy Creek that were evaluated in 2008 and 2008. There is a DMA site on Deer Creek that was first evaluated in 2008. The BA states it appears that the monitoring site on Murderers Creek is at desired conditions and near reference conditions. The South Fork Murderers Creek has shown improvement for most attributes, while the Thorn Creek and Crazy Creek sites have essentially remained static. Overall, bankfull width to depth ratios and bank stability have shown improvement (only one site remained static/slight decline) while the remaining evaluated attributes, those considered to be potentially affected by livestock grazing – bank angle, undercut banks, D50 (sediment particle size), pool percent, percent fines <6mm, residual pool depth, greenline wetland rating, and greenline woody cover – remained relatively unchanged (a few of the attributes lacked data to make an evaluation). The BA states that there are too few reference sites within the John Day River basin to determine whether similar changes are occurring in unmanaged watersheds. Although only bankfull width to depth ratios and bank stability showed improvement, this is actually a promising indicator given that both Bengeyfield (2006) and Rosgen (1996) have indicated that the relationship between a stream's width and depth is perhaps the most revealing of all stream channel indicators as to whether the stream is in a condition to perform the various tasks that lead to a healthy riparian area.

In regards to recently collected effectiveness monitoring data, the BA concludes that while some attributes, such as channel shape and the frequent floodplain, are generally formed in 1.5- to 2-year events, others, such as habitat complexity, are formed during moderately high events of 10- to 25-year return intervals. If the stream cannot maintain its dimension, pattern, and profile during these moderately high events, then habitat or other desired values will probably not be created or sustained over time. Thus, given the short 5-year time frame between site visits for monitoring and developing trends, and the analysis of data, it is the MNF's reasoned opinion that the evaluated attributes are being maintained or showing a slight overall improvement. There has been little change in overall stream habitat conditions with the exception of the noticeable

improvement of bankfull width to depth ratios and bank stability, on Federal lands of the MNF within the Murderers Creek Allotment.

Table 48. Environmental Baseline Habitat Parameters for Murderers Creek Allotment Streams.

Stream	Pasture	Year	Rosgen Channel Type or gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Murderers Creek 1	Martin Corrals	2005	3.2		11.1	100	11	
Murderers Creek 2	Tex Creek Gather	2005	1.1		10.3	100	11	
Murderers Creek 1	Tex Creek Gather	2003		78.7	14.5	72.7	0.01	72.4
Murderers Creek 1	Tex Creek Gather	2008		43.5	14.1	93.2	0.01	66.5
South Fork Murderers Creek 1	Timber Mountain	2003	F4	11	71.2	45	1.7	22.6
South Fork Murderers Creek 1	Timber Mountain	2008	F4	13	40.3	95	4.3	17.4
South Fork Murderers Creek 1	Timber Mountain	1992	2	25.7	5	91	Cobble	63.2
South Fork Murderers Creek 1-2	Timber Mountain	2009	3.5	33.5	15.6	94	Gravel	
South Fork Murderers Creek 2-3	Blue Ridge	1992	3.5	46.9	8.8	92.8	Cobble	68
South Fork Murderers Creek 3-4	Blue Ridge	2007	5.5	60.7	10.3	99	Cobble	
South Fork Murderers Creek 4	Horse Mountain	1992	2	84	11	88	Sand	41
South Fork Murderers Creek 5	SF MC Gather	2009	2	34.1	10.5	92	Gravel	
South Fork Murderers Creek 5	Horse Mountain	1992	1.5	46.9	20.3	86.8	Sand	23.9
South Fork Murderers Creek 6-7	Horse Mountain	2009	1	18	11.2	94	Sand	32.7
South Fork Murderers Creek 7	John Young Cow Camp	1992	1	63	3.9	96.8	Sand	
South Fork Murderers Creek 8	John Young Cow Camp	2009	1	0.4	7.5	100	Sand	22.7

Stream	Pasture	Year	Rosgen Channel Type or gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
South Fork Murderers Creek 8	John Young Cow Camp	1992	2	97		99.8	Sand	
South Fork Murderers Creek 9	John Young Cow Camp	2009	1	0.6	6.3	93.6	Sand	
Bark Cabin Creek 1	Blue Ridge	1992	4	15.6	5	92.8	Sand	64.4
Crazy Creek 1	Timber Mountain	1992	3	43.3	10.9	97	Gravel	69
Crazy Creek 1	Timber Mountain	2011	5.5	27.6	13.6	96.5	15	
Crazy Creek 1	Timber Mountain	2003	B3/4	ND	ND	83	ND	84.9
Crazy Creek 1	Timber Mountain	2008	B3/4	32	32.9	88	ND	69.9
Thorn Creek 1	Martins Corral	2003	C4	67	19.7	59	1.2	57.9
Thorn Creek 1	Martins Corral	2008	C4	29	20.6	59	1	62.5
Thorn Creek 1	Martins Corral	2003						
Thorn Creek 1	Martins Corral	2008		29.1	20.8	92.9		72.6
Deer Creek 1-4	Frenchy Butte	2007	1.6		15.7		Gravel	48.8
Deer Creek 11-13	Deer Creek	1991	1	31			Cobble	
Deer Creek 5	Deer Creek	2007	1.6		12.7		Gravel	44
Deer Creek 5	Deer Creek	2008	C4	62	17.6	88	ND	17.8
NF Deer Creek 1-4	Deer Creek	1993	4.5	43	6.7		Gravel	
NF Deer Creek 1-4	Deer Creek	2007	3.9		9.3	99.6	Sand	45
SF Deer Creek 1-2	Deer Creek	1993	2.5	67.1	5.1		Gravel	
SF Deer Creek 1-2	Deer Creek	2007	3.2	2.6	11.2	100	Sand	49
Corral Creek 1-4	Deer Creek	1993	5.5	27.3	7	79.3	Gravel	43
Blue Creek 1	Frenchy Butte	1995	3		12.1	72		28

Roads and Temperature

The Murderers Creek Allotment Deer Creek Pasture encompasses part of the Corral Creek watershed. This watershed received a high road risk rating in the MNF road report. The Frenchy Butte Pasture encompasses part of the Lower Deer Creek watershed and this watershed received a high road risk rating in the MNF road report. The Blue Ridge Pasture encompasses part of the Bark Cabin Creek watershed and this watershed received a high road risk rating in the MNF road report. None of the streams in the Murderers Creek are on the State of Oregon 303d list for water temperature.

2.3.6 Environmental Baseline for MFJDR Population Allotments

2.3.6.1 Blue Mountain Allotment

The MCR steelhead in this allotment are part of the MFJDR population. Elevations within the allotment range from 4,200 feet where the MFJDR leaves the allotment to 5,800 feet in the northeast corner of the allotment. The allotment is bordered by Highway 7 on the west, US Highway 26 on the south, and the Wallowa-Whitman National Forest on the north and east. Private land within this allotment is excluded by fencing and is not managed as part of the allotment grazing system. Historically, riparian areas were logged by conventional tractor yarding. The combination of logging and valley bottom roads and railroad grades, insect epidemic, and historical livestock grazing has reduced riparian shading from hardwood and conifer species.

Allotment Pastures

The Blue Mountain Allotment is divided into five pastures: Squaw, Crawford Creek, Idaho Creek, East Summit, and West Summit. Squaw Pasture contains MCR steelhead critical habitat in the MFJDR, Summit Creek, and Squaw Creek. MSRA is designated on all three streams. The Crawford Creek Pasture contains MCR steelhead critical habitat in Crawford Creek and MSRA is designated on Crawford Creek. Idaho Creek Pasture contains MCR steelhead critical habitat in Idaho Creek, Fly Creek, Summit Creek, and North Fork Summit Creek. MSRA is designated on Idaho Creek and Summit Creek in this pasture. East Summit Pasture contains MCR steelhead critical habitat in Summit Creek and Idaho Creek. MSRA is designated on both streams in this pasture. West Summit Pasture contains MCR steelhead critical habitat in the MFJDR, Crawford Creek, and Clear Creek. MSRA is designated on the MFJDR and Clear Creek in this pasture. No other streams are known to be occupied by steelhead on the allotment.

Activities

Squaw Creek, Summit Creek, and the MFJDR in this allotment have become entrenched due to the loss of beaver dam complexes and a large localized rain on snow event in January 1997. Floodplains were disconnected and water tables were lowered from this event. Most of the impacted area was fenced in Squaw Pasture in 1997 to exclude cattle. The Squaw Pasture is a small riparian pasture (136 acres) used only to facilitate moves between the larger pastures. A PFC analysis in 2004 rated Summit Creek and Squaw Creek as Functioning at Risk with an upward trend. Riparian herbaceous vegetation, mainly Nebraska sedge and Baltic rush, are re-colonizing the streambanks but the shrub component is lacking and elk use is a concern in this

unit. Reach 1 of Squaw Creek was surveyed by the Level II team in 2011. This entrenched part of the stream has a W/D ratio of 14.4, stable streambanks, 71% pools and embedded gravel substrate.

Compliance and Resource Condition Issues

In 2008, there were several instances of unauthorized use in the Crawford Creek and Idaho Creek units by cattle from the adjacent allotment on the Wallowa-Whitman Forest. Boundary fences required repair by the permittee. The owners removed their cattle. In 2009, cattle from private land in Phipps Meadow strayed onto the allotment and were removed immediately. There was no unauthorized use in 2010.

Steelhead Habitat Conditions and Trends

There are no effectiveness monitoring sites in the Blue Mountain allotment. The first eight reaches of Summit Creek were surveyed by the MNF in 1992 but the severe down-cutting following a rain on snow event in 1997 rendered this data obsolete for time series comparisons. The first two reaches were surveyed by the MNF team in 2011. The first two reaches of Idaho Creek were surveyed by the MNF team in 1992 and 2011. In both reaches streambanks are very stable and width to depth is less than or equal to ten. Pool frequency and LWD declined significantly in both reaches although a change in the LWD monitoring protocol makes a direct comparison impossible. The dominant substrate went from sand to gravel but the fraction of fine sediment in pool tails remains very high in both reaches in 2011. Information on stream habitat can be found in Table 49.

Table 49. Environmental Baseline Habitat Parameters for the Blue Mountain Allotment.

Stream	Pasture	Year	Rosgen Channel Type or gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
MFJDR Upper	Squaw	2008	0.7	1.1	14.9	97.2	Gravel	32.8
MFJDR 1	East Summit	2011	0.5	86.5	15.6	77.6	Gravel	0.1
Summit Creek 1	East Summit	1992	2	67	15.7	85.2	Sand	38.8
Summit Creek 2	East Summit	1992	2	57	12.81	95.5	Sand	59.4
Summit Creek 1	East Summit	2011	2	59.6	11.4	99	Sand	48.2
Summit Creek 2	East Summit	2011	2	19.3	10.5	100	Gravel	54.5
North Fork Summit Creek 1	Idaho Creek	1992	3	19	8.8	95.9	Sand	56
North Fork	East Summit	2011	2	59.6	11.4	99	Sand	48

Stream	Pasture	Year	Rosgen Channel Type or gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Summit Creek 1								
North Fork Summit Creek 2	East Summit	2011	2	19.3	10.5	100	Gravel	54
Idaho Creek 1	Idaho Creek	1992	2	35	10.6	99.3	Sand	44.1
Idaho Creek 1	East Summit	2011	2	15.3	9.9	100	Gravel	57.9
Idaho Creek 2	Idaho Creek	1992	2	10.9	10.2	99.8	Sand	57.9
Idaho Creek 2	Idaho Creek	2011	2	3.1	7.7	100	Gravel	46
Fly Creek 1	Idaho Creek	1992	3	9.5	9	99.1	Sand	65.3
Squaw Creek 9	East Summit	1999	3	28.6	28.5			
Squaw Creek 1	East Summit	2011	3	71.4	14.4	98.2		18.9

Roads and Temperature

The Blue Mountain Allotment West Summit pasture encompasses part of the Clear Creek watershed. This watershed received a high road risk rating in the MNF road report. The Crawford Creek Pasture adjoins part of the Mill Creek watershed and this watershed received a high road risk rating in the MNF road report. The MFJDR and Summit Creek exceeds the 7-day mean maximum of 64.4 degrees and are on the State of Oregon 303d list for water temperature.

2.3.6.2 Upper Middle Fork Allotment

The Upper Middle Fork allotment is located within the Middle Fork John Day River subbasin (4th Field HUC), the Bridge Creek and Camp Creek watersheds (5th Field HUC), and the Bridge Creek, Mill Creek, Vinegar Creek, Little Boulder and Granite Boulder Creek sub-watersheds (6th field HUCs). Elevations within the allotment range from 8,000 feet near Vinegar Hill to 4,000 feet along County Road (CR) 20 and the MFJDR. CR 20 and the MFJDR bisect the allotment running east and west. Historically, riparian areas were logged by conventional tractor yarding. Dredge mining and railroad logging also occurred in and along many of the streams within the Upper Middle Fork Allotment. The combination of logging and valley bottom roads and railroad grades, insect epidemic, and historic livestock grazing has reduced riparian shading from hardwood and conifer species. The watersheds encompassing the Upper Middle Fork Allotment support a mix of National Forest System and private lands. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, water diversions, prescribed and natural fire, noxious weed treatment, and recreation. Approximately 300 acres of private in holdings are intermingled with MNF lands.

These in holdings are unfenced and management of these lands has not been waived to the Forest Service.

Allotment Pastures

The Upper Middle Fork Allotment is divided into ten pastures: Butte, Deerhorn, Austin, Lower Vinegar, Upper Vinegar, Caribou, Tin Cup Riparian, Shop, River, and Tailings. The Butte Pasture contains MCR steelhead critical habitat in Ragged Creek, Ruby Creek, Sulphur Creek, Butte Creek, Bennet Creek, Little Butte Creek, portions of the MFJDR and an unnamed tributary to the MFJDR. MSRA is designated in Ruby Creek, Butte Creek and the MFJDR. Deerhorn pasture contains steelhead critical habitat in portions of the MFJDR, an unnamed tributary to Little Butte Creek, Deerhorn Creek, Davis Creek, Placer Gulch, North Fork Bridge Creek and an unnamed tributary to Davis Creek. MSRA is designated in Deerhorn Creek, Davis Creek Placer Gulch, and the MFJDR. Lower Vinegar Pasture contains steelhead critical habitat in Vinegar Creek and Vincent Creek. MSRA is designated in both streams in the pasture. Upper Vinegar Pasture contains steelhead critical habitat in Blue Gulch, Vinegar Creek, and Vincent Creek. No MSRA is designated in the streams in this pasture. Caribou Pasture contains steelhead critical habitat in Windlass Creek, Little Boulder Creek, an unnamed tributary to Little Boulder Creek, Caribou Creek, and portions of Granite Boulder Creek. MSRA is designated in Caribou Creek. Tin Cup Riparian Pasture contains steelhead critical habitat in Tin Cup Creek and Windlass Creek. MSRA is not designated in either stream in this pasture. No other streams are known to be occupied by steelhead on the allotment.

Activities

A new fence was completed in March 2010 that has excluded the MFJDR from the Shop Pasture. A water gap was constructed in the southeast corner of the pasture on Tin Cup Creek. This pasture is used for gathering and short-term (≤ 48 hrs) holding of cattle. Tin Cup Creek contains the only MCR steelhead critical habitat in the pasture. A new fence to be completed in 2012 will create the Tin Cup Riparian Pasture. This pasture provides additional protection to steelhead critical habitat in Tin Cup and Windlass creeks. The Tin Cup Riparian Pasture will become part of the allotment rotation in 2012. The Tailings pasture contains 0.3 miles of the MFJDR. When this pasture is authorized for use, electric fence with a water gap will be used to limit cattle access to the MFJDR. The River Pasture is a corridor along CR 20 and the MFJDR between the Caribou and Butte pastures. It is not part of the scheduled rotation. Cattle are driven through the pasture to access other pastures and no holding occurs in this pasture.

Compliance and Resource Condition Issues

In 2008, the Upper Middle Fork Allotment met standards in all units except Caribou. There was excess use on the Caribou Pasture following the move out date. Prior to 2007 maintenance of fences and water development was lacking due to non-use status. A lack of adequate fencing contributed to standards being exceeded in the Caribou unit. The allotment boundary fence between the Upper and Lower Middle Fork allotments along Granite Boulder Creek does not effectively deter cattle from accessing either allotment. Cattle from the Upper Middle Fork were moving into the Lower Middle Fork by simply walking around the end of the existing fence. Consequently, cattle found in the Lower Middle Fork were placed back into the Caribou unit

before being moved on to the next unit. To remedy this, an additional 3.5 miles of fences was completed in the fall of 2009.

In 2009, the Upper Middle Fork Allotment was in Non-Use. Construction of the 3.5-mile fence was started. Cattle from the Wallowa-Whitman National Forest were found on the upper reaches of Vinegar Creek in the Upper Vinegar Pasture and in the Lower Vinegar Pasture.

In 2010, the Upper Middle Fork Allotment was grazed at 52% of permitted numbers. The Lower Vinegar Pasture and the Tailings Pasture were not authorized for grazing but cattle from the Upper Vinegar Pasture entered through an open gate. The one-acre Tailings pasture contains 0.3 mile of the MFJDR and the 10% bank alteration standard was exceeded while cattle were in the pasture for less than 24 hours. Cattle from the unfenced Wallowa-Whitman National Forest Duprat Spring area were again found in Upper Vinegar Pasture.

In 2011, grazing on the allotment for the season was enjoined by the District Court on December 30, 2010.

Recent implementation monitoring information for end of season indicators is presented in Table 50. This information is from the BA and MNF EOY reports for the Upper Middle Fork Allotment.

Table 50. MIM Monitoring Results for the Upper Middle Fork Allotment, 2004-2011 (NM-Not Monitored, blank cells indicate no data reported)

Location and Indicators Monitored	**Year**				
	2007	**2008**	**2009** (non use)	**2010** (non use)	**2011**
Cow Camp Meadows – Caribou Pasture					
Bank Alteration (%)		23	NM	8	NM
Stubble Height (inches)		4	NM	8	NM
Woody Browse (%)		Heavy	NM	Moderate	NM
Bank Stability (%)		NM	NM	100	NM
Covered Banks (%)		NM	NM	100	NM
Windlass Creek – Caribou Pasture					
Bank Alteration (%)		26			NM
Stubble Height (inches)		6			NM
Woody Browse (%)		Moderate			NM

Location and Indicators Monitored	Year				
	2007	2008	2009 (non use)	2010 (non use)	2011
Bank Stability (%)		NM			NM
Covered Banks (%)		NM			NM
Vinegar Creek MIM DMA –Lower Vinegar Pasture					
Bank Alteration (%)		14	4	6	NM
Stubble Height (inches)		7	10	10	NM
Woody Browse (%)		Light	Light	Moderate	NM
Bank Stability (%)		NM	52	61	NM
Covered Banks (%)		NM	56	68	NM
Butte Creek – Butte Pasture					
Bank Alteration (%)		8	NM	NM	NM
Stubble Height (inches)		5	NM	NM	NM
Woody Browse (%)		Light	NM	Slight	NM
Bank Stability (%)		NM	NM	NM	NM
Covered Banks (%)		NM	NM	NM	NM
Davis Creek – Deerhorn Pasture					
Bank Alteration (%)		0	NM	NM	NM
Stubble Height (inches)		20+	NM	NM	NM
Woody Browse (%)		None-Slight	NM	NM	NM
Bank Stability (%)		NM	NM	NM	NM
Covered Banks (%)		NM	NM	NM	NM

Steelhead Habitat Conditions and Trends

There is an effectiveness monitoring integrator site on Vinegar Creek near the confluence with the MFJDR and effectiveness monitoring DMA approximately 4 miles upstream from Vinegar Creek in the Lower Vinegar Pasture. The integrator site was evaluated in 2001 and 2006. It shows a significant decrease in width to depth ratio. Greenline woody cover is low at this site.

The BA states that there are too few reference sites within the John Day River basin to determine whether similar changes are occurring in unmanaged watersheds. Both Bengeyfield (2006) and Rosgen (1996) have indicated that the relationship between a stream's width and depth is perhaps the most revealing of all stream channel indicators as to whether the stream is in a condition to perform the various tasks that lead to a healthy riparian area. Other recent stream habitat data for streams in this allotment can be found in Table 51.

Table 51. Environmental Baseline Habitat Parameters for Upper Middle Fork Allotment Streams.

Stream	Pasture	Year	Rosgen Channel Type or Gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Placer Gulch 1-2	Deerhorn	2008	3.7	8.4	13.4	98.6	21.3	
Vinegar Creek 1	Lower Vinegar	2001	F4	28	38	93	51	ND
Vinegar Creek 1	Lower Vinegar	2006	C4	30	29	100	59	26

Roads and Temperature

The Upper Middle Fork Allotment Lower Vinegar Pasture encompasses part of the Vinegar Creek watershed. This watershed received a high road risk rating in the MNF road report. The Caribou Pasture adjoins the Granite Boulder Creek watershed and this watershed received an extreme road risk rating in the MNF road report. The Deerhorn Pasture encompasses the Little Boulder Creek/Deerhorn Creek watershed and this watershed received a high road risk rating in the MNF road report. The MFJDR, Placer Creek, Vinegar Creek, Davis Creek, Caribou Creek, Little Boulder Creek, Little Butte Creek, Butte Creek, Granite Boulder Creek, Mill Creek and Ragged Creek have exceeded the 7-day mean maximum of 64.4 degrees and are on the State of Oregon 303d list for water temperature.

2.3.6.3 Lower Middle Fork Allotment

The MCR steelhead in this allotment are part of the MFJDR population. The Lower Middle Fork Allotment is located within the MFJDR subbasin (4th Field HUC), the Camp Creek and Big Creek watersheds (5th field HUCs), and the Big Creek, Bear Creek, Balance Creek, Big Boulder Creek and Granite Boulder Creek sub-watersheds (6th field HUCs). The watersheds encompassing the Lower Middle Fork Allotment support a mix of National Forest System and private lands. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation.

Allotment Pastures

The Lower Middle Fork Creek Allotment is divided into eight pastures: Balance, Chicken House, Granite Boulder, Granite Boulder Exclosure, Mosquito Riparian, Pizer, Sunshine, and Susanville. The Balance Pasture does not contain MCR steelhead critical habitat. The Chickenhouse Pasture contains MCR steelhead critical habitat in a 200- to 300-foot long water gap on Big Creek used to enter and exit the pasture. This water gap is not designated MSRA. The Granite Boulder Pasture contains steelhead critical habitat in Beaver Creek, Granite Boulder Creek, and Lemon Creek. Beaver Creek is designated MSRA in the pasture. The Granite Boulder Exclosure Pasture contains MCR steelhead critical habitat in Granite Boulder Creek. MSRA is designated in this part of Granite Boulder Creek and no authorized livestock grazing occurs within the exclosure. Mosquito Creek Pasture contains steelhead critical habitat in Mosquito Creek. MSRA is not designated on Mosquito Creek in this pasture. Pizer Pasture contains steelhead critical habitat in Big Creek, Pizer Creek, Lost Creek, East Fork Big Creek, Deadwood Creek, Onion Gulch and Swamp Gulch. MSRA is designated on Big Creek, Deadwood Creek and Swamp Gulch. Susanville Pasture contains MCR steelhead critical habitat in Deep Creek, Elk Creek, Coyote Creek, Myrtle Creek, Big Boulder Creek, Badger Creek, Wray Creek, Dry Creek and Beaver Creek. No MSRA is designated on any of these streams.

Streams with MCR steelhead critical habitat in the Lower Middle Fork Allotment are, Granite Boulder Creek, Lemon Creek, Beaver Creek, Sunshine Creek, Dry Creek, Big Boulder Creek, Myrtle Creek, Badger Creek, Wray Creek, Coyote Creek, Elk Creek, North Fork Elk Creek, Deep Creek, Mosquito Creek, Big Creek, Swamp Gulch, Deadwood Creek, Onion Gulch, East Fork Big Creek, Pizer Creek, and Lost Creek. No other streams are known to be occupied by steelhead on the allotment.

Activities

A new fence to be completed in 2012 will create the Mosquito Riparian Pasture. This pasture will provide additional protection to MCR steelhead critical habitat in Mosquito Creek. Cattle grazing will only occur as cattle are being driven through during turn-out and turn-off of the allotment.

Compliance and Resource Condition Issues

In 2008, livestock grazing on the Lower Middle Fork Allotment was enjoined by the District Court. There were instances on unauthorized use in the Balance, Pizer, Susanville, and Granite Boulder pastures. Cattle from private land walked across a cattleguard that was filled with dirt into the Susanville Pasture. Cattle from private land entered the Pizer Pasture through a break in the fence. Cattle from the Upper Middle Fork Allotment entered the Balance Pasture through an open gate and the Granite Boulder Pasture through ineffective fence. All unauthorized cattle were removed within three days of owner notification. Cattle from the Long Creek Allotment were also found in the Balance Pasture. Unauthorized use did not create adverse impacts. In 2009, the Lower Middle Fork Allotment was not grazed and there were again several occurrences of unauthorized cattle from private property. Use was negligible. In 2010, the Susanville and Granite Boulder pastures were grazed. Cattle tended to concentrate in two dry

meadows in the northwest portion of the Susanville Pasture and this area was rested in 2011. The 10% bank alteration endpoint in the Susanville Pasture was 12% but other endpoints were met and streambank stability was 98% and the exceedance was likely due to combined cattle and wildlife use. There was again unauthorized use by cattle from neighboring private property where the fence is not maintained.

Recent implementation monitoring information for end of season indicators is presented in Table 52. This information is from the BA and MNF EOY reports for the Lower Middle Fork Creek Allotment.

Table 52. MIM Monitoring Results for the Lower Middle Fork Allotment, 2004-2011 (NM-Not Monitored, blank cells indicate no data reported).

Location and Indicators Monitored	**Year**				
	2007	**2008** (non use)	**2009** (non use)	**2010**	**2011** (non use)
Dry Creek – Granite Boulder Pasture					
Bank Alteration (%)		NM	6	7	NM
Stubble Height (inches)		NM	14	14	NM
Woody Browse (%)		NM	35	75	NM
Bank Stability (%)		NM	96	98	NM
Covered Banks (%)		NM	99	98	NM
Elk Creek – Susanville Pasture					
Bank Alteration (%)		NM	NM	12	NM
Stubble Height (inches)		NM	NM	13	NM
Woody Browse (%)		NM	NM	43	NM
Bank Stability (%)		NM	NM	98	NM
Covered Banks (%)		NM	NM	100	NM
Deadwood Creek - Pizer Pasture MIM Monitoring Results					
Bank Alteration (%)	7				NM
Stubble Height (inches)	14				NM
Woody Browse (%)	18				NM
Bank Stability (%)	NM				NM
Covered Banks (%)	NM				NM

Steelhead Habitat Conditions and Trends

Effectiveness monitoring sites are in the Lower Middle Fork Allotment are on the Deadwood Creek tributary to Big Creek in the Pizer Pasture. It was monitored in 2005 and 2010. Summary data is shown in Table 53. The width to depth ratio at this site decreased from 23 to 16. Pools and undercut banks are being created but the fraction of fine sediment in the substrate increased. Riparian vegetation indicators remained static.

Table 53. Environmental Baseline Habitat Parameters for Lower Middle Fork Allotment Streams

Stream	Pasture	Year	Rosgen Channel Type or Gradient (%)	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Deadwood Creek 1	Pizer	2005	B4C	48	23	100	28	34
Deadwood Creek 1	Pizer	2010	B4C	64	16	92	20	39

Roads and Temperature

The Lower Middle Fork Allotment Granite Boulder Pasture adjoins of the Granite Boulder Creek watershed. This watershed received a high road risk rating in the MNF road report. The Susanville Pasture encompasses the Coyote Creek watershed and adjoins the Mosquito Creek watershed and both of these watersheds received a high road risk rating in the MNF road report. Granite Boulder Creek exceeded the 7-day mean maximum of 64.4 degrees and is on the State of Oregon 303d list for water temperature.

2.3.6.4 Long Creek Allotment

The MCR steelhead in this allotment are part of the MFJDR population. Elevations within the Long Creek Allotment range from 3,650 feet on lower Camp Creek to 6,300 feet at Ragged Rocks. Forest Road 36 and Camp Creek bisect the allotment running north and south. Historically, this allotment was heavily logged with railroad grades which are still evident in most riparian areas. After the time of the railroad, the allotment was again logged using conventional methods. Roads were built up the bottom of most major drainages, many of which are still in use today. The combination of logging, valley bottom roads and railroad grades, insect epidemic, and historic livestock grazing has reduced riparian shading from hardwood and conifer species.

Allotment Pastures

The Long Creek Allotment consists of ten pastures: Flat Camp, Flat Camp Cow Camp, Ladd, Lick Creek, Lick Creek Riparian, Hiyu, Coxie Creek, Keeney Meadows, Flood Meadows, and Camp Creek Riparian. Streams in the Flat Camp pasture containing steelhead critical habitat are Long Creek, Jonas Creek, and Cottonwood Creek. MSRA is designated on Long Creek in this pasture. The only stream in the Flat Camp Cow Camp Pasture with steelhead critical habitat is Cottonwood Creek. MSRA is not designated on Cottonwood Creek. Ladd Pasture contains steelhead critical habitat in Long Creek. MSRA is designated on Long Creek in this pasture. Lick Creek Pasture contains steelhead critical habitat in Lick Creek, Cougar Creek, Camp Creek, Trail Creek, West Fork Lick Creek, Eagle Creek, and Charlie Creek. MSRA is designated in Lick Creek, Cougar Creek, Camp Creek, and West Fork Lick Creek in this pasture. Lick Creek Riparian Pasture contains steelhead critical habitat in Lick Creek. MSRA is designated in Lick

Creek in this pasture. Hiyu Pasture contains steelhead critical habitat in Long Creek and Jonas Creek. MSRA is designated on Long Creek in this pasture. Flood Meadows Pasture contains steelhead critical habitat in Long Creek. MSRA is designated in Long Creek in this pasture. Camp Riparian Pasture contains steelhead critical habitat in Camp Creek. MSRA is designated in Camp Creek in this pasture. The Coxie Creek Pasture contains steelhead critical habitat in Coxie Creek. MSRA is not designated on Coxie Creek in this pasture. There is no steelhead critical habitat in the Keeney Meadows Pasture. No other streams are known to be occupied by steelhead on the allotment.

Activities

The Flat Camp Cow Camp is an approximately one-acre pasture within the Flat Camp pasture. This small pasture contains the housing facility for the full time rider, several outbuildings, a corral, and a pasture for the riders' horses. During the grazing season at least one rider stays at this facility seven days a week. The Ladd Pasture is used to load and unload livestock onto the allotment at the beginning and end of the grazing season. The Lick Creek Riparian Pasture is used for gathering and short-term holding. Cattle will overnight in this pasture and then be moved out the following day. The Flood Meadows Pasture was created in 2005 to allow the permittee to better control cattle access to the main stem of Long Creek adjacent to Flood Meadows. When livestock move between Flat Camp and Lick Creek pastures or Lick Creek Pasture and Hiyu Pasture, they cross the Camp Creek Riparian Pasture. When this occurs, livestock are driven (*i.e.*, not allowed to drift across – but driven in bunches) across one of two established, hardened crossings. The Clover Crossing of Camp Creek is used to move cattle between Flat Camp and Lick Creek pastures and is located on the 36 road at the junction of the 3650 road and Cougar Creek. The second crossing is located on the 36 road at the border of the Long Creek and Slide Creek grazing allotments. Both of these crossings are characterized by shallow bank angles, for ingress and egress, with stream beds that are comprised of predominantly cobble-sized material.

Compliance and Resource Condition Issues

In 2008, the stubble height endpoint for the Flat Camp Pasture Keeney Creek site was exceeded. The 10% bank alteration endpoint was exceeded at the Lick Creek Pasture, Ladd Pasture, and Hiyu Pasture monitoring sites because cattle were not cleared from the pastures in a timely way. The Camp Creek Riparian Pasture was used as a grazing pasture instead of a gather pasture and the 10% bank alteration standard was exceeded. The Long Creek Allotment was rested for the 2009 grazing season. Riparian monitoring was done to establish a baseline without cattle grazing. Wild ungulate woody browse was heavy in the Lick Creek and Flat Camp pastures. The Long Creek Allotment was grazed at 50% of the permitted numbers and 20% of the permitted time in 2010. Camp Creek, Ladd, and Lick Creek pastures were rested for the entire season.

Table 54. MIM Monitoring Results for the Long Creek Allotment, 2004-2011 (NM- Not Monitored, blank cells indicate no data reported).

Location and Indicators Monitored	Year				
	2007	**2008**	**2009**	**2010**	**2011**
Cougar Creek					
Bank Alteration (%)		30	3	6	rested
Stubble Height (inches)		6.8	10.8	12.9	rested
Woody Browse (%)		17.5	16.5	26.2	rested
Bank Stability (%)		NM	82	85	rested
Covered Banks (%)		NM	100	93	rested
Flood Meadow					
Bank Alteration (%)		14	rested	3	6
Stubble Height (inches)		7.1	rested	13.5	8
Woody Browse (%)		NA	rested	NA	NA
Bank Stability (%)		NM	rested	100	93
Covered Banks (%)		NM	rested	100	100
Keeney Creek Critical DMA					
Bank Alteration (%)		13	10	11	rested
Stubble Height (inches)		14	17	12	rested
Woody Browse (%)		11	S/L (0-40)	8	rested
Bank Stability (%)		NM	NM	90	rested
Covered Banks (%)		NM	NM	90	rested
Long Creek (Ladd Pasture)					
Bank Alteration (%)		27	2	2	rested
Stubble Height (inches)		7.9	11.5	18.4	rested
Woody Browse (%)		6.5	7.3	40.0	rested
Bank Stability (%)		NM	93	100	rested
Covered Banks (%)		NM	100	100	rested
Lick Creek					
Bank Alteration (%)		23	0	1	rested
Stubble Height (inches)		8.6	11.3	14.8	rested
Woody Browse (%)		9.3	62.9	26.4	rested
Bank Stability (%)		NM	84	100	rested
Covered Banks (%)		NM	100	100	rested
Camp Creek Lower Riparian					
Bank Alteration (%)		14	1	1	rested
Stubble Height (inches)		10.3	19.7	20.9	rested
Woody Browse (%)		10.4	27.9	53.8	rested
Bank Stability (%)		NM	100	100	rested
Covered Banks (%)		NM	100	100	rested
Pepper Creek					
Bank Alteration (%)		NM	3	11	rested
Stubble Height (inches)		4	13.2	9.2	rested

Location and Indicators Monitored	Year				
	2007	2008	2009	2010	2011
Woody Browse (%)		NM	74.0	83.7	rested
Bank Stability (%)		NM	100	88	rested
Covered Banks (%)		NM	100	98	rested
West Fork Lick Creek					
Bank Alteration (%)		15	2	5	rested
Stubble Height (inches)		NM	8.0	11.5	rested
Woody Browse (%)		10.2	4.2	40.3	rested
Bank Stability (%)		NM	100	90	rested
Covered Banks (%)		NM	100	95	rested

Steelhead Habitat Conditions and Trends

There is an effectiveness monitoring integrator site on Long Creek in the Ladd Pasture and effectiveness monitoring DMA on Long Creek in the Flood Meadows Pasture. The Flood Meadows Pasture is a narrow exclosure around Long Creek with a short grazing window, similar to the Camp Creek pastures. At this site, width to depth ratio decreased from 20.4 to 15.0 between 2005 and 2010, with streambank stability greater than 97%. Pools and undercut banks increased significantly while substrate sediment parameters were low and remained unchanged. Greenline vegetation parameters were also static. Steam habitat data for this allotment is presented in Table 55.

Table 55. Environmental Baseline Habitat Parameters for Long Creek Allotment.

Stream	Pasture	Year	Rosgen Channel Type or gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Long Creek I	Ladd	2005	C3	51.9	20.4	100	78	23
Long Creek I	Ladd	2010	C3	64.4	15.0	97	70	22
Long Creek K	Flood Meadows	2005				88		0
Long Creek K	Flood Meadows	2010		53.6	8.4	100		0

Roads and Temperature

The Long Creek Allotment Flat Camp, Lick Creek, Hiyu, and Camp Riparian pastures adjoin the Camp Creek watershed. This watershed received a high road risk rating in the MNF road report. The Lick Creek Pasture encompasses the Lick Creek watershed which also received a high road

risk rating in the MNF road report. Camp Creek and Long Creek exceeded the 7-day mean maximum of 64.4 degrees and are on the state of Oregon 303d list for water temperature.

2.3.6.5 Fox Allotment

The MCR steelhead in this allotment are part of the MFJDR and NFJDR populations. The watersheds encompassing the Fox Allotment support a mix of National Forest System and State and private lands. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation.

Allotment Pastures

The Fox Allotment is divided into four pastures: Upper Fox, Lower Fox, South Fork, and Wiley Creek. Streams in the Upper Fox Pasture containing MCR steelhead critical habitat are Dunning Creek and Smith Creek. Neither stream is designated MSRA in this pasture. The Lower Fox Pasture contains MCR steelhead critical habitat in Fox Creek, Day Creek, Mill Creek, and an unnamed tributary stream to Mill Creek. Fox Creek is designated MSRA in this pasture. The South Fork Pasture contains steelhead critical habitat in South Fork Long Creek which is the designated MSRA in this pasture. The Wiley Creek Pasture contains steelhead critical habitat in Cottonwood Creek, Mill Creek and Murphy Creek. Neither stream is designated MSRA in this pasture. No other streams are known to be occupied by steelhead on the allotment.

Activities

In 2009 and 2010, livestock were not grazed at the Lower Fox Creek Pasture. Monitoring results indicate large numbers of elk frequent these meadows for most of the summer months. In 2008 and 2009, the South Fork Pasture was grazed met all endpoint standards. In 2010, surplus forage in the Upper Fox and Wiley Creek pastures allowed permittees to keep their herds in these pastures and rest the South Fork Pasture. There was excess use of the South Fork Pasture by cattle from the Long Creek Allotment but endpoints were not exceeded.

Compliance and Resource Condition Issues

Recent implementation monitoring data information for end of season indicators is presented in Table 56. An interdisciplinary group using the MIM method acquired monitoring data for the Fox Creek and South Fork Long Creek MNF DMA sites in the Lower Fox Pasture and South Fork Pasture of the Fox Allotment. This information is from the BA and MNF EOY reports for the Fox Allotment.

Table 56. MIM Monitoring Results for the Fox Allotment, 2008-2011 (NM- Not Monitored, blank cells indicate no data reported).

Location and Indicators Monitored	Year			
	2008	**2009**	**2010**	**2011**
Fox Creek Lower Fox Pasture				
Bank Alteration (%)	49	15	13	rested
Stubble Height (inches)	4.5	12.8	13	rested
Woody Browse (%)	63	67	75	rested
Bank Stability (%)	NM	93	65	rested
Covered Banks (%)	NM	100	100	rested
South Fork Long Creek South Fork Pasture MNF DMA				
Bank Alteration (%)	10	5	8	5
Stubble Height (inches)	5.3	6.6	11.7	4
Woody Browse (%)	80	68	90	Moderate
Bank Stability (%)	NM	91	94	80
Covered Banks (%)	NM	100	96	100

Steelhead Habitat Conditions and Trends

There are two effectiveness monitoring integrator sites and one effectiveness monitoring DMA site on the Fox Allotment. The BA states that the integrator site on South Fork Long Creek have shown improvement for most attributes, while the Fox Creek integrator DMA sites have essentially remained static. Overall, bankfull width to depth ratios, percent bank stability and percent undercut bank have shown improvement (only one site remained static/slight decline) while the remaining evaluated attributes, those considered to be potentially affected by livestock grazing: bank angle, D50, residual pool depth, percent fines <6mm, greenline wetland rating, and greenline woody cover, remained relatively unchanged (a few of the attributes lacked data to make an evaluation). It should be noted that besides riparian vegetation, the stream attributes most directly affected by grazing activities are bank stability, bank angle, width to depth ratio, and percent undercut banks. There are too few reference sites within the John Day River basin to determine whether similar changes are occurring in unmanaged watersheds. Although only bankfull width to depth ratios, percent bank stability, and percent undercut bank showed improvement, this is actually a promising indicator given that both Bengeyfield (2006) and Rosgen (1996) have indicated that the relationship between a stream's width and depth is perhaps the most revealing of all stream channel indicators as to whether the stream is in a condition to perform the various tasks that lead to a healthy riparian area.

Table 57. Environmental Baseline Habitat Parameters for Fox Allotment Streams.

Stream	Pasture	Year	Rosgen Channel Type or gradient	Percent Pools	Percent undercut Bank	Bankfull W/D Ratio	Percent Stable Bank	Median Particle Size (mm)	BankFull Width (*DMA site only)	Greenline and Woody Cover
South Fork Long Creek	South Fork	2005	B4	14	5	25.4	100	58		1.9
South Fork Long Creek	South Fork	2010	B4	23	23	21.9	100	47		.5
South Fork Long Creek (DMA)	South Fork	2005			10		93		7.8	
South Fork Long Creek (DMA)	South Fork	2010			22		98		12.4	
Fox Creek	Lower Fox	2005	C4	32		16.5	95	2 (very fine gravel)		2
Fox Creek	Lower Fox	2010	C4	32			100	3 (very fine gravel)		1.6

Roads and Temperature

The Fox Allotment pastures do not encompass watersheds that are at a high or extreme risk from roads or that are on the state of Oregon 303d list for water temperature.

2.3.5.6 Camp Creek Allotment

The Camp Creek Allotment is located at the confluence of the MFJDR and Camp Creek. Elevations within the allotment average 3,600 feet. The MFJDR runs the length (east/west) of the allotment, as does County Road 20. Camp Creek and the 36 road also run the length of the allotment (north/south). Private land adjacent to the allotment is excluded by fencing. There are four water rights certificates issued within the boundaries, or associated areas of the Camp Creek Allotment. There are four existing irrigation diversions on Camp Creek; two are located on National Forest System lands and two are located on private lands. The two on National Forest System lands are no longer functional and there are no plans for repairing them. The push-up dam diversion points, which irrigate private lands, have been improved through the installation of infiltration galleries.

Allotment Pastures

The Camp Creek Allotment consists of seven pastures: Lower Camp Creek, Middle Camp Creek, Campground, Road, North, Gibbs Meadow and Upper Camp. Lower Camp Creek Pasture contains steelhead critical habitat on the MFJDR, all of which is designated MSRA in this pasture. The Middle Camp Creek Pasture contains the MFJDR and Camp Creek. Both are designated MSRA in this pasture. The Campground Pasture contains a short segment of Camp Creek which is designated MSRA in the pasture. The Road Pasture, North Pasture, Gibbs Meadow Pasture and Upper Camp Pasture do not contain steelhead critical habitat. No other streams are known to be occupied by steelhead on the allotment.

Activities

In 2011, an exclosure was constructed along both the MFJDR and Camp Creek in the Middle Camp Creek pasture and there will be no cattle access to either the MFJDR or Camp Creek with the exception of a water gap on Camp Creek near the bridge on the 3690 road. The Campground pasture will be removed from the allotment grazing rotation beginning in 2012. The pasture will only be used as cattle are driven (not allowed to trail or linger) through to enter and exit the Upper Camp Pasture.

Compliance and Resource Condition Issues

A new grazing strategy was adopted in 2007, to reduce the amount of browse on riparian hardwoods. Toward the end of the 2009 season yearling heifers from the adjacent private property were found in the Lower Camp Pasture. The owner was contacted and removed the cattle within a few days, however, a week later range personnel again found the yearlings on the allotment. Once again the owner was contacted and he removed the cattle from the allotment and moved them to a new location. The Middle Camp Pasture was only used for two weeks due to resource concerns on Camp Creek. In 2010, turn-out was scheduled to occur on the Lower Pasture, however due to extremely wet conditions in early June, turn-out occurred on the North Pasture. The Lower Pasture contains the MFJDR and at the time of turn-out the river was at or above flood stage making the pasture unsuitable for grazing. Cattle entered the Lower Pasture in mid-June after the flood waters had receded and the meadows had dried. The Middle Pasture also contains the MFJDR and Camp Creek. For the 2010 season, electric fence was used to restrict cattle access to both the river and Camp Creek. Cattle entered the restricted area but use was minimal.

Recent implementation monitoring data information for end of season indicators is presented in Table 58.

Table 58. MIM Monitoring Results for the Camp Creek Allotment, 2008-2011 (NM- Not Monitored, blank cells indicate no data reported).

Location and Indicators Monitored	Year			
	2008	**2009**	**2010**	**2011**
Camp Creek – Campground Pasture				
Bank Alteration (%)	2	NM	NM	NM
Stubble Height (inches)	5	6		NM
Woody Browse (%)	19	20	25	NM
Bank Stability (%)	NM	NM	NM	NM
Covered Banks (%)	NM	NM	NM	NM
Camp Creek Middle Pasture				
Bank Alteration (%)	4	NM	NM	NM
Stubble Height (inches)	12	8		NM
Woody Browse (%)	34	20		NM
Bank Stability (%)	NM	NM	NM	NM
Covered Banks (%)	NM	NM	NM	NM
Camp Creek Lower Pasture				
Bank Alteration (%)	1	3	7	NM
Stubble Height (inches)	12	12	10	NM
Woody Browse (%)	25	12	18	NM
Bank Stability (%)	NM	85	NM	NM
Covered Banks (%)	NM	98	NM	NM

Steelhead Habitat Conditions and Trends

An effectiveness monitoring integrator site is on Camp Creek in the Middle Camp Pasture. Data from 2006 is presented below.

Table 59. Environmental Baseline Habitat Parameters for Camp Creek Allotment Streams.

Stream	Pasture	Year	Rosgen Channel Type or gradient	Percent Pools	Percent undercut Bank	Bankfull W/D Ratio	Percent Stable Bank	Median Particle Size (mm)	Greenline and Woody Cover
Camp Creek		2006	C3b	32.4	9.1	28	100	90	20

Roads and Temperature

The Camp Creek Allotment Lower Camp Pasture encompasses part of the lower Camp Creek watershed. This watershed received a high road risk rating in the MNF road report. Camp Creek and the MFJDR exceeded the 7-day mean maximum of 64.4 degrees and are on the state of Oregon 303d list for water temperature.

2.3.6.7 Slide Creek Allotment

The Slide Creek Allotment is located within the Middle Fork John Day subbasin (4th Field HUC), the Camp Creek and Big Creek watersheds (5th field HUCs), and the Lower Camp Creek, Bear Creek and Slide Creek sub-watersheds (6th field HUCs). Elevations within the allotment range from approximately 3,600 feet near Camp Creek to 5,500 feet near the center of the allotment. The Slide Creek Allotment is one of the most productive grazing allotments on the MNF. Large timber harvests in the early 1960s and 1970s created a mosaic of upland meadows with a diverse variety of bunchgrasses and forbs. Several designated livestock driveways (Hawkins, Swickey, and Bear Creek) facilitate proper cattle distribution and effective pasture moves. The watersheds encompassing the Slide Creek Allotment support a mix of National Forest System and private lands. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, water diversions, prescribed and natural fire, noxious weed treatment, and recreation.

Allotment Pastures

The Slide Creek Allotment is divided into nine pastures: Camp Riparian, East, Hog, Sale Area, West, Whiskey Flats, Whiskey Riparian, Slide Holding, and Slide Riparian. Camp Riparian Pasture contains MCR steelhead critical habitat in Camp Creek which is designated MSRA in the pasture. East Pasture contains MCR steelhead critical habitat in Bear Creek and Whiskey Creek. MSRA is not designated in either stream in the pasture. The West Pasture contains MCR steelhead critical habitat in Slide Creek. MSRA is not designated on Slide Creek in this pasture. Slide Riparian Pasture contains MCR steelhead critical habitat in Slide Creek. MSRA is designated in Slide Creek in this pasture. Whiskey Riparian Pasture contains MCR steelhead critical habitat in Whiskey Creek. MSRA is not designated on Whiskey Creek in this pasture. Hog, Sale Area, Whiskey Flats, and Slide Holding pastures do not contain MCR steelhead critical habitat. No other streams are known to be occupied by steelhead on the allotment.

Activities

Camp Riparian Pasture is used to facilitate pasture moves between the East Pasture and the next pasture in the rotation. In 2009 and 2010, the Whiskey Riparian Pasture was excluded from livestock grazing by fencing. There was evidence of use by wild ungulates when pastures were monitored in years of non-use by livestock.

Compliance and Resource Condition Issues

In 2008, cattle remained in the East Pasture longer than scheduled and the bank alteration endpoint was exceeded. In 2009, electric fence was used to protect Slide Creek critical habitat in the Sale Area Pasture and Whiskey Creek critical habitat in the East Pasture, but vandalism allowed cattle to access the excluded areas at Slide Creek. Nonetheless, endpoints were met. A rider lives on the allotment during the summer and moves the cattle several times a day to avoid over utilization. In 2009 and 2010, in the Whiskey Riparian Pasture, wild ungulate use exceeded the proposed end-point of 40% woody browse at 64% and 87%. The 2008 estimate for the site was 19%. In 2010, a new fence was constructed to create a riparian pasture along Slide Creek in the Sale Area Pasture. A temporary cattle guard is used where the new fence crosses the county

road. This cattle guard was vandalized while cattle were in the Sale Area Pasture allowing cattle to get into the exclosure for several days and they exceeded the 10% bank alteration endpoint.

Recent implementation monitoring information for end of season indicators is presented in Table 58. This information is from the BA and MNF EOY reports for the Slide Creek allotment.

Table 60. MIM Monitoring Results for the Slide Creek Allotment, 2004-2011 (NM- Not Monitored, blank cells indicate no data reported)

Location and Indicators Monitored	**Year**				
	2007	**2008**	**2009**	**2010**	**2011**
Slide Creek – Slide Riparian Pasture					
Bank Alteration (%)		11	6	17	rested
Stubble Height (inches)		3	9	8	rested
Woody Browse (%)		15	15	76	rested
Bank Stability (%)		NM	79	66	rested
Covered Banks (%)		NM	100	82	rested
Whiskey Creek – Whiskey Riparian Pasture					
Bank Alteration (%)		27	0	3	rested
Stubble Height (inches)		4	10	13	rested
Woody Browse (%)		19	64	87	rested
Bank Stability (%)		NM	93	93	rested
Covered Banks (%)		NM	100	100	rested

Steelhead Habitat Conditions and Trends

There is one effectiveness monitoring integrator site on Slide Creek located one mile downstream from the Slide Creek Allotment within an exclosure on the York Allotment. This site is not directly impacted by cattle grazing but is influenced by peak flows and sediment from the Slide Creek Allotment. This site shows a decrease in bankfull width to depth ratio and a decrease in percent pools and percent greenline woody cover between 2005 and 2010.

Table 61. Environmental Baseline Habitat Parameters for Slide Creek Allotment Streams.

Stream	Pasture	Year	Rosgen Channel Type or Gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Slide Creek 1 (York)	York	2005	B4	53	12	98	61	77
Slide Creek 1 (York)	York	2010	B4	45	8	98	50	55

Roads and Temperature

The Slide Creek Allotment West and Slide Riparian pastures encompass part of the Slide Creek watershed. This watershed received a high road risk rating in the MNF road report. The Camp Holding Pasture encompasses Camp Creek which also received a high road risk rating. Camp Creek and Slide Creek exceeded the 7-day mean maximum of 64.4 degrees and are on the state of Oregon 303d list for water temperature.

2.3.6.8 York On/Off Allotment

Grazing activities on the York On/Off Allotment are conducted within the MFJDR (HUC 4# 17070203) subbasin. This allotment lies within the Big Creek-MFJDR (HUC 5# 1707020303) watershed. Elevations within the allotment range from approximately 3,800 feet to 4,600 feet. Vegetative types range from ponderosa pine to mixed conifer. Dominant grass species are bluebunch wheatgrass/Idaho fescue on the open hill slopes and elk sedge/pine grass in the forested areas.

Allotment Pastures

The York On/Off Allotment consists of two pastures: Slide and East. Slide Pasture contains MCR steelhead critical habitat in Slide Creek. Section of Slide Creek are designated MSRA in this pasture. East Pasture does not contain MCR steelhead critical habitat. No other streams are known to be occupied by steelhead on the allotment.

Compliance and Resource Condition Issues

In recent years, only upland forage monitoring has occurred on this allotment. Endpoint indicators for upland forage utilization have been met consistently during these years.

Steelhead Habitat Conditions and Trends

The effectiveness monitoring integrator site for the Slide Creek Allotment is on Slide Creek in the York On/Off Allotment.

Roads and Temperature

The York On/Off Allotment Slide Pasture encompasses part of the Slide Creek watershed. This watershed received a high road risk rating in the MNF road report. Slide Creek exceeded the 7-day mean maximum of 64.4 degrees and is on the state of Oregon 303d list for water temperature.

2.3.7 Environmental Baseline for NFJDR Population Allotments

2.3.7.1 Fox Allotment

See Section 2.3.6.5 for information about the Fox Allotment.

2.3.7.2 Donaldson Allotment

The MCR steelhead in this allotment are part of the NFJDR population. The Donaldson Allotment is located within the North Fork John Day (HUC # 17070202) subbasin. The two pastures comprising the Donaldson Allotment lie within the Cottonwood Creek (HUC # 17070202) watershed. The Donaldson Allotment is located at the southwest end of Fox Valley on National Forest System Lands. The watersheds encompassing the Donaldson Allotment support a mix of National Forest System, State, and private lands. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation.

Allotment Pastures

The Donaldson Allotment is divided into two pastures: Glade and Hinton. The Glade Pasture contains MCR steelhead critical habitat in Fox Creek, Camp Creek, Boulder Creek, and Cottonwood Creek. Reaches of Fox Creek are designated MSRA. The Hinton Pasture does not contain MCR steelhead critical habitat. No other streams are known to be occupied by steelhead on the allotment.

Compliance and Resource Condition Issues

Monitoring of the Donaldson Allotment for compliance with the terms and conditions of the permit has been with quantitative measurements of Upland Utilization from 2007 through 2010 shown in Table 62, below. The maximum percent utilization allowed is 45%.

Table 62. Donaldson Allotment Upland Utilization Monitoring Results.

Monitoring Year	**2007**	**2008**	**2009**	**2010**
Average percent upland utilization	23%	11%	23%	38%

Steelhead Habitat Conditions and Trends

There are no IM or DMA monitoring sites identified in the allotment. The BA identifies that stream surveys had been done on Fox Creek and Camp Creek. No stream surveys have been completed on Cottonwood Creek. Information on stream habitat for the Donaldson Allotment is found in Table 63.

Table 63. Environmental Baseline Habitat Parameters for Donaldson Allotment Streams.

Stream	Allotment	Pasture	Year	Rosgen Channel Type or Gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Fox Creek 1	Donaldson	Glade	1991	2	12.7	6.8		Gravel	
Camp Creek 1	Donaldson	Glade	1994	2	45.2	36.7			

Roads and Temperature

The Donaldson Allotment Glade Pasture encompasses part of the Fox Creek watershed. This watershed received a high road risk rating in the MNF road report. Cottonwood Creek and Fox have exceeded the 7-day mean maximum of 64.4 degrees and Cottonwood Creek is on the state of Oregon 303d list for water temperature.

2.3.7.3 Deer Creek Allotment

The MCR steelhead in this allotment are part of the NFJDR population. The watersheds encompassing the Deer Creek Allotment support a mix of National Forest System, State, and private lands. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation.

Allotment Pastures

The Deer Creek Allotment includes one pasture: Deer Creek. West Fork Deer Creek is the only stream with MCR steelhead critical habitat located in the pasture. MSRA is designated on West Ford Deer Creek in this pasture. No other streams are known to be occupied by steelhead on the allotment.

Compliance and Resource Condition Issues

Monitoring of the Deer Creek Allotment for compliance with the terms and conditions of the permit has been with quantitative measurements of Upland Utilization from 2007 through 2010 shown in Table 64, below. The maximum percent utilization allowed is 45%.

The BA did not identify any IM or DMA sites at the Deer Creek Allotment. Data was only available for monitoring of the upland utilization in the pasture.

Table 64. Deer Creek Allotment Upland Utilization Monitoring Results.

Monitoring Year	2007	2008	2009	2010
Average percent upland utilization	25%	Rested	28%	Rested

Steelhead Habitat Conditions and Trends

No effectiveness monitoring sites exist within the Deer Creek Allotment. No stream survey data was provided in the BA.

Roads and Temperature

The Deer Creek Allotment Deer Creek Pasture encompasses part of the Deer Creek watershed. This watershed received a high road risk rating in the MNF road report. West Fork Deer Creek has exceeded the 7-day mean maximum of 64.4 degrees but is not on the state of Oregon 303d list for water temperature.

2.3.7.4 Indian Ridge Allotment

The MCR steelhead in this allotment are part of the NFJDR population. The Indian Ridge Allotment is located within the North Fork John Day (HUC # 17070202) subbasin and the Long Creek (HUC # 1707020304) and Cottonwood Creek (HUC # 1707020209) watersheds. The watersheds encompassing the Indian Ridge Allotment support a mix of National Forest System, state, and private lands. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation. Historically, riparian areas were logged by conventional tractor yarding. The combination of logging, insect epidemic, and valley bottom roads has reduced shading from conifer species.

Allotment Pastures

The Indian Ridge Allotment consists of five pastures: Boothill, West, East, Ridge and Highway. No streams containing designated MCR steelhead critical habitat are within the East Pasture. However, *O. mykiss* are known to occur within the pasture above the extent of steelhead critical habitat which ends approximately 0.2 mile below the Forest Service land boundary fence. MCR steelhead were observed as recently as September 15, 2011, during a field assessment of Indian Creek. A subsequent visit on October 26, 2011, verified the absence of substantive barriers to migration for adult MCR steelhead into Indian Creek from 0.8 mile above its confluence with Fox Creek, upstream to the pasture boundary. Redband trout distribution extends approximately 3.0 miles onto MNF land within this pasture. Although no designated critical habitat is found within the East Pasture of the Indian Ridge Allotment, the absence of substantial barriers to adult MCR steelhead migration and presence of *O. mykiss* on Forest Service land resulted in 300 feet

of Indian Creek past the Forest Service boundary being considered occupied MCR steelhead habitat. No other streams are known to be occupied by steelhead on the allotment.

Compliance and Resource Condition Issues

There no DMA monitoring sites identified in the allotment. A DMA was once located within the Indian Ridge Allotment (East Pasture) but is no longer in use because it was deemed not an appropriate location. The following narrative was provided in the BA, as a rationale followed by the results of monitoring conducted from 2002-2006.

During the September 2011, site visit it was also noted that large woody debris is a controlling factor for this stream reach on Forest Service land. However, there is an abrupt change in riparian vegetation and gradient approximately 300 feet before Indian Creek leaves Forest Service land. Within this section of stream, alder and dogwood are present as well as hydric sedges. Spawning gravel is present and large woody debris is absent as well as any large shade trees within that 300 feet. This continues onto private land below the Forest Service boundary where alder disappears and the bank vegetation is primarily sedges with no large conifers present. Within this 300 feet, there is a transition from a large wood controlled system (headwaters) to a more herbaceous riparian hardwood controlled system. The BA identified the MNF rationale for why a DMA is not appropriate for this location is due to the site being immediately adjacent to fence boundary where livestock become concentrated due to the location being the primary source of water within the pasture.

Steelhead Habitat Conditions and Trends

No effectiveness monitoring sites exist in the Indian Ridge allotment. Stream survey information on stream habitat for the Indian Ridge Allotment is found in Table 65.

Table 65. Environmental Baseline Habitat Parameters for Indian Ridge Allotment Streams.

Stream	Allotment	Pasture	Year	Rosgen Channel Type or Gradient	Percent Pools	Bankfull W/D	Percent Stable	Median Particle Size (mm)	Greenline Woody Cover
Indian Creek 2	Indian Creek	East Boothill	1993	7	1.7	9.1	57	Sand	80

Roads and Temperature

The Indian Ridge Allotment East Indian Creek Pasture encompasses part of the Upper Long Creek watershed. This watershed received a moderate road risk rating in the MNF road report. No temperature data is available for Indian Creek.

2.4 Effects of the Action

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

The BAs contains a thorough description of the proposed action, associated project design criteria and management measures designed to reduce the impacts of grazing. The BA divides the proposed action into six elements: (1) Livestock use of allotment/pastures; (2) permittee management of livestock and infrastructure maintenance; (3) range improvements; (4) exclusionary fencing; (5) monitoring; and (6) adaptive management. The analysis of the BA and this opinion focus on elements 1, 2, and 6. Elements 3 and 4 and their effects on MCR steelhead and critical habitat are addressed in prior ESA consultations (refer to NMFS Nos.: 2007/02970 and 2008/03505); effects related to these elements are very minor and expected to be consistent with those analyses. The very limited effects of element 5 are set forth in the BA and incorporated here by reference. See, *e.g*. Murderers Creek BA at pp 75-106. The effects discussion considers impacts of the proposed action with respect to the life cycle of MCR steelhead and the applicable PCEs of critical habitat (spawning, rearing, and migration).

2.4.1 General Grazing Effects

2.4.1.1 Direct Effects on MCR Steelhead

As cattle approach streams to drink or cross they could interrupt spawning behavior by forcing adult steelhead to retreat to nearby cover. However, most if not all spawning by adult MCR steelhead occurs in the early spring (March-May), and spawning activities will have largely concluded by the time cattle enter the allotments addressed by this consultation. Adult steelhead either die or swim downstream after constructing redds where they deposit eggs. Although the BAs submitted by the MNF state that adults may be disturbed by grazing livestock, adult steelhead are unlikely to be in the action area when grazing will occur. Therefore, the probability of cattle interrupting spawning or other adult behavior is low. There are only two allotments, Beech Creek and Murderers Creek with turnout dates in mid-May. There is some possibility of interference with spawning on these allotments, but the conservation measures proposed by the MNF reduce this risk.

Of more concern, livestock can trample redds which is reasonably certain to result in partial or total mortality of embryos or juveniles concentrated in the redd. Salmonid embryos are vulnerable to mechanical disturbance, and their sensitivity varies with developmental stage (Peterson *et al*. 2010). For instance, Roberts and White (1992) reported that a single wading incident on a simulated spawning redd killed 43% of pre-hatching embryos and twice-daily wading throughout embryo development killed at least 83% of eggs and pre-emergent fry.

Steelhead in the John Day River basin, spawn between March-May with spawning peaking in April. Depending on water temperature, eggs and alevins remain in redds for approximately 45 to 60 days. During this time, redds are susceptible to trampling by livestock. By June 30, most alevins have emerged from the gravel and the susceptibility of redds to trampling drops significantly.

Although it is fairly certain that fish are injured or killed when redds are trampled, less is known about how frequently livestock come in contact with redds. Only a small number of studies have examined the likelihood that salmonid redds will be trampled by livestock. None of these studies has looked at steelhead redds, so the results must be interpreted with caution.

Ballard and Krueger (2005) observed interactions between spawning Chinook salmon and cattle on Catherine Creek in eastern Oregon. They found that cattle trampled two of six observed redds during a 28-day grazing season. Each redd was observed for an average of 36 hours during the 28-day period. Because each disturbed redd was only stepped on by a single hoof, the authors concluded that "the distribution of the egg pockets within the redd in combination with the fact that the cattle spent 1.0% of their time in the stream and, 0.01% of their time in contact with a salmon redd suggest that the likelihood of a cow stepping on a redd is very small and the chance of the cow causing significant damage to the buried eggs is also very small."

Gregory and Gamett (2009) found that cattle grazing on a Forest Service allotment in central Idaho for 14 to 21 days trampled 12 to 78% of simulated bull trout (*Salvelinus confluentus*) redds. The authors note their results show the chance of cattle trampling a salmonid redd is not always low and contradicts the earlier conclusions of Ballard and Krueger (2005).

These studies are somewhat informative, but both were carried out during summer or fall because bull trout and Chinook salmon spawn at this time. During the summer and fall, cattle spend more time in riparian areas due to hot dry weather and lack of palatable upland forage. During the spring and early summer, steelhead redds are vulnerable to trampling, but cattle spend more time in upland areas due to cool, wet weather and availability of suitable forage. This suggests that steelhead redds are generally at lower risk than bull trout and Chinook salmon redds.

Peterson *et al.* (2010) modeled egg-to-fry mortality of westslope cutthroat trout (*Oncorhynchus clarkii lewisi*) across a range of trampling rates and then used a matrix model to determine how trampling affected trout population growth. Cutthroat trout spawn in the spring or early summer, a behavior that more closely matches MCR steelhead. The authors noted that cattle trampling concentrated over a few days when the embryos were most sensitive caused greater egg-to-fry mortality than when the same amount of trampling occurred over one month period. They also noted that trampling caused a large increase in egg-to-fry mortality when that natural mortality was low, but the overall population-level effect was far less than might have been anticipated from the rate of trampling itself. The authors conclude that the overall risk posed by trampling will depend on whether trout populations (or in this case, steelhead) face concurrent threats that have already reduced their abundance and resilience.

The MNF proposes significant measures to reduce the potential for redd trampling. Pre turnout stream surveys that locate spawning steelhead and redds are required on 100% of MSRA designated critical habitat and 20% of non-MSRA designated critical habitat. Spawning surveys greatly reduce the likelihood that redds will be vulnerable to trampling. MNF and permittees will utilize a number of tools to prevent livestock from disturbing spawners and protect redds from trampling. These tools include using and alternate pasture rotation that avoids spawning, resting the pasture with spawners and redds, using fence to exclude livestock from the spawning site, and using additional riding to herd cattle away from spawning sites.

In 2000, the MNF reported a single incident in which cattle trampled five MCR steelhead redds in a meadow area of Squaw Creek on the Sullens Allotment (grazing is no longer authorized on this allotment). Since this incident, the MNF has not reported any additional instances of steelhead redd trampling. This is despite significant additional effort made to survey for redds and redd trampling. The available information indicates that steelhead redd trampling on the MNF happens occasionally, but not frequently.

After reviewing the available information and considering the measures the MNF has proposed to protect redds, NMFS concludes that it is reasonably certain that a few MCR steelhead redds will be trampled over the 5-year term of this consultation. Due to the large geographic scale of this consultation, this trampling may or may not be observed during the proposed MNF surveys. Trampling will result in the death or injury of MCR steelhead eggs, alevins, or juveniles. However, the total number of redds trampled is expected to be low. This is because cattle spend significant amount of time in uplands during the time MCR steelhead redds are vulnerable and the MNF is proposing a number of measures to detect and protect redds.

In addition to redd trampling, rearing juvenile MCR steelhead are likely to be disturbed by cattle approaching and entering streams. Similarly, range riders on horses will occasionally cross streams causing the same type of effect. Juvenile MCR steelhead may respond by leaving near shore cover and entering open water where they are more vulnerable to predation. This could lead to death or injury of these individuals. Cattle or horse entering streams may also cause juvenile steelhead to abandon other critical behaviors such as feeding.

The occasional disruptions caused by livestock are not expected to result in any significant decrease in abundance or productivity of juvenile MCR steelhead at the population scale. This is because the disruptions to essential juvenile behaviors of feeding and sheltering are likely to be limited to stream reaches where cattle can easily approach or enter the water. Disruptions are not likely to occur in streams that are less accessible due to the occurrence of woody vegetation around the streambanks or the presence of large amounts of down woody debris near streams. Additionally, many pastures contain fencing that exclude cattle from streams. The MNF also proposes a number of management measures, such as herding and placement of mineral supplements in uplands, to reduce the amount of time livestock spend in riparian areas. Many of the accessible reaches are designated as MSRAs, and the more conservative management of these areas will help to further reduce the frequency of harassment of juvenile steelhead by cattle.

2.4.1.2 Direct and Indirect Effects on MCR Steelhead Habitat[11]

Numerous symposia and publications have documented the detrimental effects livestock grazing can have on stream and riparian habitats (Johnson *et al*. 1985; Menke 1977; Meehan and Platts 1978; Cope 1979; American Fisheries Society 1980; Platts 1981; Peek and Dalke 1982; Ohmart and Anderson 1982; Kauffman and Krueger 1984; Clary and Webster 1989; Gresswell *et al*. 1989; Kinch 1989; Chaney *et al*. 1990, Belsky *et al*. 1997). These publications describe a series of additive effects that can result when cattle over-graze or impact riparian areas. Over time, woody and hydric herbaceous vegetation along a stream can be reduced or eliminated and livestock trampling causes streambanks to collapse. Without vegetation to slow water velocities, hold the soil, and retain moisture, flooding causes more erosion of streambanks; the stream becomes wider and shallower and in some cases downcut; the water table drops; and hydric, deeply rooted herbaceous vegetation dies out and is replaced by upland species with shallower roots and less ability to bind the soil. The resulting instability in water volume, increased summer water temperature, loss of pools and habitat adjacent and connected to streambanks, and increased substrate fine sediment and cobble-embeddedness.

The MNF proposes a suite of management measures and project design criteria to reduce the effects of grazing on MCR steelhead habitat. Most importantly, they have established endpoint indicators for herbaceous stubble height, woody vegetation browse, and streambank alteration. As explained in the BAs, woody vegetation browse is used to regulate impacts on woody shrub recruitment to streams, greenline stubble height is used to regulate grazing impacts on greenline ecological status and streambank alteration is used to regulate grazing impacts on streambank stability and channel width. Permittees are expected to meet indicators each year. The MNF will monitor pastures in the Murderers Creek Allotment to ensure that endpoint indicators are not exceeded prior to cattle turnout.

The MNF proposes to carry out implementation monitoring of endpoint indicators to ensure compliance with these requirements. The MNF has defined a detailed adaptive management process with distinct corrective actions to respond to instances when endpoint indicators are not met. The MNF grazing program is very large and complex and some modest exceedence of endpoint indicators is practically inevitable. When endpoint indicators are exceeded, the MNF will adjust grazing management through the adaptive management process or in cases of significant or repeat exceedences, will issue a notice of non-compliance to the permittee and take corrective action (further clarification is provided in the MNF Memo dated February 10, 2012). Corrective action may include reducing AUMs or resting a pasture. This corrective action will reduce the impact of grazing in subsequent years. When endpoint indicators are not met, the severity of the effects described below (impacts to riparian vegetation, reduction of shade, input of fine sediment, *etc.*) will increase. When minor exceedences occur, the MNF will adjust grazing management so any effects caused by the exceedence will be less likely to occur in subsequent years. This will ensure these effects do not become chronic in nature. In cases of significant or repeat exceedences, NMFS expects that the MNF's corrective actions will reduce the impact of grazing in subsequent years and will and create a compensatory effect. Areas

[11] This section addresses direct and indirect effects of the proposed action on MCR steelhead habitat and how those effects impact individual fish and population dynamics. The discussion also is relevant to effects to MCR steelhead critical habitat, addressed in section 2.4.2 below.

damaged by the exceedence will be able to recover more quickly because pastures or allotments will be rested or grazing pressure will be reduced.

NMFS does not expect that the occasional exceedence will prevent the development of habitat capable of supporting viable populations of MCR steelhead. This conclusion is based on the flowing considerations: (1) The MNF has developed a specific inter-disciplinary adaptive management process to respond to minor exceedences or other problems encountered during the grazing season. This will ensure that grazing can be adjusted quickly and appropriately before grazing impacts on MCR habitat become chronic, (2) the MNF will monitor pastures in the Murderers Creek allotment to ensure that endpoint indicators are not exceeded prior to cattle turnout;. this will ensure that livestock grazing will not have additive effects on areas that are already impacted by wildlife, wild horses or unauthorized grazing; (3) the identification of specific corrective actions to endpoint indicator exceedences creates a strong incentive for permittees to meet indicators; and (4) when there is significant or repeat exceedences, administrative responses will reduce grazing pressure, allowing damaged areas to recover.

The MNF also proposes a number of other practices to limit the effects of grazing on MCR steelhead habitat. These practices are fully described in the BA and include required maintenance of exterior and interior fences prior to turnout, use of mineral supplements in uplands, riding and herding, designation and specific management of MSRAs.

Riparian Vegetation

In areas of historic season-long grazing, major vegetation changes can take place. Routinely grazing an area too late in the growing season can cause adverse changes in the plant community. Individual plants are eliminated by re-grazing them during the growing season and not allowing adequate recovery after grazing. Herbaceous vegetation consumed by livestock in July, August, and early September will generally not begin re-growing until Fall (September 15 or later). Some habitat functions of this vegetation such as providing shade and cover will be lost during the summer as described in the BA, but the proposed utilization levels will allow for the long-term vigor of the plants. The amount of regrowth occurring in any given year will be influenced by several factors such as temperature and total precipitation and is not predictable. Therefore, it is appropriate for the MNF to propose endpoint indicators that do not rely on regrowth. This is a key element of the proposed action.

Removal of riparian vegetation through grazing can reduce habitat quality and result in negative impacts on fish production (Platts and Nelson 1989). Reductions in streambank cover related to overhanging vegetation, root vegetation, and undercut banks have been correlated with reduced fish production (EPA 1993). This is particularly evident in meadow systems, where herbaceous vegetation may provide the only shade to stream channels. As noted in the BAs, removal of herbaceous vegetation can result in a reduction of shade, but this is typically minimal and limited to streams with narrow channels.

The MNF has identified a 4-inch stubble height endpoint indictor for early season grazing and a 6-inch stubble endpoint indicator for mid and late season grazing. The move triggers associated with these endpoints are 5 inches for early season grazing and 7 inches for mid and late season grazing. The extra inch of forage length for the move trigger allows for the endpoint to be met

while some additional grazing occurs as livestock are moved from a pasture. During early season grazing, some regrowth of herbaceous vegetation can be expected, so a shorter stubble height is appropriate. The MNF's endpoint indicators for stubble height are consistent with recommendations made by Hall and Bryant (1995), Clary and Webster (1989), Clary and Booth (1993), Clary *et al.* (1996), Clary and Lenninger (2000), and Fink *et al.* (2000). Setting and meeting the appropriate standards will: (1) Prevent significant grazing of bank stabilizing vegetation (Hall and Bryant 1995); (2) allow enough streamside vegetation to trap and stabilize fine sediments (Clary *et al.* 1996; Clary and Webster 1989); (3) prevent unwanted browsing of woody vegetation (Hall and Bryant 1995; Clary and Lenninger (2000); and (4) prevent streambank damage (Platts and Nelson 1989). The proposed stubble height endpoint indicators are sufficient to ensure that plant vigor is maintained and that adverse habitat effects caused by the proposed action are minimal.

Stream cover and shade in hardwood-dominated riparian systems can also be damaged by unmanaged livestock grazing. Shrubby vegetation, such as willows, may be an important source of shade along smaller streams and in mountainous areas (Henjum *et al*. 1994). Cattle often begin to browse woody species when herbaceous stubble heights fall below about 4 inches (Hall and Bryant 1995). Others suggest that 4 to 8 inches of herbaceous residual stubble height may be needed to protect hardwoods, especially during late season grazing (Clary and Leininger 2000). In a study of late season grazing in the Blue Mountains of eastern Oregon, Kauffmann *et al.* (1983) found that shrub use was generally light except on willow-dominated gravel bars. They conclude that on gravel bars, succession was retarded by livestock grazing. In a later study in the same area, Green and Kauffman (1995) found that livestock disturbance and the ecosystem response to grazing were highly variable among plant communities. In areas rested from grazing, abundance of undesirable non-native species decreased. They also found that in grazed areas, height, establishment, and reproduction of woody species on gravel bars was less than in ungrazed areas. These studies suggest that although livestock grazing may not have adverse effects on mature individuals of woody species such as willows, recolonization of disturbed areas such as gravel bars may be impeded by livestock grazing. Another study with similar results found that regeneration of willow, cottonwood, and aspen was inhibited by browsing on seedlings (Fleischner 1994).

In order to avoid unwanted impacts on riparian shrubs, the MNF proposes endpoint indicator of 30 to 50% mean incidence of use on woody shrub species, in addition to other endpoint indicators and range management measures. As noted in the BAs, woody vegetation is an important component of many stream/riparian ecosystems as it can provide a strong root system, filter sediment, and provide stream shade and habitat diversity. Woody species browse is a short-term indicator of grazing utilization of woody species. As described in the BA, there is generally a reduction in seed production of woody plants that receive more than 55% utilization, and when heavy and severe utilization levels are sustained over time, overall plant health, including size and root strength, is reduced. The BAs also note that although the literature is not extensive, it generally suggests light to moderate allowable use on woody species (approximately 30 to 50%) can be sustained and not meaningfully impede the potential for improved conditions of affected woody plant communities. It is also important to note that cattle generally prefer herbaceous vegetation over woody vegetation, so the setting and meeting appropriate stubble height endpoint indicators is also an important tool to reduce shrub browsing by livestock. The endpoint

indicators along with the other management measures proposed by the MNF should allow for the recruitment of woody shrubs and, over time, the development of a healthy riparian plant community.

The MNF is also implementing progressive grazing strategies designed to help meet riparian management objectives. Rather than relying on season-long grazing or simple pasture rotations, the MNF has switched many allotments to rest rotation or deferred rotation management. The available information indicates that these strategies can be successful in meeting riparian management goals.

In rest rotation grazing systems, one or more pastures in an allotment are rested every year. The period of rest is rotated among pastures over the complete cycle. Often, three or more pastures are used in this type of system. The obvious benefit of this system is that riparian areas in at least one pasture are allowed a full growing season to recover each year. Leonard *et al.* (1997) report several successes of this system throughout areas in the arid West.

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. A study in Nevada by Myers and Swanson (1995) found that a switch to a deferred grazing strategy result in improved riparian and stream condition.

When all aspects of the MNF's proposed grazing management are considered collectively, it is likely that riparian plant communities in the action area will improve over time.. As riparian areas recover, streams will begin to narrow, overhead cover will increase, and undercut banks will develop. In general, habitat quality for MCR steelhead will improve. Overtime, the improvements to stream habitat will lead to increased survival of juvenile MCR steelhead. This in turn will eventually lead to improvements in population abundance and productivity.

Shade and Stream Temperature

As noted in the BAs, water temperature is an important factor affecting distribution and abundance of salmonids within the action area. Water temperatures influence water chemistry, as well as every phase of salmonid life history. The BAs report optimal temperatures for steelhead are 50˚ to 61˚F (10˚ to 16˚C), and the lethal temperature is approximately 77˚F (25˚C). Bell (1986) reported the upper lethal temperature for steelhead to be 75° F, with a preferred temperature range between 50 and 55°F. The ability of rearing steelhead to tolerate temperature extremes depends to a certain degree on the fish's recent thermal history; however, research indicates that most salmonid species are at risk when temperatures exceed 73 to 77° F (Spence *et al.* 1996).

In addition to the lethal effects of high temperatures, salmonids rearing at temperatures near the upper lethal limit have decreased growth rates because nearly all consumed food is used for metabolic maintenance (Bjornn and Reiser 1991). Temperatures exceeding the upper lethal limits may be tolerated for brief periods or fish may seek thermal refugia. Li *et al*. (1991) reported that resident rainbow trout in an eastern Oregon stream selected natural and artificially created cold water areas when temperature in the main stream channel exceeded 75.2°F but showed no preference for these areas when temperature in the main stream channel was less than 68°F. Coldwater refugia, such as springs and groundwater seeps, allow some steelhead to persist in areas where temperatures in mainstream channels exceed their upper lethal limit. However, total steelhead production in streams will tend to decrease if the amount of habitat suitable for the species use is restricted to areas of coldwater refugia.

Stream temperatures are of particular concern within the John Day River basin. This is highlighted in the John Day Subbasin Plan (NPCC 2005) as well as the MCR Steelhead Recovery Plan (NMFS 2009). Degraded water quality, which includes elevated water temperatures, is identified as a limiting factor for MCR steelhead in both plans. Stream temperature is influenced by a number of factors including site conditions, weather, riparian vegetation, and input of solar radiation. As noted in the BAs, solar radiation is the most important source of radiant energy affecting stream temperature. Removal of riparian vegetation can decreases shade which increases the amount of solar radiation reaching streams. Stream temperature is also affected by stream width-to-depth ratio, condition of riparian soil, and hydrograph. All of these factors are potentially affected by livestock grazing. Our analysis of the combined effect of these factors on stream temperature is presented below.

When riparian vegetation is removed by grazing, sunlight reaching streams can increase, leading to cumulative increases in downstream temperatures (Barton *et al*. 1985). This is especially true for high desert watersheds, such as the John Day River basin, (Platts and Nelson 1989). In a study of watersheds in the John Day River basin, Maloney *et al*. (1999) found that watersheds with less than 75% surface shade can exceed stream temperature standards for rainbow trout and Chinook salmon. Stream temperatures in all heavily grazed watersheds in this study exceeded standards for salmonids. The authors concluded that revegetation of the streamside area with shrubs or small trees would likely result in reduced stream temperatures and an improved environment for rainbow trout and Chinook salmon.

Li (1994) noted that solar radiation reaching the channel of an unshaded stream in the John Day River basin was six times greater than that reaching an adjacent, well-shaded stream and that summer temperatures were 4.5°C warmer in the unshaded tributary. Below the confluence of these two streams, reaches that were unshaded were significantly warmer than upstream and downstream shaded reaches. A separate comparison of water temperatures at two sites of similar elevation in watersheds of comparable size found temperature differences of 11°C between shaded and unshaded streams (Li 1994). Warming of streams from loss of riparian vegetation is likely widespread in eastern Oregon and may be particularly acute because of low summer flows and many cloud-free days.

Alteration of stream temperature processes may also result from changes in stream channel morphology. Streams in areas that are improperly grazed are wider and shallower than in

ungrazed systems, exposing a larger surface area to incoming solar radiation (Bottom *et al*. 1985; Platts 1991). Wide, shallow streams heat more rapidly than narrow, deep streams (Brown 1980). Similarly, wide, shallow streams may cool more rapidly, increasing the likelihood of anchor ice formation. Reducing stream depth may expose the stream bottom to direct sunlight, allowing greater heating of the substrate and subsequent conductive transfer to the water. Properly managed grazing allows for the establishment of healthy riparian vegetation which in turn allows streambanks to stabilize. Overtime, vegetation traps sediments, streambanks rebuild and channels begin to narrow. As streams channels regain a more natural morphology, stream temperatures will decrease.

Changes in a stream's hydrograph can also affect stream temperature. For instance, a shift in peak stream flow earlier in the season (as seen in watersheds with high road density) can reduce stream flow in summer, with a coincident increase in temperature due to reduced stream volume. Compaction of riparian soils by livestock can reduce water infiltration and decrease the amount of water released back into the stream from riparian areas during base flows. Proper management of grazing can help minimize these effects. In particular, using a combination of techniques, such as herding and use of upland mineral supplements can reduce the amount of time cattle remain in riparian areas. This can lead to less soil compaction and greater water-holding capacity of riparian soils. If grazing intensity on riparian areas is properly controlled, natural freeze-thaw cycles and the natural action of plant roots will alleviate soil compaction. Due to protective standards and other conservation measures, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management.

The analysis presented in the BAs demonstrates that the proposed action will reduce stream shade and result in a small but measurable increase in stream temperatures in some stream channel types. The BAs state that it is probable that livestock grazing will result in small, but measurable increases in water temperature in streams with narrow channels (less than 10 feet) where grass and grass-like vegetation are providing stream shade. These types of stream channels, typically Rosgen E and C channels found in meadows, are located throughout the MNF, but are not the dominant stream type. The loss of shade will occur as a result of reducing the height of shade-producing vegetation by grazing. The use of endpoint indicators for stubble height and shrub browse helps to minimize this effect, but do not eliminate it. At the same time, improved grazing management will allow other factors that influence stream temperature, such as stream morphology and soil compaction, to improve over time.. This should mitigate for the minor increase in stream temperature expected to result from the proposed action. It should also be noted that current stream temperatures are generally suitable for MCR steelhead adult migration, spawning, and egg incubation. Concerns about elevated stream temperature are only in regards to the summer juvenile rearing life stage which takes place between June and September. Juvenile MCR steelhead exposed to higher than optimal stream temperatures suffer reduced growth or die due to thermal stress.

When all factors that affect stream temperature are considered together, NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. This is because the areas where shade is being reduced, channels 10 feet wide or less where grass or grass like plants provide shade, are located throughout the action area but are not the dominant stream type. Most

streams in the action area have higher gradient and are located in a forested setting where shade is provided by shrubs and conifers. The MNF's grazing strategy, including the use of endpoint indicators, is designed to allow for improved vigor of woody shrubs. As discussed above, shade is expected to increase on these streams as shrub communities recover over time. Also, any increase in stream temperature is likely to be at least partially off-set by improvements to riparian soils and stream morphology that decrease stream temperatures.

Sediment and Turbidity

Grazing by large herbivores can result in hoof shear to streambanks (McIver and McInnis 2007) and trampling and consumption of streamside vegetation. Cattle trampling streambanks or exposing bare soil and subsequent erosion adds fine sediments to stream substrates. Mass wasting of sediment may occur along streambanks where livestock walk on overhanging banks (Behnke and Zarn 1976; Platts and Raleigh 1984; Fleischner 1994). Concentrated use of an area by livestock can create trails and expose bare soil which is later washed into streams during precipitation events.

The use of vehicles in support of grazing management activities on and off roads, can also create the potential for some fine sediment to be transported from unpaved roads to stream channels, primarily at road crossings, during rainstorms or runoff events. Due to the limited use of vehicles in support of grazing, the amount of fine sediment generated by vehicles is expected to be extremely small.

Increases in fine sediment lead to greater substrate embeddedness and a decrease in interstitial spaces in gravel substrate important for MCR steelhead spawning. Increased substrate embeddedness also impairs food production (discussed in greater detail below) and blocks refugia for young salmonids (Rinne 1990), thus reducing the quality of spawning and rearing habitat available. Salmonid survival at early life stages has been inversely linked to the amount of surface fines in stream substrates (EPA 1993). Juvenile salmonids depend on clean substrate for cover, especially for over-winter survival (EPA 1993). Successful salmonid spawning requires clean gravels with low fine sediment content (Spence *et al.* 1996). Excess fine sediment can fill pools needed by juvenile MCR steelhead for resting, hiding and foraging.

Fine sediment entering streams can also create turbidity. An increase in turbidity can adversely affect juveniles. At moderate levels, turbidity has the potential to reduce primary and secondary productivity; at higher levels, turbidity may interfere with feeding and may injure and even kill both juvenile and adult salmonids (Berg and Northcote 1985; Spence *et al.* 1996). However, Bjornn and Reiser (1991), found that adult and larger juvenile salmonids appear to be little affected by the high concentrations of suspended sediments that may be experienced during storm and snowmelt runoff episodes.

Exposure duration is a critical determinant of the occurrence and magnitude of turbidity caused by physical or behavioral turbidity effects (Newcombe and Jensen 1996). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such seasonal high pulse exposures. However, research indicates that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Servizi

and Martens 1991). In a review of 80 published reports of fish responses to suspended sediment in streams and estuaries, Newcombe and Jensen (1996) documented increasing severity of ill effects with increases in dose (concentration multiplied by exposure duration).

The amount of fine sediment introduced into streams by livestock grazing or vehicle use of roads at any one time will be small. This is because the MNF's grazing strategy will allow for increased ground cover over time and the amount of vehicle use associated with administration of grazing is low. Pulses of turbidity caused by this sediment are likely to be small and last for a short time. When fine sediment is introduced to streams during high flows, the turbidity created will not be observable above background levels. Although the creation of turbidity during low flow may occasionally interrupt juvenile steelhead behaviors such as feeding, these interruptions will not be significant enough to reduce juvenile steelhead survival.

The primary method to reduce the introduction of fine sediments from livestock grazing is to limit streambank trampling. The MNF proposes limiting streambank alteration to 15% for streams within MSRAs and 20% for stream reaches outside of MSRAs. The BAs state that streambank alteration is another annual or short-term indicator used to evaluate the potential effects of livestock grazing in riparian areas, primarily evaluating potential effects to long-term streambank stability and channel shape.

The best available information indicates that streambank alteration levels between 10 and 20% are appropriate to prevent bank destabilization and protect habitats critical to listed fish. Pfankuch (1978) and Hayslip (1993) set 90% or more unaltered streambank as the lower level of excellent or optimal condition. In a study by Thompson *et al.* (1998), streams with 95% unaltered banks received the best score. Bengyfield and Svoboda (1998) suggest using 90% plus unaltered streambank as a goal for streams containing listed fish. Powell *et al.* (2000) stated that greater than 20% of the surface affected by deep hoof prints should not occur along high value fish habitat. Cowley (2002) concluded that "streams with 90% of the potentially stable banks unaltered (ten percent or less alteration) would seem to allow for near optimal recovery and should not retard or prevent attainment of riparian management objectives."

The MNF's proposed streambank endpoint indicators fall within the range of acceptable bank alteration recommend by the experts cited above. The indicators are also consistent with result from the one study examining streambank alteration levels and recovery of stream habitat. Two grazed sites with streams in the Beaverhead–Deerlodge National Forest in southwest Montana showed a marked narrowing of stream channels after establishing and actively managing for a streambank alteration move trigger of 30% (Bengeyfield 2006). In this study, cross-section monitoring documented that channels had become wider and shallower as a result of livestock trampling of the streambanks. Streambank alteration estimates were 45% and 80% or higher, respectively, for the two grazed sites prior to establishing the 30% streambank alteration move trigger. While working to achieve the 30% streambank alteration move trigger, active management by the grazing permittee resulted in mean streambank alteration livestock use levels of 17% and 15% for the two pastures at the conclusion of the study.

Although the amount of improvement differed from site to site, Bengeyfield (2006) noted an upward trend in the shape of the stream channel over a 4- to 6-year period where streambank

alteration guidelines were met. Improvements to riparian vegetation condition were noted in each case. The author concluded that generally, stream widths became narrower, forcing the channels to become deeper at the same time. Bengeyfield (2006) also noted that the only streams that showed significant improvement were those where the streambank alteration levels were met, as neither a forage utilization of 45% nor a stubble height of 4 inches initiated the upward trend in stream channel shape that they believed was necessary to achieve riparian function. The 17% and 15% streambank alteration values for the two locations fall within the range of streambank alteration endpoint indicators proposed by the MNF.

The proposed action will result in a small amount of fine sediment entering streams. This fine sediment will be primarily generated by streambank trampling and exposure of bare soil by livestock. Trampling will occur at locations where streambanks are composed of soils or soil and rock mixtures. As noted above, excessive levels of fine sediment in stream substrates can reduce MCR steelhead egg survival, reduce forage available for juveniles, and decrease available refugia sites within stream substrates. Establishing proper streambank alteration endpoint indicators in combination with the other management measures intended to reduce the amount of time livestock spend in riparian areas will substantially reduce the amount of turbidity created and the fine sediment introduced into streams. Sensitive stream reaches, primarily found in the designated MSRAs, have lower streambank alteration endpoint indicators and this will further lower streambank trampling and inputs of fine sediment at these sites. Although some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. This is because the amount of fine sediment introduced into streams at locations where livestock impact streambanks will be small and not all stream reaches within the action area have streambanks that are prone to the effects of trampling.

Prey Base

The coldwater communities (aquatic invertebrates and other coldwater fish) which rearing juvenile steelhead rely on for food require minimum dissolved oxygen levels of between 6 and 8 mg/L (ODEQ 1995). In streams without adequate riparian vegetation, temperatures increase and dissolved oxygen levels drop. Cold water communities shift from salmonids and less tolerant aquatic invertebrates such as mayflies and stoneflies to warmer water species dominated by sculpins and more tolerant aquatic invertebrates such as chironomids. A study by Li *et al*. (1994), in the John Day River basin, found that colder streams supported the highest standing crops of trout and had the most favorable trout-to-invertebrate standing crop ratios. This suggests that colder streams in this basin have a greater trophic efficiency leading to increased salmonid production.

As discuss above, a reduction in riparian canopy increases solar radiation and stream temperature. This stimulates production of periphyton (Lyford and Gregory 1975). In a study of high desert streams, Tait *et al*. (1994) found that prey less palatable for trout dominated the food base in warm water stream reaches exposed to sunlight. In this study, Tait *et al*. (1994) reported that thick growths of filamentous algae encrusted with epiphytic diatoms were found in reaches with high incident solar radiation, whereas low amounts of epilithic diatoms and blue-green algae occurred in shaded reaches. Periphyton biomass was significantly correlated with incident solar radiation. While densities of macroinvertebrates in forested streams typically increase in

response to increased periphyton production, the effect of stimulated algal growth in rangeland streams is less clear. 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, which can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to organisms at higher trophic levels, including salmonids, may be small, because these larvae are well protected from fish predation by their cases. Tait *et al*. (1994) suggest that these organisms may act as a trophic shunt that prevents energy from being transferred to higher trophic levels.

Reducing riparian vegetation can reduce habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation also directly provides organic material to the stream, which makes up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 cited in Platts 1991). This allochthonous material provides an important food source for aquatic insects which, in turn, become prey for salmonids. Consequently, removal of riparian vegetation can affect the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963).

These studies underscore the need to manage grazing in a manner that allows for the establishment of healthy riparian vegetation. The studies discussed above demonstrate that streams with functioning riparian plant communities produce more suitable food for rearing juvenile steelhead. Steelhead juveniles that acquire adequate food to survive become adults, those that do not die. Increased survival of MCR steelhead at the juvenile stage is needed to improve population abundance and productivity for populations that are not meeting the recovery criteria. Removal of streamside vegetation through livestock grazing will usually result in small decrease in the amount of food available to juvenile steelhead. However, managing grazing in a manner that allows for the development of functioning riparian plant community will increase the amount food available in the long term.

The MNF proposes stubble height and shrub browse endpoint indicators that limit the amount of forage that livestock can remove from riparian areas. As noted in the BAs and the previous discussion on riparian vegetation, these endpoint indicators were developed to maintain plant vigor and allow proper riparian function. Additionally, the MNF proposes a number of management practices to reduce the amount of time livestock spend in riparian areas. In some cases, the MNF has fenced additional areas, excluding livestock altogether. The MNF also proposes implementation and effectiveness monitoring to ensure that these practices are carried out and are having the desired results. Implementation of these practices will allow for the development of a healthy riparian plant community in streams that are recovering and maintenance of a healthy plant community in streams with properly functioning riparian areas. Over time, as riparian plant communities recover and the amount of food available to juvenile MCR steelhead should increase.

As discussed above, fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance (McIver and McInnis 2007). 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). As noted earlier, establishment of streambank alteration endpoint indicators in

combination with other management practices that reduce the amount of time livestock spend in riparian areas should significantly limit the amount of fine sediment introduced into streams.

In summary, the removal of streamside vegetation through grazing and the introduction of fine sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead. This small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. In the long term, the management measures proposed by the MNF will allow for development of functioning riparian plant communities which in turn will increase the amount of food available for juvenile steelhead.

Large Woody Debris

Large woody debris is a key component of steelhead freshwater habitat (Spence *et al.* 1996). The BAs states that in streams within the action area, large wood is usually provided by fallen conifers. The proposed action will have no effect on conifer recruitment. However, in some areas where hardwoods—particularly black cottonwood and quaking aspen—play an important role in riparian species composition, ungulate grazing can prevent future large wood recruitment by limiting sapling regeneration and large tree recruitment.

The BAs go on to cite several studies that indicate that livestock grazing can suppress cottonwood recruitment and reduce future levels of large woody debris. The BAs conclude that the proposed action will likely result in negative effects to future large woody debris recruitment. The effects will likely be observed in areas where adequate cattle forage overlaps low-gradient stream sections such as MSRAs that have relatively open canopy and have potential to develop a cottonwood gallery forest. The mechanisms causing this effect include: (1) Browsing on young cottonwoods seedlings/saplings; (2) retarding cottonwood succession and large tree recruitment; and (3) reduction in future levels of instream large wood. These mechanisms will negatively and measurably affect the large woody debris levels. The BAs state that negative impacts to the large woody debris indicator will be minimized by use of the endpoint indicator for shrub browse and other management measures designed to reduce the time livestock spend in riparian areas.

Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. This is because in most of the action area, conifers provide large woody debris and the proposed action will have no effect on conifer recruitment. The areas where large woody debris recruitment will be suppressed (cottonwood galleries) are found in only a few locations throughout the action area. Many of the areas where cottonwood galleries could be expected to form are found on mainstem reaches of the Upper and Middle Fork John Day rivers. Most of these reaches are on private land or on lands acquired for conservation. The suppression of recruitment caused by the proposed action will have an insignificant effect on current and future large woody debris levels when measured at the watershed scale.

Nutrients

Nutrients consumed by cattle elsewhere on the range are often deposited in riparian zones (Heady and Child 1994). The deposition of nutrients in riparian areas increases the likelihood that elements such as nitrogen and phosphorous will enter the stream. Increased nutrients from

livestock waste will likely increase stream productivity for a short distance downstream from the source. It is anticipated that livestock grazing will have slight negative impact to water quality, but those impacts are too small to be meaningfully measured.

The MNF proposes a number measures to reduce the amount of time livestock spend in riparian areas. When considered collectively, these measures will limit the amount of waste livestock deposit in streams and riparian areas. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead.

Water Quantity

Riparian vegetation has been linked to the water-holding capacity of streamside aquifers (Platts 1991). As riparian vegetation is removed by livestock grazing and streamside soils are compacted by livestock hooves, the ability of areas to retain water can decrease. Evapotranspiration and infiltration decrease and hasten surface runoff, resulting in a more rapid hydrologic response of streams to rainfall. When this occurs, high flows in the spring tend to increase in volume, leading to bank damage and erosion. Summer and fall base flows are decreased, often resulting in flows that are insufficient to provide suitable rearing habitat for juvenile salmonids. If aquifers lose their capacity to hold and slowly deliver water to the stream, differences between peak and base discharge rates increase dramatically (EPA 1993). Some streams that typically flowed perennially may experience periods of no flow in the summer or fall. Li *et al*. (1994) found that streamflow in a heavily grazed eastern Oregon stream became intermittent during the summer, while a nearby, well-vegetated reference stream in a similar-sized watershed had permanent flows. They suggested that the difference in flow regimes was due to diminished interaction between the stream and floodplain, with resultant lowering of the water table.

The BAs state that indirect effects of historic livestock grazing in the action area (including trailing and watering), on channel and bank features such as bank stability, undercut banks and width to depth ratio, as well as impacts to shrub recruitment and green line plant vigor, have likely affected peak and base flows on some streams.

As stated earlier, proper management of grazing can help minimize soil compaction and potential changes in peak/base flow. In particular, using a combination of techniques, such as herding and use of upland mineral supplements can reduce the amount of time cattle remain in riparian areas. This can lead to less soil compaction and greater water-holding capacity of riparian soils. If grazing intensity on riparian areas is properly controlled, natural freeze-thaw cycles and the natural action of plant roots will alleviate soil compaction. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management.

2.4.1.3 Effects on MCR Steelhead Critical Habitat

The effects of the proposed action on MCR steelhead critical habitat are described below. While framed with regard to species rather than PCEs, the discussion of the effects of the proposed action on the various components of steelhead habitat in Section 2.4.1.2, above, is also applicable here. As with the discussion above, the analysis of effects on critical habitat was

completed with full consideration given to the suite of grazing management measures, including the adaptive management process, proposed by the MNF.

Freshwater spawning sites

Freshwater spawning sites require water quantity and quality conditions and substrate supporting spawning, incubation and larval development. These features are essential to conservation because without them the MCR steelhead cannot successfully spawn and produce offspring.

Water quantity– As described earlier, as vegetation is removed by grazing and streamside soils are compacted by hooves, the ability of riparian areas to retain water decreases. The proposed management techniques, such as herding and use of upland mineral supplements can reduce the amount of time cattle remain in riparian areas. If grazing intensity on riparian areas is properly controlled as proposed, natural freeze-thaw cycles and the natural action of plant roots will alleviate soil compaction. Although there may be some minor effects to the water quantity PCE in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management.

Water quality– The effects of the proposed action on water quality (temperature, turbidity, and nutrients) are thoroughly described in the previous section. In summary, livestock grazing and the use of roads in support of grazing management will result in short pulses of turbidity, deposition of cattle waste in riparian areas and streams, and a small increase in stream temperature in certain channel types. The application of the full suite of grazing management measures will ensure that the effects to the water quality PCE remain minor. Over time, as riparian conditions improve, stream temperatures are expected to decrease. As streambank condition improves over time, the amount of turbidity created when cattle impact streambanks will also decrease.

Substrate– Livestock grazing and the use of vehicles on and off roads can expose bare soil or generate fine sediments which may enter streams. As described earlier, the proposed action will result in a small amount of fine sediment entering streams. This fine sediment can lead to greater stream substrate embeddedness and a general decrease in habitat quality for MCR steelhead. Establishing proper streambank alteration move triggers and endpoint indicators in combination with the other management measures intended to reduce the amount of time livestock spend in riparian areas will substantially reduce the amount of the fine sediment introduced into streams. Sensitive stream reaches, primarily found in the designated MSRAs, have lower streambank alteration endpoint indicators and/or additional conservation measures and this will further lower streambank trampling and inputs of fine sediment at these sites. The application of the full suite of grazing management measures will ensure that the effects of the proposed action on the substrate PCE remain minor. As streambank condition improves over time, the amount of fine sediment created when cattle impact streambanks will decrease.

Freshwater rearing sites

Freshwater rearing sites require: (1) Water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; (2) Water quality, (3) Forage supporting juvenile development; and (4) Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders,

side channels, and undercut banks. These features are essential to conservation because without them, juvenile steelhead cannot access and use the areas needed to forage, grow, and develop behaviors (*e.g*., predator avoidance, competition) that help ensure their survival.

Water quantity– As described earlier, as riparian vegetation is removed by grazing and streamside soils are compacted by hooves, the ability of areas to retain water is decreased. The proposed management techniques, such as herding and use of upland mineral supplements can reduce the amount of time cattle remain in riparian areas. If grazing intensity on riparian areas is properly controlled as proposed, natural freeze-thaw cycles and the natural action of plant roots will alleviate soil compaction. Although there may be some minor effects to the water quantity PCE in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management.

Floodplain connectivity – Improperly managed grazing can remove riparian vegetation and damage streambanks. Without vegetation to slow water velocities, hold the soil, and retain moisture, flooding can cause more erosion of streambanks; streams can becomes wider and shallower, and in some cases downcut. The application of the full suite of grazing management measures will ensure that adequate riparian vegetation will be maintained along streambanks to prevent streambank erosion. Establishing and meeting the proper streambank alteration move triggers and endpoint indicators reduces the amount streambank damage and allow banks to stabilize over time. Any effects to the floodplain connectivity PCE will be minor. Over time, streams that are currently disconnected from their floodplains will be able to reestablish connectivity as riparian conditions improve. It should be noted however that it can take decades for stream bed elevation to increase enough to reestablish connectivity in streams that are significantly incised.

Water quality – The effects of the proposed action on water quality (temperature, turbidity, and nutrients) are thoroughly described in the previous section. In summary, livestock grazing and the use of roads in support of grazing management will result in short pulses of turbidity, deposition of cattle waste in riparian areas and streams, and a small increase in stream temperature in certain channel types. The application of the full suite of grazing management measures will ensure that the effects to the water quality PCE remain minor. Over time, as riparian conditions improve, stream temperatures are expected to decrease. As streambank condition improves over time, the amount of turbidity created when cattle impact streambanks will also decrease.

Forage – As describe earlier, livestock grazing can reduce the amount terrestrial and aquatic insect prey available to juvenile MCR steelhead. This reduction is caused by the removal of streamside vegetation or through the introduction of fine sediment into streams. The application of the full suite of grazing management measures limits the amount of vegetation that can be removed from riparian areas and reduces the amount of time livestock spend in riparian areas. Establishing and meeting the proper streambank alteration move triggers and endpoint indicators reduces the amount of the fine sediment introduced into streams. The implementation of these management measures will ensure that any effects to the forage PCE will remain minor. In the long term, the grazing strategy proposed by the MNF will allow for development of functioning

riparian plant communities which in turn will increase the amount of food available for juvenile steelhead.

Natural cover – MCR steelhead use various stream features such as undercut streambanks, large woody debris, boulders, and overhanging vegetation to provide cover. As described earlier, the removal of riparian vegetation can reduce overhead cover. Streambank alteration by livestock can eliminate undercut banks and improperly managed grazing can suppress the recruitment of large woody debris. The introduction of fine sediments can increase substrate embeddedness, reducing the number of hiding places between cobbles and boulders. The application of the full suite of grazing management measures limits the amount of vegetation that can be removed from riparian areas and reduces the amount of time livestock spend in riparian areas. Establishing and meeting the proper streambank alteration move triggers and endpoint indicators reduces amount of damage to streambanks. The implementation of these management measures will ensure that any effects to the natural cover PCE will remain minor. In the long term, the grazing strategy proposed by the MNF will allow for development of functioning riparian areas and more complex stream habitat which in turn will increase the amount of cover available to MCR steelhead.

Freshwater migration corridors

Freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks support juvenile and adult mobility and survival. These features are essential to conservation because without them juveniles cannot use the variety of habitats that allow them to avoid high flows, avoid predators, successfully compete, begin the behavioral and physiological changes needed for life in the ocean, and reach the ocean in a timely manner. Similarly, these features are essential for adults because they allow fish in a non-feeding condition to successfully swim upstream, avoid predators, and reach spawning areas on limited energy stores.

Obstruction – The proposed action will not create any obstructions or block fish passage in any way.

Water quantity – As described earlier, as riparian vegetation is removed by grazing and streamside soils are compacted by hooves, the ability of areas to retain water is decreased. The proposed management techniques, such as herding and use of upland mineral supplements can reduce the amount of time cattle remain in riparian areas. If grazing intensity on riparian areas is properly controlled as proposed, natural freeze-thaw cycles and the natural action of plant roots will alleviate soil compaction. Although there may be some minor effects to the water quantity PCE in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management.

Water quality – The effects of the proposed action on water quality (temperature, turbidity, and nutrients) are thoroughly described in the previous section. In summary, livestock grazing and the use of roads in support of grazing management will result in short pulses of turbidity, deposition of cattle waste in riparian areas and streams, and a small increase in stream temperature in certain channel types. The application of the full suite of grazing management

measures will ensure that the effects to the water quality PCE remain minor. Over time, as riparian conditions improve, stream temperatures are expected to decrease. As streambank condition improves over time, the amount of turbidity created when cattle impact streambanks will also decrease.

Natural cover – MCR steelhead use various stream features such as undercut streambanks, large woody debris, boulders, and overhanging vegetation to provide cover. As described earlier, the removal of riparian vegetation can reduce overhead cover. Streambank alteration by livestock can eliminate undercut banks and improperly managed grazing can suppress the recruitment of large woody debris. The introduction of fine sediments can increase substrate embeddedness, reducing the number of hiding places between cobbles and boulders. The application of the full suite of grazing management measures limits the amount of vegetation that can be removed from riparian areas and reduces the amount of time livestock spend in riparian areas. Establishing and meeting the proper streambank alteration move triggers and endpoint indicators reduces amount of damage to streambanks. The implementation of these management measures will ensure that any effects to the natural cover PCE will remain minor. In the long term, the grazing strategy proposed by the MNF will allow for development of functioning riparian areas and more complex stream habitat which in turn will increase the amount of cover available to MCR steelhead.

2.4.2 Allotment-Specific Effects on UJDR Population

2.4.2.1 Dark Canyon Allotment

Introduction. Effects from grazing in the Dark Canyon Allotment are likely to be limited to 15.37 miles of MCR steelhead critical habitat used for spawning and rearing (Table 66).

Table 66. Miles of MCR Steelhead Critical Habitat in the Dark Canyon Allotment

Stream Name	Miles of MCR Steelhead Critical Habitat	Miles of MSRA
Middle Fork Canyon Creek	5.61	1.23
Canyon Creek	5.28	2.54
Crazy Creek	1.91	0
Wall Creek	1.77	0.26
Unnamed trib. To Wall Creek	0.80	0
Total	**15.37**	**4.03**

Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 15.37 miles of critical habitat on the allotment, over 4 miles have been identified as MSRAs. As described in Section

2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The Dark Canyon Allotment is permitted for 194 cow/calf pairs (1,297 AUMs) from June 1 to October 30. The Dark Canyon Allotment's grazing rotation system will utilize a deferred rotation with a staggered season of use entry system. The Dark Canyon Allotment consists of five main pastures. The Canyon Creek Pasture will utilize a deferred rotation system, alternating areas of use between the Table Mountain/Middle Fork Canyon Creek area and the Chamber Spring/Canyon Creek area. During years of abundant forage this type of rotation will allow for a rest rotation to be implemented. Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorized use. See Dark Canyon and Fawn Springs BA at pages 20-21.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Dark Canyon and Fawn Springs BA at pages 22-23.

Canyon Creek is a major spawning area (MaSA) (as identified by the IC-TRT) and ODFW spawning surveys show that Middle Fork Canyon Creek and Wall Creek have a history spawning so MSRA is appropriately designated to provide protection to spawners and redds. Livestock use of the 15 Road Pasture will be limited in duration consisting primarily of short-term holding for moves between the larger pastures. Canyon Creek and Middle Fork Canyon Creek are vulnerable to the additive effect of sediment inputs from grazing because they are in watersheds with high road density and proximity.

Canyon Creek is 303d-listed with minimal woody cover at the PIBO EM site 2006 but the BA describes Canyon Creek and Middle Fork Canyon Creek as heavily wooded with alder and some dogwood in the 15 Road Pasture.

Livestock use of this allotment has undergone many changes in the last five years. Historically the land contained within this allotment was run in conjunction with the Seneca Allotment. Grazing occurred late in the season, year after year. At some point the allotments were combined creating what was the Sugarloaf and Seneca allotments. This allotment consists of 7 pastures and contains 15.37 miles of steelhead critical habitat.

Elevations within the Canyon Creek Pasture vary from 4,500 feet near FR 15 and 7,000 at the allotment boundary within the Strawberry Wilderness. Vegetation varies from mixed conifer at the higher elevations to Ponderosa pine in the lower elevations. Understory vegetation consists of bluebunch wheatgrass and Idaho fescue associated with a pine overstory and pine grass and elk sedge in the mixed conifer areas. Streams within the Canyon Creek Pasture containing steelhead

critical habitat are: Canyon Creek, Middle Fork Canyon Creek, Crazy Creek, Wall Creek, and an unnamed tributary to Wall Creek.

The 15 Road Pasture is a riparian pasture of approximately 490 acres. This pasture was created by the construction of a new fence in the Wickiup Pasture to exclude livestock access to Canyon Creek when grazing the Wickiup Pasture. Livestock use will be limited in duration consisting primarily of short-term holding to facilitate moves between the larger pastures. The 15 Road Pasture contains Canyon Creek and the confluence of the Middle Fork Canyon Creek with Canyon Creek. Both Canyon Creek and the Middle Fork Canyon Creek within the pasture are heavily wooded with alder and some dogwood.

The North Rock Springs and Wickiup pastures are within the Upper John Day watershed, which supports anadromous fish and their habitat. However, these pastures do not have any streams containing steelhead critical habitat within their boundaries and therefore will not be discussed further.

The South Rock Springs, Dark Canyon, and CH pastures are within the Silvies watershed. This watershed does not contain anadromous fish or their habitat. Therefore these pastures will not be discussed or analyzed further.

For 2012-2016, the bank alteration endpoint in the Canyon Creek and 15 Road pastures will be 15% because each contains MSRA. Endpoint bank alteration was measured at 8% in 2007, 2008 and 2010, and at 16% in 2009, barely over the 15% endpoint indicator for 2012-2016.

Effects on MCR Steelhead. The effects of the proposed action for the Dark Canyon Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Dark Canyon and Fawn Springs BA at pages 98-99.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Dark Canyon and Fawn Springs BA at pages 98-99.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Dark Canyon and Fawn Springs BA at pages 99-106.

Overtime, it is likely that riparian plant communities in the Dark Canyon Allotment will recover, improving habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Dark Canyon Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat[12]. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Dark Canyon Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for Canyon, Middle Fork Canyon, Crazy and Wall creeks and an unnamed tributary to Wall Creek as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs BA at page 69.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs BA at pages 70-107.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs BA at pages 73-107.

Freshwater rearing sites

Water quantity – Minor effect to water quantity for Canyon, Middle Fork Canyon, Crazy and Wall creeks and an unnamed tributary to Wall Creek as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs BA at page 69.

[12] The critical habitat in the allotments is primarily designated as freshwater spawning and rearing sites. The effects on any migration sites within the allotments are anticipated to be the same as in section 2.4.1.3. See also allotment specific BAs.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs BA at pages 70-107.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs BA at pages 75-95.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs BA at pages 76-105.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.2. See also Dark Canyon and Fawn Springs BA at pages 96-106.

2.4.2.2 Fawn Springs Allotment

Introduction. The pastures comprising the Fawn Springs Allotment lie within the Canyon Creek (HUC # 1707020107) watershed. The allotment encompasses approximately 6,614 acres and is divided into five pastures: Lake, G-4, L-8, Alder, and Fawn Springs. Effects from grazing in the Fawn Springs Allotment are likely to be limited to 2.32 miles of MCR steelhead critical habitat used for spawning and rearing (Table 67).

Table 67. Miles of MCR Steelhead Critical Habitat in the Fawn Springs Allotment

Stream Name	Critical Habitat Miles	MSRA Miles
East Fork Canyon Creek	0.58	0.16
Wall Creek	1.74	0.00
Total	2.32	0.16

Cattle will have access to spawning areas in the Lake Pasture during critical spawning times. The Lake Pasture will continue to be used during the early season. This section of East Fork Canyon Creek is partially confined by nearly vertical canyon walls comprised of columnar granite and livestock access is extremely limited. MSRA on East Fork Canyon Creek mandates pre-turnout spawning surveys and redd protection measures to isolate livestock from redds.

Although much of East Fork Canyon Creek and Wall Creek are inaccessible to cattle, the effects of sediment from streambank disturbances and alterations to the steelhead food chain from the lost overhead cover and nutrients added by livestock waste will occur at distributed points along the streams where cattle graze in meadows and drink. The move triggers assigned to the Lake Pasture will disperse these effects.

The Fawn Springs Allotment will use a deferred rotation grazing system. This will lessen impacts to steelhead critical habitat on Wall Creek. Currently, cattle are removed from the allotment by mid-late August. When forage allows, the Lake Pasture will be rested and it is

expected that during the life of this consultation the Lake Pasture may be rested 2 out of the 5 years.

Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 2.32 miles of critical habitat on the allotment, 0.16 miles have been identified as MSRAs. As described in Section 2.3.3.1, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The Fawn Springs Allotment is currently permitted for 107 cow/calf pairs (636 AUMs) from June 1 to October 15, and will use a deferred rotation grazing system. The Lake Pasture will continue to be used during the early season. This will lessen impacts to steelhead critical habitat on Wall Creek. Cattle will be removed from the allotment by mid-late August. Whenever forage availability will allow it, the Lake Pasture will be rested, likely 2 out of the 5 years. Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorized use. See Dark Canyon and Fawn Springs allotments BA at pages 21-22.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Dark Canyon and Fawn Springs allotments BA at pages 22-23.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Fawn Springs Allotment. Elevations within the allotment range from 4,100 feet to 6,200 feet. The Fawn Springs Allotment is bordered by the Strawberry Wilderness on the north and east and private property on the west. This allotment is primarily west- and south-facing slopes. Terrain tends to gently slope downward towards Canyon Creek. Overstory vegetation in the allotment consists of Ponderosa pine, Douglas-fir, and Western larch. Dominant grass species throughout the allotment are bluebunch wheatgrass, Idaho fescue, elk sedge, and pine grass. Riparian overstory vegetation generally consists of a mix of hardwood and conifer species along the stream with alder being the dominant species. The Fawn Springs Allotment is divided into five pastures: Lake, G-4, L-8, Alder, and Fawn Springs.

Elevations within the Lake Pasture vary from 4,200 feet at the confluence of Wall Creek with East Fork Canyon Creek to 5,200 feet on the ridge south of Wall Creek. The Strawberry Wilderness boundary divides this unit in half with Wall Creek being entirely within the Wilderness boundary. In 2008, the permittee complied with the grazing schedule and the utilization of grass and non-hydrophytic plant species standard was met. The Lake unit contains Wall Creek and portions of East Fork Canyon Creek. Wall Creek is heavily armored by vegetation and downed logs making it largely inaccessible to cattle. Excluding Wall Creek, water is limited in this unit; much of the area is scablands or savannah-like vegetation on mainly southern aspects. The east portion of the unit has ponderosa pines with elk sedge/bunch grass understories.

East Fork Canyon Creek serves as a boundary separating the Lake and G-4 pastures. The G-4 Pasture contains the East Fork Canyon Creek, and the District Wildlife Biologist and Range Specialist concluded that it is not accessible to cattle in this pasture due to sheer canyon walls. This section of East Fork Canyon Creek is partially confined by nearly vertical canyon walls comprised of columnar granite. This is the only stream containing MCR steelhead critical habitat within the G-4 Pasture. The G4 and Lake pastures contain Wall Creek and East Fork Canyon Creek. East Fork Canyon Creek serves as a boundary separating the pastures.

The L-8, Alder, and Fawn Springs pastures do not contain MCR steelhead or their critical habitat. Therefore, they will not be discussed or analyzed further.

For 2012-2016, the bank alteration endpoint in the Lake Pasture will be 15% because it contains MSRA. The measured endpoint bank alteration in 2009 was 6%.

Effects on MCR Steelhead. The effects of the proposed action for the Fawn Springs Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Dark Canyon and Fawn Springs allotments BA at pages 98-99.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Dark Canyon and Fawn Springs allotments BA at pages 98-99.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Dark Canyon and Fawn Springs allotments BA at pages 99-106.

Over time, it is likely that riparian plant communities in the Fawn Springs Allotment will recover, improving habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Fawn Springs Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Fawn Springs Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for East Fork Canyon and Wall creeks as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs allotments BA at pages 69-70.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs allotments BA at pages 70-73.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs allotments BA at page 73.

Freshwater rearing sites

Water quantity – Minor effect to water quantity for East Fork Canyon and Wall creeks as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs allotments BA at pages 69-70.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs allotments BA at pages 70-73.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs allotments BA at pages 75-76.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs allotments BA at page 76.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Dark Canyon and Fawn Springs allotments BA at page 83.

2.4.2.3 Hanscomb Allotment

Introduction. Effects from grazing in the Hanscomb Allotment are likely to be limited to 1.48 miles of MCR steelhead critical habitat in Laycock Creek, and 0.39 miles of MCR steelhead critical habitat on Hanscomb Creek. Of these miles of critical habitat 0.19 miles on Laycock Creek is likely MCR steelhead spawning and rearing habitat and identified as MSRA. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 1.87 miles of critical habitat on the allotment, 0.19 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The Hanscomb Allotment is managed under a single permit with the Deadhorse, Seneca, and Fields Peak allotments. The Hanscomb Allotment includes grazing into four pastures: Laycock, Upper Geary, Geary Meadows, and Allen Morris. The allotment will be managed using a deferred rest-rotation grazing strategy. Deferred rest-rotation grazing allows discontinuation of grazing on the range in alternative years. This allows each grazed part to rest on alternative years. Range Readiness and utilization levels may result in varying on/off dates and pasture rotations within the parameters of authorized use. Livestock grazing typically begins June 1 until October 15 for 121 cow/calf pairs. See BA at 28-29.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 29-30.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices in the Hanscomb Allotment. The Laycock Pasture contains MCR steelhead critical habitat in Laycock Creek and Hanscomb Creek. MSRA is designated on Laycock Creek and likely rearing and spawning for MCR steelhead. The Laycock Pasture is the only pasture in this allotment that provides critical habitat for MCR steelhead. No other streams are known to be occupied by steelhead on the allotment.

For 2012-2016, the bank alteration endpoint in the Laycock Pasture will be 15% because it contains MSRA. Laycock Pasture was rested from 2009 to 2011.

Effects on MCR Steelhead. The effects of the proposed action for the Hanscomb Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 99-100.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 99-100.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 100-108.

Over time, it is likely that riparian plant communities in the Hanscomb Allotment will recover, improving habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water

quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Hanscomb Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Hanscomb Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites
Water quantity – Minor effects to water quantity for Laycock Creek as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 73-74.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 74-77.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 78.

Freshwater rearing sites
Water quantity – Minor effect to water quantity for Laycock Creek and Hanscomb Creeks as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 78.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 78-79.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 80-81

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 81-87.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 88-89.

2.4.2.4 Dixie Allotment

Introduction. Effects from grazing in the Dixie Allotment are likely to be limited to MCR steelhead critical habitat including 2.59 miles on Hall Creek of which 0.16 miles are

identified as MSRA as likely spawning and rearing habitat, 1.70 miles on Bear Creek, 5.20 miles on Dixie Creek, of which 1.46 miles are identified as MSRA, 3.51 miles of Standard Creek and 0.38 miles on East Fork Camp Creek. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 13.38 miles of critical habitat on the allotment, 1.62 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The allotment is managed under one permit grazing in two main pastures, Standard Creek and Bear Creek, using a rest rotation grazing system. Range readiness and utilization levels may vary on/off dates within the parameters of authorized use. Livestock grazing begins June 1 until October 15 (173 cow/calf pairs). See BA at 21-22.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Dixie BA at 22-23. The riparian areas on Standard Creek Pasture are inaccessible due to the rough terrain according to the BA.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices. The Bear Creek Pasture contains the following streams containing steelhead critical habitat: Hall Creek, Bear Creek, Dixie Creek, and East Fork Camp Creek. In the Bear Creek Pasture, Hall Creek and Dixie Creek contain 1.62 miles identified as MSRA and is likely MCR steelhead spawning and rearing habitat. The Standard Pasture contains streams containing steelhead critical habitat within the Standard Pasture is: Dixie Creek and Standard Creek. Riparian areas in the Standard Creek Pasture are inaccessible. Livestock use on Forest Service lands in this pasture is extremely low due to the ruggedness of the terrain and including in and around Dad’s Creek. In 2011, attempts were made to locate a suitable riparian monitoring site but one was not found. Upland Utilization end of season monitoring has been within the allowable use levels for 2009 and 2010. In the Bear Creek Pasture end point indicators were met and upland utilization in 2009 and 2010. The Range staff concluded that 2011 standards were met based on weekly inspection reports.

For 2012-2016, the bank alteration endpoint in the Bear Creek and Standard Creek pastures will be 20% because the allotment will use a rest rotation grazing strategy.

Effects on MCR Steelhead. The effects of the proposed action for the Dixie Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Dixie BA at 96-97.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Dixie BA at 96-97.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Dixie BA at 71-104.

Overtime, there is a high likelihood that riparian plant communities in the Dixie Allotment will recover, improving habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Dixie Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Dixie Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity—Minor effects to water quantity for Hall Creek, Dixie Creek, and Standard Creek as described in Section 2.4.1.3. See also Dixie BA at 68-69

Water quality –Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Dixie BA at 69-72.

Substrate –Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Dixie BA at 72.

Freshwater rearing sites
Water quantity – Minor effects to water quantity for Hall Creek, Bear Creek, Dixie Creek, Standard and East Fork Camp Creek as described in Section 2.4.1.3. See also Dixie BA at 73.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Dixie BA at 73.

Floodplain connectivity – Minor effects to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Dixie BA at 74-75.

Forage – Minor effects resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Dixie BA at 76-81.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.2. See also Dixie BA at 82.

2.4.2.5 Fields Peak Allotment

Introduction. Effects from grazing in the Fields Peak Allotment are likely to be limited to 5.10 miles of MCR steelhead critical habitat in Fields Creek, 0.90 miles of MCR critical habitat on Wickiup Creek, 2.30 miles of MCR critical habitat in Buck Cabin Creek, 4.68 miles of MCR critical habitat in Tex Creek, 0.83 miles of MCR critical habitat in Miner Creek, 0.67 miles of MCR critical habitat in Sugar Creek, 0.48 miles of MCR critical habitat in Basin Creek, 0.67 miles of MCR critical habitat in White Creek, 0.51 miles of MCR critical habitat in Charlie Mack Creek, 0.89 miles of MCR critical habitat in Lemon Creek and 5.33 miles of MCR critical habitat in Murderers Creek. Of these miles of critical habitat, 0.10 miles on Fields Creek, 0.11 miles on Wickiup Creek, 3.22 miles on Tex Creek and 4.51 miles on Murderers Creek are likely MCR steelhead spawning and rearing habitat and identified as MSRA. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 22.36 miles of critical habitat on the allotment, 7.94 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to

focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The Fields Peak Allotment is managed under one grazing permit with the Seneca, Deadhorse and Hanscomb allotments. The Fields Peak Allotment is grazed in 5 pastures: Fields Peak, Tex Creek, Miners Creek, North Murderers Creek, and Murderers Creek using a deferred rest-rotation grazing strategy. Deferred rest-rotation grazing allows discontinuation of grazing on the range in alternative years. This allows each grazed part to rest on alternative years. Range Readiness and utilization levels may result in varying on/off dates and pasture rotations within the parameters of authorized use. The Fields Peak Allotment is currently permitted for 240 cow/calf pairs and two horses from June 15 to October 15. See BA at 28-29.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 29-30.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices in the Fields Peak Allotment. The steelhead critical habitat in the Fields Peak Pasture includes Fields Creek, Wickiup and Buck Cabin Creek. In the Fields Creek Pasture, Fields Creek contains steelhead spawning habitat and contains MSRA, although other tributaries to Fields Creek likely provide rearing habitat for MCR steelhead. Wickiup also has reaches of MSRA. In the Miners Creek Pasture, MCR steelhead critical habitat is in Tex Creek, Miners Creek and Sugar Creek. In the Tex Creek Pasture, Tex Creek contains MSRA and steelhead spawning and rearing habitat. In 2009, the North Murderers Creek Pasture was created as a new fence constructed along Murderers Creek and FS Road 21. The fence was constructed to provide for additional protection to Murderers Creek and allow for greater management flexibility and grazing rotations. Streams containing steelhead critical habitat within the North Murderers Creek pasture are: Charlie Mack Creek, Basin Creek, and White Creek. MNF biologists have determined that the critical habitat on the lower section of Charlie Mack Creek does not support fish during summer months. The lower section of the stream suitable for spawning loses surface flow by mid to late June. In the Murderers Creek pasture, streams containing steelhead critical habitat pasture are: Murderers Creek and Lemon Creek. Murderers Creek is a documented steelhead spawning stream and contains MSRA.

For 2012-2016, the bank alteration endpoint in the Fields Peak, Tex Creek, Miners Creek and Murderers Creek Pastures will be 15% because each contains MSRA. The bank alteration for the North Murderers Creek Pasture will be 20% since it does not contain a MSRA. Murders Creek, Fields Peak, Miners and Tex Creek pastures were rested from 2008 to 2011.

Effects on MCR Steelhead. The effects of the proposed action for the Fields Peak Allotment on MCR steelhead are described below. As noted above, cattle access to MCR

steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 99-100.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 99-100.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Fields Peak BA at 100-108. Over time, it is likely that riparian plant communities in the Fields Peak Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Fields Peak Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Fields Peak Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for Fields Creek, Tex Creek, Wickiup Creek and Murderers Creek as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 73-74.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 74-77.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 78.

Freshwater rearing sites
Water quantity – Minor effect to water quantity for Fields Creek, Tex Creek, Miner Creek, Sugar Creek, Murderers Creek, Charlie Mack Creek, Basin Creek, White Creek and Lemon Creek as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 78.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 78-79.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Fields Peak BA at 80-81.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 81-87.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Seneca, Deadhorse, Hanscomb, and Fields Peak BA at 88-89.

2.4.2.6 Roundtop Allotment

Introduction. Effects from grazing in the Roundtop Allotment are likely to be limited to MCR steelhead critical habitat in Grub, Tinker Creek, and Beech Creek pastures. Streams within the allotment that contain MCR steelhead critical habitat include 1.16 miles on Grub Creek, 2.34 miles on Tinker Creek, and 3.57 miles East Fork Beech Creek. Of these miles of critical habitat, 0.52 miles of Grub Creek, 0.29 miles of East Fork Beech Creek and 0.80 miles of Tinker Creek are likely MCR steelhead spawning and rearing habitat and are identified as MSRA.

Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of the 7.07 miles of critical habitat on the allotment, 1.61 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most

accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The allotment is managed under one permit grazing six pastures using a deferred rotation with a staggered season of use entry system. Deferred rotation grazing allows discontinuation of grazing on different parts of the range in succeeding years. This allows each grazed part to rest during the succeeding growing season. The Grub Pasture will be managed as a riparian pasture and grazing will not exceed 21 days in the pasture. Grub Creek flow is intermittent during the summer and fall so the potential for late-season interactions between livestock and rearing steelhead is very low. The Tinker Creek Pasture will not be grazed during the hot/late season. Livestock grazing for 200 cow/calf pairs begins on June 1 until September 30. See BA at 21-22.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Roundtop BA at 22-23.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Roundtop Allotment. In 2008, the permittee requested to place the Roundtop Allotment in non-use. However, unauthorized use occurred in the Grub Pasture from cattle from the Dixie Allotment and 4-corners pasture from the Long Creek Allotment. The cattle were quickly removed and adverse impacts were not noted. In 2009, Beech Creek Pasture was only used for a few days and showed little sign of use. During 2010 and 2011, the allotment was in non-use status. District range and hydrology personnel concluded that the Grub Pasture does not have any riparian areas that meet MIM criteria for riparian monitoring.

For 2012-2016, the bank alteration endpoint in the Tinker Creek, Grub, and Beech Creek pastures will be 15% because each contains MSRA. Move Triggers for each pasture will be 10%, to help the permittee to meet allowable use standards.

Effects on MCR Steelhead. The effects of the proposed action for the Roundtop Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on some of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Roundtop BA at 88-89.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Roundtop BA at 88-89.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Roundtop BA at 89-96.

Over time, it is likely that riparian plant communities in the Roundtop Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Roundtop Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Roundtop Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on some of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for Grub, Tinker Creek and East Fork Beech Creeks as described in Section 2.4.1.3. See also Roundtop BA at 68-69.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Roundtop BA at 69-72.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Roundtop BA at 72.

Freshwater rearing sites

Water quantity – Minor effects to water quantity for Grub, Tinker Creek and East Fork Beech Creeks as described in Section 2.4.1.3. See also Roundtop BA at 73.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Roundtop BA at 73.

Floodplain connectivity – Minor effects to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Roundtop BA at 74-75.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3 See also Roundtop BA at 76-81.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.2. See also Roundtop BA at 82-83.

2.4.2.7 John Day Allotment

Introduction. Effects from grazing in the John Day Allotment are likely to be limited to 0.4 miles of MCR steelhead critical habitat on Hog Creek, 0.3 miles of MCR steelhead critical habitat on Johnson Creek, 1.3 miles of MCR steelhead critical habitat on Ennis Creek, 3.5 miles of MCR steelhead critical habitat on McClellan, 3.3 miles of MCR steelhead critical habitat on Clear Creek, 0.2 miles of MCR steelhead critical habitat on Beech Creek, and 0.6 miles of MCR steelhead critical habitat on East Fork Beech Creek. Of these miles of MCR critical habitat MSRA has been identified as likely spawning and rearing habitat on 1.5 miles on McClellan Creek, 0.5 miles on Clear Creek and 0.6 miles on East Fork Beech Creek. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 9.6 miles of critical habitat on the allotment, over 2.6 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The allotment is managed under a single permit grazing in four pastures (Upper Ennis Creek, Lower Ennis Creek, Upper McClellan, and Lower McClellan) using a deferred rotation grazing strategy with a staggered season of entry beginning in 2012. Deferred rotation grazing allows discontinuation of grazing on different parts of the range in succeeding years. This allows each grazed part to rest during the succeeding growing season. Range Readiness and utilization levels

may vary on/off dates and pasture rotations within the parameters of authorize use. Livestock grazing authorizes 177 cow/calf pairs. See BA at 25-26.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Mt Vernon, John Day and Beech Creek BA at 27.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the John Day Allotment. In 2010 work began on a new fence project that will split the Ennis Creek Pasture in two separate pastures, Upper Ennis Creek and Lower Ennis Creek. The fence was completed in 2011. The Upper Ennis Pasture does not contain MCR steelhead critical habitat. In the Lower Ennis Creek Pasture, MCR steelhead critical habitat is on Beech Creek, East Fork Beech Creek, Clear Creek, Johnson Creek, Hog Creek, and Ennis Creek. Clear Creek is only accessible to livestock in one area of approximately of 200 yards in length. This area has been identified as needing increased management. Over the past two years this area has been intensely managed by the permittee by increased riding and herding. There are potential fish passage barriers for juveniles during low flow periods on reaches of Clear Creek and East Fork Beech Creek. A stream survey identified a culvert on Hog Creek that may prevent all upstream passage and an unscreened diversion at this reach. A culvert on a reach of Ennis Creek was also identified as a juvenile passage barrier. In July 2000, a spawning survey on Ennis Creek found no physical barriers but identified the reach as possible rearing habitat for MCR steelhead but poor spawning habitat for MCR steelhead. The valley bottom becomes a steep, incised “V” approximately 400 yards upstream from its confluence with Beech Creek. MCR steelhead spawning habitat and redds have been consistently found in McClellan Creek in both Upper McClellan Pasture and Lower McClellan Pasture.

Both Upper McClellan Pasture and Lower McClellan Pasture have historically been used as a rest rotation pastures and had intermittent, consecutive years of use the past 6 years. As of 2008, there is an abundance of down trees in the McClellan unit that make cattle management difficult. The public left the gate between the Upper and Lower McClellan pastures open and allowed the cattle to access the lower pasture earlier than scheduled. The permittee returned the cattle to the Upper Pasture but the stubble height endpoint was exceeded. The 10% bank alteration standard was exceeded in the Ennis units. In 2009 and 2010, the Upper McClellan Pasture was rested.

For 2012-2016, the bank alteration endpoint in the Lower Ennis Creek, and Lower McClellan will be 15% because each contains MSRA. The bank alteration endpoint in Upper McClellan is 20% since a MSRA is not identified.

Effects on MCR Steelhead. The effects of the proposed action for the John Day Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Mt Vernon, John Day and Beech Creek BA at 89-90.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Mt Vernon, John Day and Beech Creek BA at 89-90.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Mt Vernon, John Day and Beech Creek BA at 90-97.

Over time, it is likely that riparian plant communities in the John Day Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the John Day Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the John Day Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for McClellan, Clear and East Fork Beech creeks as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 70-71.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 71-74.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 74.

Freshwater rearing sites
Water quantity – Minor effect to water quantity for Hog Creek, Johnson Creek, Ennis Creek, McClellan, Clear Creek, Beech Creek, and East Fork Beech Creek as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 75.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 75.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 75-77.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 77-82.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.2. See also Mt Vernon, John Day and Beech Creek BA at 83-84.

2.4.2.8 Beech Creek Allotment

Introduction. Effects from grazing in the Beech Creek On/Off Allotment are likely to be limited to 1.4 miles of MCR steelhead critical habitat containing spawning and rearing habitat identified as MSRA in East Fork Beech Creek. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of the 1.4 miles of critical habitat on the allotment, 1.4 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally,

spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The allotment is managed under one permit grazing four pastures (Beef, Patterson, Timber, and Grouse Creek) using an on/off allotment management. Several thousand acres of private land are congruent with MNF lands, making this an On/Off allotment. On/Off permits are issued when a minor portion, usually less than 1/3, of a logical grazing area is composed of NFS lands. The intent is to promote efficient use of intermingled ownership, while at the same time achieving desired conditions of NFS lands. Under an On/Off permit the management of private lands is not waived to the Forest Service. Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use. The Beech Creek On/Off Allotment grazing turn out date can be as early as May 15. Livestock use on the allotment is 35 cow/calf pairs. See BA at 25-26.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. MNF use of conservation measures will minimize effects during early spring grazing. See Mt Vernon, John Day and Beech Creek BA at 27.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices in the Beech Creek On/Off Allotment. The allotment contains 1.4 miles of MCR steelhead rearing and spawning habitat on East Fork Beech Creek. The Beef Pasture contains all of the steelhead critical habitat in this allotment except for a water gap in the Patterson Pasture. A series of log weirs, downstream of the Beef Pasture, in reach 1 of East Fork Beach Creek, may be barriers for juvenile steelhead passage. The Timber and Grouse Creek pastures do not contain MCR steelhead critical habitat.

For 2012-2016, the bank alteration endpoint in the Beef Pasture on East Fork Beech Creek, will be 15% because it contains MSRA. None of the 2008-2010 bank alteration exceedences were greater than 15% so they would not trigger an adaptive management response.

Effects on MCR Steelhead. The effects of the proposed action for the Beech Creek On/Off Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on some of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Mt Vernon, John Day and Beech Creek BA at 89-90.

Adults. The Beech Creek Allotment has a turn out date as early as May 15. Cattle will have access to spawning habitat during the spawning period and to critical habitat when there is some possibilities of adult MCR steelhead presence. Cattle may interfere with adult behaviors due to the early turnout date. These effects will likely be minor as there will likely be little use of

riparian areas by cattle during the early grazing season. In addition, the MNF will use conservation measures to manage and reduce the cattle effects in riparian areas.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Mt Vernon, John Day and Beech Creek BA at 89-90.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Mt Vernon, John Day and Beech Creek BA at 90-97.

Over time, it is likely that riparian plant communities in the Beech Creek On/Off Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Beech Creek On/Off Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Beech Creek On/Off Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on some of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for East Fork beech Creek as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 70-71.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 71-74.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 74.

Freshwater rearing sites
Water quantity – Minor effect to water quantity for East Fork Beech Creek as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 75.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 75.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 75-77.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 77-82.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 83-84.

2.4.2.9 Mt Vernon Allotment

Introduction. Effects from grazing in the Mt Vernon Allotment are likely to be limited to 1.2 miles of MCR critical habitat in Bear Creek, 3.6 miles of MCR critical habitat in Belshaw Creek, 0.18 miles of MCR critical habitat in Beech Creek. Of these miles of critical habitat, 2.4 miles on Belshaw Creek are likely MCR spawning and rearing habitat and have been identified as MSRA. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of the 5 miles of critical habitat on the allotment, over 2.4 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The allotment is managed under two permits grazing in five pastures (Belshaw Creek, Bear Creek, Cohoe, Belshaw Meadow, and Belshaw Riparian) using a deferred rotation grazing strategy. Deferred rotation grazing allows discontinuation of grazing on different parts of the range in succeeding years. This allows each grazed part to rest during the succeeding growing season. Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use. Livestock grazing typically begins June 11 until October 5 for 319 cow/calf pairs. See BA at 25-26.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Mt Vernon, John Day and Beech Creek BA at 27.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Mt Vernon Allotment. The Belshaw Creek Pasture contains MCR steelhead critical habitat on Belshaw Creek. Access to the creek is limited by a heavy shrub over story for the majority, with increasingly limited access as the creek heads west through Forest Service land then south as it exits onto private land. The Bear Creek Pasture contains MCR steelhead critical habitat on Bear Creek, an unnamed tributary to Bear Creek and Beech Creek. For the last two years weekly inspections have been conducted on the Bear Creek when cattle have been grazing there. These inspections indicate that livestock access to Bear Creek is limited to only a few places where the road crosses the creek. The remainder of Bear Creek has limited livestock use due to the steep, rugged terrain and a dense hardwood overstory of alder, hawthorn, and dogwood. Beech Creek runs between Highway 395 and the Bear Creek Pasture fence for approximately 3 miles. Due to rock bluffs and the entrenched condition (in places 20 vertical feet) of Beech Creek, cattle have very limited access to the stream. The Cohoe Pasture and Belshaw Meadow Pasture do not contain any fish-bearing streams. In the Belshaw Riparian Pasture, Belshaw Creek contains MCR steelhead critical habitat. Belshaw Creek within the riparian pasture is more open and susceptible to the impacts of grazing.

The Belshaw Creek Riparian and Belshaw Meadows units are used primarily to facilitate gathering or moving of livestock. The Belshaw Riparian Pasture is used by a limited number of cattle for a short duration. The use of these pastures is dictated by the needs of the permittee and may not be used on an annual basis.

For 2012-2016, the bank alteration endpoint in the Belshaw Riparian Pasture, will be 15% because each it contains MSRA. The bank alteration endpoints in Belshaw Creek and Bear Creek will be 20% as they do not contain MSRA.

Effects on MCR Steelhead. The effects of the proposed action for the Mt Vernon Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Mt Vernon, John Day and Beech Creek BA at 89-90.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Mt Vernon, John Day and Beech Creek BA at 89-90.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Mt Vernon, John Day and Beech Creek BA at 90-97.

Over time, it is likely that riparian plant communities in the Mt Vernon Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Mt Vernon Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Mt Vernon Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for Belshaw Creek as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 70-71.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 71-74.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 74.

Freshwater rearing sites
Water quantity – Minor effect to water quantity for Bear Creek, Belshaw Creek and Beech Creek as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 75.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 75.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Mt Vernon, John Day and Beech Creek BA at 75-77.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3 See also Mt Vernon, John Day and Beech Creek BA at 77-82.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.2. See also Mt Vernon, John Day and Beech Creek BA at 83-84.

2.4.3 Allotment-Specific Effects on SFJDR Population

2.4.3.1 Fields Peak Allotment

See Section 2.4.2.5 for information for the Fields Peak Allotment.

2.4.3.2 Murderers Creek Allotment

Introduction. Effects from grazing in the Murderers Creek Allotment are likely to be limited to 2.51 miles of MCR steelhead spawning and rearing habitat in Corral Creek, 1.64 miles of steelhead spawning and rearing habitat in Crazy Creek, 0.81 mile of rearing habitat in Dans Creek, 9.08 miles of spawning and rearing habitat in Deer Creek, 5.44 miles of spawning and rearing habitat in Duncan Creek, 7.49 miles of spawning and rearing habitat in Murderers Creek, 2.22 mile of rearing habitat in North Fork Deer Creek, 0.6 mile of rearing habitat in Orange Creek, 0.41 mile of rearing habitat in Oregon Mine Creek, and 2.22 miles of rearing habitat in South Fork Deer Creek, 1.84 miles of spawning and rearing habitat in Vester Creek, 1.06 miles of rearing habitat in Blue Creek, 0.72 mile of rearing habitat in Bark Cabin Creek, 5.38 miles of spawning and rearing habitat in South Fork Murderers Creek, 2.04 miles of rearing habitat in Tennessee Creek, 0.9 mile of spawning and rearing habitat in Tex Creek, and 6.96 miles of spawning and rearing habitat in Thorn Creek. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections

2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 53.77 miles of critical habitat on the allotment, over 29 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The allotment is managed under three permits grazing separate herd areas (North Herd, Middle Heard, South Herd) using a deferred rotation grazing strategy. Deferred rotation grazing allows discontinuation of grazing on different parts of the range in succeeding years. This allows each grazed part to rest during the succeeding growing season. The South Herd employs a full-time rider. Livestock grazing typically begins in mid-May for the North Herd (175 cow/calf pairs); early June for the Middle Herd (200 cow/calf pairs); and July 1 in the South (400 cow/calf pairs) and Middle Herds (300 cow/calf pairs). See BA at 22-23.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Murderers Creek BA at 23-24. In addition, all pastures are monitored prior to turnout and if endpoint indicators are within proximity to allowable use, cattle will not be allowed to turnout.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Murderers Creek Allotment. The steelhead critical habitat on Vester Creek is primarily located in a steep, heavily vegetated drainage. The remaining segment of critical habitat in Vester Creek has been excluded from livestock grazing through exclosure fencing, completed in July 2011. Deer Creek has riparian areas with thick alder and dogwood stands. In the Deer Creek Pasture, approximately 0.7 miles of the South Fork Deer Creek from Forest Road 24 upstream have been fenced to exclude cattle. The only stream in John Young Meadow containing steelhead critical habitat is the South Fork Murderers Creek and all but 500 feet of critical habitat is excluded from cattle use. In Timber Mountain Pasture, in 2010 a fence was constructed along the South Fork of Murderers Creek excluding it from the pasture. The construction of this fence also excluded all MSRA from the pasture. This new pasture is an exclosure and cattle grazing will not be authorized in it. As a result of the new fence, Crazy Creek is the only stream in the Timber Mountain Pasture containing steelhead critical habitat. The streambanks are armored by large rocks. Streams in the Blue Ridge Pasture containing steelhead critical habitat are South Fork Murderers Creek, Blue Creek, and Bark Cabin Creek, however there is only 0.3 mile of MSRA within the Blue Ridge

Pasture. The only stream in Horse Mountain pasture containing steelhead critical habitat is the South Fork Murderers Creek, of which there is limited access (two water gaps) to the stream by livestock due to the construction (completed December 2011) of a riparian corridor exclusion fence running the full length of the stream. This fence also excludes access to MSRA within the pasture except at the water gaps. The Antelope Spring Pasture does not contain steelhead critical habitat.

South Fork Murderers Creek Gather, Murderers Creek Gather, Tex Creek Gather, and John Young Meadow Cow Camp pastures have been historically used for gathering and short term (≤24 hours) holding of cattle as they are moved between pastures or in the process of being removed from the allotment. South Fork Murderers Creek Gather contains approximately 0.5 miles of steelhead critical habitat on the South Fork Murderers Creek. This pasture will be used on a very limited basis (generally less than 24 hours). Electric fencing will be used to exclude livestock access to the South Fork Murderers Creek if overnight use is expected to occur. A water gap would be necessary if electric fencing is used. Approximately 0.66 mile of steelhead critical habitat are in Murderers Creek Gather Pasture, as well as a short section at the confluence with Dans Creek. This pasture will be used on a very limited basis (generally less than 24 hours). This pasture is used to wean calves and facilitate moves to the next pasture. Tex Creek Gather Pasture contains approximately 0.8 mile of steelhead critical habitat on Murderers Creek and 0.7 miles of steelhead critical habitat on Tex Creek. The pasture is approximately 180 acres of State lands; only 20 acres are Forest Service lands. There are only 0.07 miles of steelhead critical habitat on Tex Creek and 0.08 miles of steelhead critical habitat on Murderers Creek that are contained within Forest Service lands. The MNF will pursue opportunities with ODFW to provide protection for critical habitat when this pasture is authorized for use. This pasture will be used on a very limited basis (generally less than 24 hours). South Fork Murderers Creek within John Young Meadow Cow Camp Pasture is excluded from livestock grazing with the exception of a water gap.

For 2012-2016, the bank alteration endpoint in the Martin Corrals Pasture, South Fork Murderers Gather Pasture, Tex Creek Gather Pasture, Oregon Mine Pasture, Dans Creek Pasture, Blue Ridge Pasture, John Young Meadows Pasture, Frenchy Butte Pasture, Murderers Creek Gather Pasture, and the Deer Creek Pasture will be 15% because each contains MSRA. None of the 2008-2010 bank alteration exceedences were greater than 15% so they would not trigger an adaptive management response. Streambank alteration from wild ungulates often accumulates on Murderers Creek Allotment streambanks before livestock are turned out. Under the proposed action, the MNF will conduct bank alteration measurements on turnout pastures in this allotment to determine if there is sufficient bank alteration capacity to allow livestock grazing in the coming season.

Effects on MCR Steelhead. The effects of the proposed action for the Murderers Creek Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Murderers Creek BA at 96-97.

Adults. Cattle will have access to spawning habitat during the spawning period; some interference with spawning behavior is possible.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Murderers Creek BA at 96-97.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Murderers Creek BA at 71-105.

Over time, it is likely that riparian plant communities in the Murderers Creek Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Murderers Creek Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Murderers Creek Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for Corral, Crazy, Deer, Duncan, Murderers, South Fork Murderers, Tex, and Thorn creeks as described in Section 2.4.1.3. See also Murderers Creek BA at 75.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Murderers Creek BA at 75-80.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Murderers Creek BA at 80.

Freshwater rearing sites
Water quantity – Minor effects to water quantity for Corral, Crazy, Dans, Deer, Duncan, Murderers, North Fork Deer, Orange, Oregon Mine, South Fork Deer, South Fork Murderers, Tennessee, Tex, and Thorn creeks as described in Section 2.4.1.3. See also Murderers Creek BA at 80.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3 See also Murderers Creek BA at 80-81.

Floodplain connectivity – Minor effects to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Murderers Creek BA at 82-83.

Forage – Minor effects resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Murderers Creek BA at 83.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Murderers Creek BA at 84-90.

2.4.4 Allotment-Specific Effects on MFJDR Population

2.4.4.1 Blue Mountain Allotment

Introduction. Effects from grazing the five pastures in the Blue Mountain Allotment are likely to be limited to 16.97 miles of MCR steelhead critical habitat (Table 68).

Table 68. Miles of MCR Steelhead Critical Habitat in the Blue Mountain Allotment.

Stream Name	Miles of MCR Steelhead Critical Habitat	Miles of MSRA
Crawford Creek	5.92	2.25
Fly Creek	0.23	
Idaho Creek	2.49	0.38
MFJDR	2.30	1.34
North Fork Summit Creek	0.38	
Squaw Creek	0.77	0.77
Summit Creek	4.88	3.17
Clear Creek	0.5	0.5
Total	**16.97**	**8.41**

Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 16.97 miles of critical habitat on the allotment, over 8 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The Blue Mountain Allotment is managed under a single permit which is in the process of being waived back to the Forest Service. The allotment is currently permitted for 163 cow/calf pairs (821 AUMs) from June 16 to October 9. This allotment will be maintained for emergency use. The District IDT will annually determine the appropriateness of grazing, the duration and level of use based on conditions within the allotment. The Blue Mountain Allotment consists of four main pastures.

When this allotment is authorized for use (emergency situations) grazing strategy will be as follows:

The Squaw Pasture will only be used to facilitate moves between the larger pastures. A rest-rotation grazing system will be implemented on the remaining pastures. If use is authorized by the District ID Team, Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorized use. See BA at 33.

Squaw Creek, Summit Creek, and the MFJDR in this allotment have downcut due to the loss of beaver dam complexes and a large localized rain on snow event in January 1997. This resulted in disconnected floodplains and lowered water tables. Most of the impacted area was fenced (Squaw Pasture) to exclude cattle. In addition, the entire allotment has been in non-use since 2003.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Long Creek, Blue Mountain and Camp Creek BA at 33-34.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Blue Mountain Allotment. The Squaw Pasture is a small riparian pasture (136 acres). This pasture is used only to

facilitate moves between the larger pastures. Squaw Creek stopped flowing in 2002 and 2003. Juvenile and adult steelhead were observed in this stream in 2002. This stream currently contains very little steelhead spawning and rearing habitat in the pasture. Crawford Creek Pasture contains only one stream within the pasture containing steelhead critical habitat, Crawford Creek. The upper portion of the stream is perennial while the lower portion becomes intermittent in the summer months although salmonids have been observed in the upper reaches of Crawford Creek in the Crawford Meadow area.

For 2012-2016, the bank alteration endpoint in the Crawford Creek, West Summit, Idaho Creek, East Summit, and Squaw pastures will be 15% because each contains MSRA. Implementation monitoring for grazing is not available since the Blue Mountain Allotment has been in non-use since 2003.

Effects on MCR Steelhead. In the event grazing is authorized on the allotment, the effects of the proposed action for the Blue Mountain Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Long Creek, Blue Mountain and Camp Creek BA at 174-175.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Long Creek, Blue Mountain and Camp Creek BA at 174-175.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Long Creek, Blue Mountain and Camp Creek BA at 106-183. The impacts will be reduced in this allotment since it will be maintained for emergency use.

Over time, it is likely that riparian plant communities in the Blue Mountain Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a

significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Blue Mountain Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. In the event grazing is authorized on the allotment, the effects of the proposed action on MCR steelhead critical habitat PCEs for the Blue Mountain Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites
Water quantity – Minor effects to water quantity for Crawford, Fly, Idaho, North Fork Summit, North Fork Bridge, Squaw, Summit, and Clear creeks, and the MFJDR as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 111-112.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 112-115.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 116.

Freshwater rearing sites
Water quantity – Minor effect to water quantity for Crawford, Fly, Idaho, North Fork Summit, North Fork Bridge, Squaw, Summit, and Clear creeks, and the MFJDR as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 116.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 116-117.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 118-119.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 120-125.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 126-127.

2.4.4.2 Upper Middle Fork Allotment

Introduction. Effects from grazing in the Upper Middle Fork Allotment are likely to be limited to 0.49 mile of MCR steelhead critical habitat in Bennett Creek, 1.16 miles of critical habitat in Blue Gulch, 4.29 miles of critical habitat in Butte Creek, 3.00 miles of critical habitat in Caribou Creek, 4.24 miles of critical habitat in Davis Creek, 1.91 miles of critical habitat in Deerhorn Creek, 2.07 miles of critical habitat in Granite Boulder Creek, 2.89 miles of critical habitat in Little Boulder Creek, 1.72 miles of critical habitat in Little Butte Creek, and 3.61 miles of critical habitat in MFJD, 0.20 mile of critical habitat in Mill Creek, 0.21 mile of critical habitat in North Fork Bridge Creek, 2.71 miles of critical habitat in Placer Gulch, 1.43 miles of critical habitat in Ragged Creek, 3.15 miles of critical habitat in Ruby Creek, 1.06 miles of critical habitat in Sulphur Creek, 0.37 mile of critical habitat in Tin Cup Creek, 4.32 miles of critical habitat in Vincent Creek, 7.06 miles of critical habitat in Vinegar Creek, 2.25 miles of critical habitat in Windlass Creek, 1.66 miles of critical habitat in the Tributary to Little Butte Creek, 0.24 mile of critical habitat in the Tributary to Little Boulder Creek, and 0.62 mile of critical habitat in the Tributary to Davis Creek. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 50.66 miles of critical habitat on the allotment, over 19 miles have been identified as MSRAs. As described in Section 2.3.5.2, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The allotment has ten pastures (Austin, Butte, Caribou, Deerhorn, Lower Vinegar, River, Tailings, Tin Cup, Shop, and Upper Vinegar) with two herds managed under 1 permit. Herd 1 (242 cow/calf pairs) grazes pastures north of CR 20 (Caribou, Upper Vinegar, Lower Vinegar and Austin) from June 1 to October 15.

Herd 2 (243 cow/calf pairs) grazes pastures south of CR 20 (Butte and Deerhorn) from June 1 to October 15. The Upper Middle Fork Allotment's grazing rotation system will continue to emphasize a deferred rotation with a staggered season of use entry system. Herd 1 will utilize a rest-rotation grazing strategy (a deferred rotation may be implemented following implementation

of the Galena Project in 2013). Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use. See BA at 33-34.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Upper Middle Fork, Lower Middle Fork, and Slide BA at 36-37.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Upper Middle Fork Allotment. Streams in the Caribou Pasture containing steelhead critical habitat are: Windlass Creek, Little Boulder Creek, an unnamed tributary to Little Boulder Creek, Caribou Creek, and portions of Granite Boulder Creek. A new fence was completed in June 2012 that restricts access by cattle to lower Granite Boulder Creek.

A new fence proposal to be completed by June 2012 will create the Tin Cup Riparian Pasture. This pasture will provide additional protection to steelhead critical habitat in Tin Cup and Windlass creeks. The Tin Cup Riparian Pasture will become part of the allotment rotation in 2012. Elevations within the pasture vary from approximately 3,800 along CR 20 to 4300 feet. The pasture contains primarily south facing slopes. Streams in the Tin Cup Riparian Pasture containing steelhead critical habitat are Tin Cup and Windlass creeks. The Shop, River, and Tailings pastures are small pastures located along CR 20 and the MFJDR. A new fence was completed in March 2010 that has excluded the MFJDR from the Shop Pasture. A water gap was constructed in the southeast corner of the pasture on Tin Cup Creek. This pasture is used for gathering and short-term (≤ 48 hrs) holding of cattle. Tin Cup Creek is the only steelhead critical habitat in the pasture.

The River Pasture is a corridor along CR 20 and the MFJDR between the Caribou and Butte pastures. It is not part of the scheduled rotation; cattle are only driven through to access other pastures. No holding occurs in this pasture. The Tailings Pasture is located just upstream from the Deerhorn Campground and historically was used for gathering and short-term (24 hours) holding. The Tailings Pasture contains 0.3 mile of the MFJDR. When this pasture is authorized for use, electric fence with a water gap will be used to limit cattle access to the MFJDR.

For 2012-2016, the bank alteration endpoint in the Lower Vinegar Pasture, Deerhorn Pasture, Butte Pasture, and the Caribou Pasture will be 15% because each contains MSRA. None of the 2008-2010 bank alteration exceedences were greater than 15% so they would not trigger an adaptive management response.

Effects on MCR Steelhead. The effects of the proposed action for the Upper Middle Fork Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. Upper Middle Fork, Lower Middle Fork, and Slide BA at 145-146.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 145-146.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Upper Middle Fork, Lower Middle Fork, and Slide BA at 102-154.

Over time, it is likely that riparian plant communities in the Upper Middle Fork Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Upper Middle Fork Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Upper Middle Fork Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for Bennett Creek, Blue Gulch, Butte Creek, Caribou Creek, Davis Creek, Deerhorn Creek, Granite Boulder Creek, Little Boulder Creek, Little Butte Creek, MFJD, Mill Creek, North Fork Bridge Creek, Placer Gulch, Ragged Creek,

Ruby Creek, Sulphur Creek, Tin Cup Creek, Vincent Creek, Vinegar Creek, Windlass Creek, Tributary to Little Butte Creek, Tributary to Little Boulder Creek, Tributary to Davis Creek as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 107.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide at 107-111.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 111.

Freshwater rearing sites
Water quantity – Minor effect to water quantity for Bennett Creek, Blue Gulch, Butte Creek, Caribou Creek, Davis Creek, Deerhorn Creek, Granite Boulder Creek, Little Boulder Creek, Little Butte Creek, MFJD, Mill Creek, North Fork Bridge Creek, Placer Gulch, Ragged Creek, Ruby Creek, Sulphur Creek, Tin Cup Creek, Vincent Creek, Vinegar Creek, Windlass Creek, Tributary to Little Butte Creek, Tributary to Little Boulder Creek, Tributary to Davis Creek as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 112.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 112.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3 See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 112-113.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 114.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.2. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 120.

2.4.4.3 Lower Middle Fork Allotment

Introduction. Effects from grazing in the Lower Middle Fork Allotment are likely to be limited to 2.29 miles of MCR steelhead critical habitat in Badger Creek, 3.46 miles of steelhead critical habitat in Beaver Creek, 3.98 miles of critical habitat in Big Boulder Creek, 8.27 miles of critical habitat in Big Creek, 1.12 miles of critical habitat in Coyote Creek, 2.33 miles of critical habitat in Deadwood Creek, 3.23 miles of critical habitat in Deep Creek, 0.52 mile of critical habitat in Dry Creek, 2.34 miles of critical habitat in East Fork Big Creek, and 1.12 miles of critical habitat in Elk Creek, 1.72 miles of critical habitat in Granite Boulder Creek, 1.05 miles of

critical habitat in Lemon Creek, 1.13 miles of critical habitat in Lost Creek, 0.85 mile of critical habitat in Mosquito Creek, 2.59 miles of critical habitat in Myrtle Creek, 0.03 mile of critical habitat in North Fork Elk Creek, 0.29 mile of critical habitat in Onion Gulch, 0.70 mile of critical habitat in Pizer Creek, 2.88 miles of critical habitat in Sunshine Creek, 0.71 mile of critical habitat in Swamp Gulch, and 3.03 miles of critical habitat in Wray Creek. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 43.64 miles of critical habitat on the allotment, approximately 6 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The allotment is managed under three permits (01807, 01825, 01728A) using a deferred rotation grazing strategy with a staggered season of use entry system. Deferred rotation grazing allows discontinuation of grazing on different parts of the range in succeeding years. This allows each grazed part to rest during the succeeding growing season. Permit 01807 is authorized 209 cow/calf pairs (1387 AUMs), Permit 01825 is authorized 190 cow/calf pairs (1262 AUMs), and Permit 01728A is authorized 150 cow/calf pairs (997 AUMs) from June 1 to October 31. See BA at 33-35.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Upper Middle Fork, Lower Middle Fork, and Slide BA at 36-37.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Lower Middle Fork Allotment. A 200- to 300-foot long water gap on Big Creek in the Chickenhouse pasture that is used to enter and exit the pasture will be closed when grazing is authorized in the pasture and will not be used for livestock watering. There is no authorized grazing within the Granite Boulder exclosure on Granite Boulder Creek. The Mosquito Riparian Pasture was created in 2011 to protect steelhead critical habitat in Mosquito Creek. Cattle will graze as they are driven through the pasture during turn-on and turn-off but they will not be allowed to loiter or overnight within the exclosure.

For 2012-2016, the bank alteration endpoint in the Pizer Pasture and Granite Boulder Pasture will be 15% because each contains MSRA. None of the 2008-2010 bank alteration exceedences were greater than 15% so they would not trigger an adaptive management response.

Effects on MCR Steelhead. The effects of the proposed action for the Lower Middle Fork Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 145-146.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 145-146.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Upper Middle Fork, Lower Middle Fork, and Slide BA at 102-154.

Over time, it is likely that riparian plant communities in the Lower Middle Fork Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Lower Middle Fork Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Lower Middle Fork Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites
Water quantity – Minor effects to water quantity for Badger, Beaver, Big Boulder, Big, Coyote, Deadwood, Deep, Dry, East Fork Big, Elk, Granite Boulder, Lemon, Lost, Mosquito, Myrtle, North Fork Elk creeks, and Onion Gulch, Pizer Creek, Sunshine Creek, Swamp Gulch, and Wray Creek as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 107-108.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 108-111.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 111.

Freshwater rearing sites
Water quantity – Minor effect to water quantity for Badger, Beaver, Big Boulder, Big, Coyote, Deadwood, Deep, Dry, East Fork Big, Elk, Granite Boulder, Lemon, Lost, Mosquito, Myrtle, North Fork Elk creeks, and Onion Gulch, Pizer Creek, Sunshine Creek, Swamp Gulch, and Wray Creek as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 112.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 112.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 112-114.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 114.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Lower Middle Fork BA at 114-120.

2.4.4.4 Long Creek Allotment

Introduction. Effects from grazing in the ten pastures in the Long Creek Allotment are likely to be limited to 37.3 miles of MCR steelhead critical habitat (Table 69).

Table 69. Miles of MCR Steelhead Critical Habitat in the Long Creek Allotment.

Stream Name	Miles of MCR Steelhead Critical Habitat	Miles of MSRA
Camp Creek	11.2	10.5
Charlie Creek	1.5	
Cottonwood Creek	3.8	
Cougar Creek	2.6	2.6
Coxie Creek	0.5	
Eagle Creek	0.7	
Jonas Creek	1.6	1.3
Lick Creek	4.9	2.4
Long Creek	6.9	6.8
Trail Creek	0.4	
West Fork Lick Creek	2.4	2.4
Unnamed trib. to Camp Creek	0.8	
Total	**37.3**	**26.0**

Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 37.3 miles of critical habitat on the allotment, 26 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The Long Creek Allotment is managed under four permits. The Long Creek Allotment is currently permitted for 967 cow/calf pairs (5,749 AUMs). Livestock grazing occurs from June 1 to October 15 (See BA at 31-32).

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See also Long Creek, Blue Mountain and Camp Creek BA at 33-34.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical

characteristics of the pastures, and management practices such as fencing in the Long Creek Allotment. The Coxie Creek, Flat Camp, Lick Creek and Flood Meadow pastures constitute a deferred rotation grazing system with a staggered season of use entry system. Deferred rotation distributes the early season effects to species among the three pastures over time. The Camp Creek riparian pastures total approximately 900 acres. The three pastures are managed using rest rotation, ensuring that two of the pastures are rested every year. Due to the size of these pastures, no more than 200 cow/calf pairs authorized to graze the riparian pastures for three weeks. More commonly, these pastures will be used to gather livestock. Livestock will overnight in these pastures and be moved the following day. Flat Camp and Lick Creek pastures will be grazed first and second, alternating years. Ladd Pasture will be used as an overnight stop or for unloading when bringing livestock onto the Forest. Camp Creek and Lick Creek Riparian pastures will be used for gathering Flat Camp Cow Camp will house the full-time riders and provide pasture for stock horses. Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use. See BA at 31-32. The Forest Service will visually inspect riparian livestock use in each pasture containing steelhead critical habitat near the mid-point of the grazing rotation for that pasture, and will conduct applicable MIM on any such pasture where it appears that riparian conditions are approaching one or more move triggers or end-point indicators.

For 2012-2016, the bank alteration endpoint Flat Camp, Lick Creek, Hiyu, Camp Creek Riparian, Lick Creek Riparian, and Flood Meadows pastures in the Long Creek Allotment will be 15% since all have MSRAs. The 10% bank alteration endpoint was exceeded in seven pastures in 2008 but was met in 2009-2010. Woody browse exceedance in 2009 and 2010 is attributed to wildlife because these pastures were not used by livestock.

Effects on MCR Steelhead. The effects of the proposed action for the Long Creek Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Long Creek, Blue Mountain and Camp Creek BA at 174-175.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Long Creek, Blue Mountain and Camp Creek BA at 174-175.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Long Creek, Blue Mountain and Camp Creek BA at 106-183.

Over time, it is likely that riparian plant communities in the Long Creek Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Long Creek Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Long Creek Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for Camp, Charlie, Cottonwood, Cougar, Coxie, Eagle, Jonas, Lick, Long, Trail, West Fork Lick creeks, and the unnamed tributary to Camp Creek as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 111-112.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 112-115.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 116.

Freshwater rearing sites

Water quantity – Minor effects to water quantity for Camp, Charlie, Cottonwood, Cougar, Coxie, Eagle, Jonas, Lick, Long, Trail, West Fork Lick creeks, and the unnamed tributary to Camp Creek as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 116.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 116-117.

Floodplain connectivity – Minor effects to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 118-119.

Forage – Minor effects resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 120-125.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 126-127.

2.4.4.5 Fox Allotment

Introduction. Effects from grazing in the Fox Allotment are likely to be limited to 1.64 miles of MCR steelhead critical habitat in Day Creek, 0.98 mile of steelhead critical habitat in Dunning Creek, 4.03 miles of critical habitat in Fox Creek, 0.85 mile of critical habitat in Smith Creek[13], 1.43 miles of critical habitat in Mill Creek and its Tributary, 0.96 mile of critical habitat in Murphy Creek, 2.60 miles of critical habitat in South Fork Long Creek, and 1.41 miles of critical habitat in Cottonwood Creek. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 13.9 miles of critical habitat on the allotment, over 4 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The allotment is managed under four permits grazing separate herd areas (Wiley Creek Pasture, Upper Fox Pasture, South Fork Pasture and Lower Fox Pasture) using a deferred rotation grazing strategy. Deferred rotation grazing allows discontinuation of grazing on different parts of the range in succeeding years. This allows each grazed part to rest during the succeeding growing season. Livestock grazing typically begins in mid-June with 168 cow/calf pairs on the Wiley Creek Pasture and 125 cow/calf pairs on the Upper Fox Pasture. In August, both herds are combined and moved into the South Fork Pasture until the end of the grazing season; usually

[13] Smith Creek is not hydrologically connected to Fox Creek (Jaindl 2006), therefore, steelhead cannot access Smith Creek critical habitat.

September 30 depending on weather conditions and move indicators. Under this grazing system, the Lower Fox Pasture and South Fork Pasture will receive some rest over the five year period. See BA at 22-23.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Fox BA at 23-24.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Fox Allotment.

For 2012-2016, the bank alteration endpoint in the Lower Fox Pasture and South Fork Pasture will be 15% because each contains MSRA. None of the 2008-2010 bank alteration exceedences were greater than 15% so they would not trigger an adaptive management response.

Effects on MCR Steelhead. The effects of the proposed action for the Fox Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on some of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Fox and Hamilton BA at 99-100.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Fox and Hamilton BA at 99-100.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Fox and Hamilton BA at 74-107.

Over time, it is likely that riparian plant communities in the Fox Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a

significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Fox Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Fox Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on some of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for Day, Dunning, Fox, Smith, Murphy, South Fork Long, and Cottonwood creeks, along with Mill Creek and its Tributary as described in Section 2.4.1.3. See also Fox and Hamilton BA at 78.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Fox and Hamilton BA at 79-82.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Fox and Hamilton BA at 83.

Freshwater rearing sites

Water quantity – Minor effect to water quantity for Day, Dunning, Fox, Smith, Murphy, South Fork Long, and Cottonwood creeks, along with Mill Creek and its Tributary as described in Section 2.4.1.3. See also Fox and Hamilton BA at 84.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Fox and Hamilton BA at 84.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Fox and Hamilton BA at 85-86.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Fox and Hamilton BA at 86-92.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Fox and Hamilton BA at 93-94.

2.4.4.6 Camp Creek Allotment

Introduction. Effects from grazing the seven pastures in the Camp Creek Allotment are likely to be limited to 2.17 miles of MCR steelhead critical habitat (Table 70).

Table 70. Miles of MCR Steelhead Critical Habitat in the Camp Creek Allotment.

Stream Name	Miles of MCR Steelhead Critical Habitat	Miles of MSRA
Camp Creek	0.88	0.75
MFJDR	1.29	1.07
Total	**2.17**	**1.82**

Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 2.17 miles of critical habitat on the allotment, 1.82 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The Camp Creek Allotment is managed under a single permit. The allotment is currently permitted for 50 cow/calf pairs (330 AUMs) from June 1 to October 30. The Camp Creek Allotment consists of seven pastures. The Middle Camp Creek Pasture contains the MFJDR and Camp Creek. In 2011, an exclosure was constructed along both the MFJDR and Camp Creek. As a result there will be no cattle access to either the River or Camp Creek with the exception of a water gap on Camp Creek near the bridge on the 3690 road. The Campground Pasture is a very small unit, which contains a short segment (less than 0.25 mile) of Camp Creek. This pasture will be removed from the allotment rotation beginning in 2012. Use of this pasture will only occur as cattle are driven (not allowed to trail or linger) through to enter and exit the Upper Pasture. The Road Pasture is an upland pasture with no fish bearing streams. There is a water gap on Camp Creek that is about 25 feet long and is located upstream from the bridge on the 3690 road and below private land. It serves as a water source for the Road Unit and is the only portion of Camp Creek in the Road Unit. The North Pasture is an isolated south facing unit on the north side of County Road 20. It is entirely and upland pasture and does not contain any fish bearing streams therefore it will not be discussed further. The Gibbs Meadow Pasture is an old hay field

located south of the MFJDR. A small section of Jungle Creek flows through this pasture, however it does not contain steelhead critical habitat and will not be discussed further. The Upper Camp Pasture is an isolated pasture east of the 36 road. It is entirely and upland pasture and does not contain any fish bearing streams therefore it will not be discussed further.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Long Creek, Blue Mountain and Camp Creek BA at 33-34.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Camp Creek Allotment. For example, only Lower Camp and Middle Camp pastures will be grazed, with the Lower Pasture used only early in the grazing season. Cattle will only be driven through Campground Pasture. The remaining pastures in this allotment, Road, North, Gibb, and Upper either do not have fish-bearing streams or do not contain steelhead critical habitat.

For 2012-2016, the bank alteration endpoint in the Lower Camp pasture will be 15% because it contains MSRA. Implementation monitoring for grazing in the Lower Riparian Pasture indicates that streambank alteration was 1% in 2008, 3% in 2009 and 7% in 2010.

Effects on MCR Steelhead. The effects of the proposed action for the Camp Creek Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Long Creek, Blue Mountain and Camp Creek BA at 174-175.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Long Creek, Blue Mountain and Camp Creek BA at 174-175.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Long Creek, Blue Mountain and Camp Creek BA at 106-183. The impacts will be reduced in this allotment since it will be maintained for emergency use.

Over time, it is likely that riparian plant communities in the Camp Creek Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR

steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Camp Creek Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Camp Creek Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for the MFJDR and Camp Creek as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 111-112.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 112-115.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 116.

Freshwater rearing sites

Water quantity – Minor effect to water quantity for the MFJDR and Camp Creek as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 116.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 116-117.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 118-119.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 120-125.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Long Creek, Blue Mountain and Camp Creek BA at 126-127.

2.4.4.7 Slide Creek Allotment

Effects from grazing in the Slide Creek Allotment are likely to be limited to 2.3 miles of MCR steelhead critical habitat in Bear Creek, 1.3 miles of steelhead critical habitat in Camp Creek, .05 mile of critical habitat in Lick Creek, 2.9 miles of critical habitat in Slide Creek, and 2.6 miles of critical habitat in Whiskey Creek. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 9.2 miles of critical habitat on the allotment, approximately 2.4 miles have been identified as MSRAs. As described in Section 2.3.5.7, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The Slide Creek Allotment consists of three main pastures (Sale Area, East, West) using a deferred rotation grazing strategy with a staggered season of use entry system. Deferred rotation grazing allows discontinuation of grazing on different parts of the range in succeeding years. This allows each grazed part to rest during the succeeding growing season. The Slide Creek Allotment is currently permitted for 777 cow/calf pairs (4,620 AUMs) from June 1 to October 15. This allotment is managed through a grazing association with full-time riders. Range Readiness and utilization levels may vary on/off dates and pasture rotations within the parameters of authorize use. Hog Creek, Slide Creek Riparian, Camp Creek Riparian, and Slide Holding pastures will continue to be used for gathering purposes or to trail through when moving from one pasture to another during the season. See BA at 33-35.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Upper Middle Fork, Lower Middle Fork, and Slide BA at 36-37.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Slide Creek Allotment. In addition to the MSRA, the MNF and the permittees have identified reaches of steelhead critical habitat that are the most difficult to manage and have built riparian enclosures around them. These enclosures effectively eliminate grazing in these areas and are not authorized for grazing. Creating these enclosures has increased the permittees ability to effectively manage the larger pastures in a more uniform manner. These enclosures account for approximately 3.95 miles of steelhead critical habitat on Whiskey Creek and Slide Creek.

The Whiskey Riparian Pasture is 211 acres in size and contains approximately 1.5 miles of steelhead critical habitat on Whiskey Creek. A 2010 spawning survey found one potential redd located just inside the pasture boundary fence on Whiskey Creek. The Slide Riparian Pasture is 380 acres and contains approximately 1.3 miles of steelhead critical habitat on Slide Creek. This riparian pasture is generally excluded from grazing. However, it will be used to facilitate moves between the Sale Area and West pastures. The Hog Creek, Sale Area, Whiskey Flats, and the Slide Holding pastures do not contain steelhead critical habitat.

For 2012-2016, the bank alteration endpoint in the Slide Riparian Creek Pasture and the Camp Creek Riparian Pasture will be 15% because each contains MSRA. None of the 2008-2010 bank alteration exceedences were greater than 15% so they would not trigger an adaptive management response.

Effects on MCR Steelhead. The effects of the proposed action for the Slide Creek Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 145-146.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 145-146.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Upper Middle Fork, Lower Middle Fork, and Slide BA at 102-154.

Over time, it is likely that riparian plant communities in the Slide Creek Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Slide Creek Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Murderers Creek Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on many of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for Bear, Camp, Lick, Slide, and Whiskey creeks as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 107.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 107-111.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 111.

Freshwater rearing sites

Water quantity – Minor effect to water quantity for Bear, Camp, Lick, Slide, and Whiskey creeks as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 112.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 112.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3 See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 112-113.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 114.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Upper Middle Fork, Lower Middle Fork, and Slide BA at 120.

2.4.4.8 York On/Off Allotment

Introduction. Effects from grazing in the York On/Off Allotment are likely to be limited to 0.88 mile of MCR steelhead spawning and rearing habitat in the Slide Pasture. The East Pasture does not contain critical habitat or MSRA. The York On/Off Allotment is used by a small number of livestock: only 12 cow/calf pairs during the season and thus the effects of use by this small number of individual animals is considered to be minimal. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1 and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of the 0.88 miles of critical habitat on the allotment, 0.30 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The allotment is managed under one permit grazing 12 cow/calf pairs and is used by the permittee as an on-off allotment from June 1 through October 31. Endpoints were met in 2008, 2009, and 2010. See BA at 20-21. Annual Use Indicators including browse use, greenline stubble and streambank alteration, including move triggers and end point indicators will be used to manage this allotment.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See York On/Off BA at 21-22. The small number of individual livestock used on this allotment will cause the effects as described in following sections.

However, these effects are relatively low due to the low number of individual livestock that will be on the York On/Off Allotment.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices York On/Off Allotment. There is no steelhead critical habitat in East Pasture. The steelhead critical habitat on Slide Creek runs through the Forest portion of this pasture for 0.88 miles, which includes two identified MSRA reaches. These areas are production flats and may contain valuable spawning grounds. They are low gradient, open meadow reaches that are likely steelhead spawning habitat and are more sensitive to cattle grazing. There is not designated critical habitat or MSRA in the East Pasture.

For 2012-2016, the bank alteration endpoint in the Slide Pasture will be 15% because it contains a MSRA. A DMA site has yet to be determined.

Effects on MCR Steelhead. The effects of the proposed action for the York On/Off Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on some of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in section 2.4.1.1. See also York On/Off BA at 111-112.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in section 2.4.1.1. See also York On/Off BA at 111-112.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the York On/Off BA at 112-120.
Over time, it is likely that riparian plant communities in the York On/Off Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some

minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the York On/Off Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the York On/Off Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on some of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites
Water quantity – Minor effects to water quantity for Slide Creek as described in Section 2.4.1.3. See also York On/Off BA at 74.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also York On/Off BA at 75-78.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also York On/Off BA at 79.

Freshwater rearing sites
Water quantity – Minor effects to water quantity for Slide Creek as described in Section 2.4.1.3. See also York On/Off BA at 79.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also York On/Off BA at 79-80.

Floodplain connectivity – Minor effects to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also York On/Off BA at 81-82.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also York On/Off BA at 82-83.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also York On/Off BA at 89-90.

2.4.5 Allotment-Specific Effects on NFJDR Population

2.4.5.1 Fox Allotment

See Section 2.4.4.5 for information on the Fox Allotment.

2.4.5.2 Donaldson Allotment

Introduction. Effects from grazing in the Donaldson Allotment are likely to be limited to 1.0 mile of MCR steelhead critical habitat in Boulder Creek, 0.8 mile of steelhead critical habitat in Fox Creek, 0.2 mile of critical habitat in Camp Creek, 0.6 mile of critical habitat in Cottonwood Creek. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 2.6 miles of critical habitat on the allotment, 1.15 miles have been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The Donaldson Allotment consists of two main pastures (Glide and Hinton) that will be managed using a deferred rotation grazing strategy. This allotment is currently permitted for 100 cow/calf pairs (599 AUMs) from June 15 to October 30. See BA at 22-23.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Donaldson, Deer Creek, and Indian Ridge BA at 24-25.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Donaldson Allotment.

For 2012-2016, the bank alteration endpoint in the Glade Pasture will be 15% because it contains MSRA. None of the 2008-2010 bank alteration exceedences were greater than 15% so they would not trigger an adaptive management response.

Effects on MCR Steelhead. The effects of the proposed action for the Donaldson Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on some of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Donaldson, Deer Creek, and Indian Ridge BA at 84-86.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Donaldson, Deer Creek, and Indian Ridge BA at 84-86.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Donaldson, Deer Creek, and Indian Ridge BA at 58-97.

Over time, it is likely that riparian plant communities in the Donaldson Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Donaldson Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Donaldson Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on some of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for Boulder, Fox, Camp and Cottonwood creeks as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 62-63.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 63-66.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 67.

Freshwater rearing sites
Water quantity – Minor effect to water quantity for Boulder, Fox, Camp and Cottonwood creeks as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 67.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 67-68.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 69-70.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 71.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 71-78.

2.4.5.3 Deer Creek Allotment

Introduction. Effects from grazing in the Deer Creek Allotment are likely to be limited to 1.22 miles of MCR steelhead critical habitat in West Fork Deer Creek. Effects to critical habitat and MCR steelhead in the identified streams are expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. Of 1.22 miles of critical habitat on the allotment, less than 1 mile has been identified as MSRAs. As described in Section 2.3, MSRAs are identified stream reaches of high quality steelhead spawning and rearing critical habitat as determined by the MNF. MSRAs are typically steelhead critical habitat that is most accessible and sensitive to livestock use and vulnerable to livestock impacts. Consequently, MSRAs provide a useful basis for distinguishing among areas within the allotments so as to focus special analysis and management attention on those areas the MNF has already determined may be the most susceptible to causing adverse impacts to the listed fish from grazing. For example, MSRA locations will guide application of bank alteration values. Additionally, spawning surveys will occur within all pastures containing MSRAs where turn out is expected to occur prior to June 30.

The allotment is managed under one permit using a rest rotation grazing strategy. Deferred rotation grazing allows discontinuation of grazing on different parts of the range in succeeding years. This allows each grazed part to rest during the succeeding growing season. The Deer Creek Allotment is currently permitted for 88 cow/calf pairs (371 AUMs) from June 11 to September 15. See BA at 23.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Donaldson, Deer Creek, and Indian Ridge BA at 24-25.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Deer Creek Allotment.

For 2012-2016, the bank alteration endpoint in the Deer Creek Pasture will be 15% because each contains MSRA. None of the 2008-2010 bank alteration exceedences were greater than 15% so they would not trigger an adaptive management response.

Effects on MCR Steelhead. The effects of the proposed action for the Deer Creek Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on some of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Donaldson, Deer Creek, and Indian Ridge BA at 85-86.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Donaldson, Deer Creek, and Indian Ridge BA at 85-86.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Donaldson, Deer Creek, and Indian Ridge BA at 58-97.

Over time, it is likely that riparian plant communities in the Deer Creek Allotment will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably

reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Deer Creek Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. The effects of the proposed action on MCR steelhead critical habitat PCEs for the Deer Creek Allotment are described below. As noted above, cattle access to critical habitat is limited or of short duration on some of the pastures in the allotment, which will further minimize effects to PCEs.

Freshwater spawning sites

Water quantity – Minor effects to water quantity for West Fork Deer Creek as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 62-63.

Water quality – Minor effects to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 63-66.

Substrate – Minor increase in substrate fine sediment for the above identified creeks as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 67.

Freshwater rearing sites

Water quantity – Minor effect to water quantity for West Fork Deer Creek as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 67.

Water quality – Minor, short-term impacts to water quality for the above identified creeks for water temperature, sediment, and nutrients as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 67-68.

Floodplain connectivity – Minor effect to floodplain connectivity for the above identified creeks as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 69-70.

Forage – Minor effect resulting in a reduction in prey for the above identified creeks as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 71.

Natural cover – Minor, reduction in natural cover for the above identified creeks for overhead vegetative cover and large wood debris as described in Section 2.4.1.3. See also Donaldson, Deer Creek, and Indian Ridge BA at 74-77.

2.4.5.4 Indian Ridge Allotment

Introduction. Effects from grazing in the Indian Ridge Allotment are likely to be limited to 300 feet of occupied MCR steelhead habitat in Indian Creek. Effects to habitat and MCR steelhead in the identified stream is expected to be consistent with the general effects described in Sections 2.4.1.1, and 2.4.1.2; further detail and reference to the BA is provided below. Additionally, specific aspects of the allotment most relevant to allotment specific effects, including allotment conditions and project design criteria, are highlighted below.

Conditions and Project Design Criteria for the Allotment. There are no MSRAs identified for this allotment.

The allotment is managed under one permit that consists of five pastures (West, East, Boothill, Ridge, and Highway) using a deferred rotation grazing strategy using the four larger pastures. Deferred rotation grazing allows discontinuation of grazing on different parts of the range in succeeding years. This allows each grazed part to rest during the succeeding growing season. The Indian Ridge Allotment is currently permitted for 94 cow/calf pairs (396 AUMs) from June 11 to September 15. See BA at 22-23.

All general project design criteria intended to minimize effects on steelhead and critical habitat are applied to the allotment. See Donaldson, Deer Creek, and Indian Ridge BA at 24-25.

For both steelhead and their critical habitat, grazing impacts to riparian habitat will be further limited in some pastures as a result of the distribution of steelhead critical habitat, physical characteristics of the pastures, and management practices such as fencing in the Indian Ridge Allotment. There is no critical habitat on any pasture on the allotment. The only steelhead access is 300 feet in Indian Creek in the East Pasture.

Effects on MCR Steelhead. The effects of the proposed action for the Indian Ridge Allotment on MCR steelhead are described below. As noted above, cattle access to MCR steelhead habitat is limited or of short duration on many of the pastures of the allotment, which will further minimize effects to steelhead.

Direct Effects to Steelhead

Redds. Cattle will have access to spawning habitat during the spawning period and effects are anticipated as described in Section 2.4.1.1. See also Donaldson, Deer Creek, and Indian Ridge BA at 84-85.

Adults. Cattle will have access to spawning habitat during the spawning period; however, for reasons discussed in Section 2.4.1.1. NMFS does not anticipate adults will be affected by cattle.

Juveniles. Cattle will have access to streams during times of juvenile rearing and effects are anticipated as described in Section 2.4.1.1. See also Donaldson, Deer Creek, and Indian Ridge BA at 84-85.

Habitat Effects on Steelhead

The effects of the proposed action on MCR steelhead from impacts to riparian habitat identified above will be as described in Section 2.4.1.2 and in the Donaldson, Deer Creek, and Indian Ridge BA at 58-97.

Over time, it is likely that riparian plant communities in the Indian Ridge Allotments will improve, leading to improvements in stream habitat quality. NMFS does not expect the small anticipated increase in stream temperature to appreciably reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will result in a small amount of fine sediment entering streams, and some individual MCR steelhead will experience the adverse effects associated with fine sediment inputs, this will not appreciably reduce or prevent the increase of population-scale abundance or productivity. Although sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead, this small reduction in food availability is not significant enough to reduce or prevent the increase of MCR steelhead abundance or productivity at the population scale. Although the proposed action will reduce the recruitment of large woody debris, this is not expected to have a significant effect on MCR steelhead survival. The minor water quality effects caused by livestock waste will result in negligible effects on MCR steelhead. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management. When all aspects of the MNF's proposed grazing management are considered collectively, habitat quality should improve, leading to increased survival of juvenile MCR steelhead in the Indian Ridge Allotment. This in turn will eventually lead to improvements in population abundance and productivity.

Effects on Critical Habitat. There is no MCR steelhead critical habitat within this allotment. The effects of the proposed action on MCR steelhead critical habitat PCEs downstream from this allotment will be insignificant.

2.5 Cumulative Effects

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

Between 1990 and 2000, the population of Grant County increased by 1.0%. However, between 2000 and 2010, the population of Grant County is estimated to have decreased by 6.2%. Based on these figures it is difficult to determine whether the population will continue to decrease, level out, or increase again. However, since the most recent trend is an estimated decrease in population, NMFS assumes that the population will remain stable or decrease over the next 5 years. Future private and state actions will continue within the action area at approximately the same level at which they are occurring now since the population will likely not increase. These actions are described in the environmental baseline section above and cumulative effects section of the BA. As the human population in the action area remains somewhat constant, demand for

agricultural, commercial, or residential development, and recreation will also remain somewhat constant.

The ODFW might choose to increase elk or deer populations in the future by further restricting harvest through hunting regulations, but NMFS has no information that ODFW intends to do this within the five year term of this consultation, so elk and deer populations are assumed to remain fairly stable into the future. The effects of elk and deer in the action area are described in the environmental baseline.

There is a history of some livestock trespassing onto Federal land from adjacent private land in the action area. The MNF has largely been successful addressing these issues. However, given the abundance of landowners grazing cattle adjacent to MNF land, it is likely that trespass will occur in the future at similar levels. Laycock Unit in the Hanscomb Allotment has a history of heavy recreational use resulting in erosion and sediment transport.

Because the action area is primarily Federal land, population growth and development are not likely to cause measurable effects within the action area, and recreation is expected to continue at similar levels. Therefore, the conservation value of the habitat within the action area is likely to steadily increase, with natural recovery from the historic, less conservative land management. NMFS is not aware of any specific future non-Federal activities within the action area that would cause greater effects to a listed species or a designated critical habitat than presently occur. Thus, NMFS assumes that future private and state actions will continue within the action area, at roughly the same level. Due to MNF efforts, NMFS does not anticipate livestock trespassing will impede continuing habitat recovery across the allotments. The cumulative effects in the action area are not expected to further reduce the conservation of designated MCR steelhead critical habitat, or the productivity, spatial distribution, or abundance of MCR steelhead populations.

2.6 Integration and Synthesis

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 (Section 2.4) to the environmental baseline (Section 2.3) and the cumulative effects (Section 2.5) 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 (Section 2.2).

The MCR steelhead populations occurring within the action area include the MFJD, SFJD, UJDR, and NFJD populations. The MPG-level recovery criteria from the MCR Steelhead Recovery Plan (NMFS 2009) require that the LJDR, the NFJD, and either the MFJD or the UJDR populations should be viable. One of these populations should be highly viable. The SFJD population must be at a maintained viability status (NMFS 2009). The MFJD and UJDR populations do not meet the recovery plan viability criteria, while the NFJD population is "highly viable." The SFJD population is currently at maintained status (Ford *et al*. 2010) and

must remain at this rating, or improve, for the John Day MPG-level recovery criteria to be met. The MFJD and UJDR populations are not currently viable, and one of these populations must reach viable status before the MPG-level criteria can be met.

As described in Section 2.4.1.1, the proposed action is likely to result in disturbance of rearing juvenile steelhead. Disruptions to essential juvenile behaviors of feeding and sheltering are likely to be limited to stream reaches where cattle can easily approach or enter the water. Disruptions are not likely to occur in streams that are less accessible due to the occurrence of woody vegetation around the streambanks or the presence of large amounts of down woody debris near streams. The implementation of a variety of conservation measures, including extensive fencing in MSRAs and other areas, placing mineral supplements away from streams, providing upland water sources, grazing sensitive areas early in the season when upland forage and water is available, or providing a full-time rider will reduce the amount of time cattle spend in riparian areas and the frequency of disruption to juvenile MCR steelhead. Disturbance of adult behaviors is possible on the Beech Creek Allotment. These disturbances are expected to be minimal because cattle spend less time in riparian areas during the spring and the MNF proposes management measures designed to reduce the amount of time cattle spend in riparian areas. The disruptions to essential behaviors caused by the proposed action will not be significant enough to appreciably reduce or prevent the increase of abundance or productivity of any populations addressed by this consultation.

As described in Section 2.4.1.1, the proposed action will occasionally result in cattle trampling MCR steelhead redds. Any redd trampling that occurs is likely to dislodge or destroy developing eggs or alevins in streams where spawning occurs within the action area. Trampling will result in the death or injury of MCR steelhead eggs, alevins, or juveniles. However, the total number of redds trampled is expected to be low. This is because cattle spend significant amount of time in uplands during the time MCR steelhead redds are vulnerable and the MNF is proposing a number of measures to detect and protect redds. The small amount of individuals killed by redd trampling is not significant enough to appreciably reduce or prevent the increase of abundance or productivity of any populations addressed by this consultation.

The potential impact of the proposed action on MCR steelhead habitat is described in Section 2.4.1.2. Although the proposed action will result in some impacts to MCR steelhead habitat, such as minor streambank alteration, small reductions in shade due to removal of herbaceous vegetation, and introduction of fine sediments into streams, these impacts will be minimized by the full suite of management measures proposed by the MNF. In particular, the designation and more conservative management of MSRAs will ensure that impacts of the proposed action are limited in areas where MCR steelhead and the habitat are most vulnerable. The monitoring and adaptive management components of the proposed action will ensure that these management measures are carried out as proposed. The MNF is also incorporating more progressive grazing management strategies such rest rotation and deferred rotation that will reduce the overall impacts of grazing on riparian areas and stream habitat.

The potential impact of the proposed action on MCR steelhead critical habitat is described in Section 2.4.1.3. These impacts include minor streambank alteration, small reductions in shade due to removal of herbaceous vegetation, introduction of fine sediments into streams, a small

reduction in forage, and a minor reduction in overhead cover. These impacts will be minimized by the full suite of management measures proposed by the MNF.

The information presented in the environmental baseline section (Section 2.3) indicates that many streams within the action areas are degraded due to past land management practices. The information also indicates that herds of deer and elk can have some, albeit minor, effects to riparian areas and stream channels throughout the action area. Recent information from effectiveness monitoring efforts indicates that some attributes of stream habitat quality are improving while habitat quality in some streams remains static. Information presented in the BAs and environmental baseline section also indicates that in some watersheds, certain stream habitat attributes, such as temperature and substrate embeddedness, are highly influenced by watershed road density and legacy effects from past land management practices. In these watersheds, improvements to stream habitat quality may be slow whether the proposed action is carried out or not. Regardless of the current condition of stream habitat in the action area, the proposed action is expected to allow for improvement of riparian areas over time which will in turn allow for the improvement of stream habitat quality. Overtime, the proposed action should allow for the development of habitat conditions capable of supporting viable populations of MCR steelhead.

Information on endpoint indicator compliance presented in the environmental baseline section, shows that permittees have met endpoint indicators in most allotments over the last three years. The MNF is proposing a more definitive adaptive management process to respond to instances when end point indicators are not met. NMFS is confident that the new adaptive management process will allow MNF to address any resource conditions issues that should arise on the allotments and keep effects of the proposed action within the scope of this opinion.

As noted in Sections 2.2, 2.2.2, and 2.3, climate change is likely to affect MCR steelhead and their habitat in the John Day River basin. Although these effects are expected to be mostly negative, it is difficult to impossible to predict the specific changes that will result from climate change over the term of this consultation (2012-2016). Over the past several years, precipitation levels in the John Day Basin have varied widely,[14] with high waters years producing favorable conditions for MCR steelhead and low water years producing less favorable conditions. This has made it even more difficult to predict how short term changes in climate might affect MCR steelhead and their habitat. NMFS will revisit the environmental baseline and information on climate change in future consultations on the proposed action.

The cumulative effects of state and private actions within the action area are anticipated to continue at approximately the same level that they are now occurring and will cause no discernible change to habitat condition or trend since the action area consists almost exclusively of Federal land, and the population of Grant County does not appear to be growing.

In summary, the proposed action will result in minor disturbances to MCR steelhead, but these disturbances will not appreciably reduce or prevent the increase of abundance or productivity of the populations addressed by this consultation. The proposed action will cause minor effects to MCR steelhead habitat, but these impacts to habitat will not appreciably reduce or prevent the

[14] See: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/basinsweplots/or/basinplotjohn%20day12.gif

increase of abundance or productivity of the populations addressed by this consultation. The proposed action will have no effect on population spatial structure or diversity. The NFJD population is already highly viable and does not need significant habitat improvements in order to meet recovery goals. The proposed action affects only a tiny portion of this population's habitat and its contribution to recovery will not be affected by the proposed action. The SFJD population has met its required status in order to satisfy the recovery goals, and the continued habitat improvement allowed for by the proposed action will help to ensure this population maintains its current status. The abundance and productivity of the UJDR and MFJD populations need to improve for recovery goals to be met. By allowing for improvements to stream habitat over time, the proposed action is consistent with the recovery strategy of increasing population abundance and productivity. The proposed action is consistent with a recovery scenario that allows the John Day MPG to reach viable status. This is critical step toward recovery of the DPS as whole, because all MPGs must be considered viable for the DPS to reach recovery.

The conservation value of critical habitat within the action area varies, but for the most part, conservation value of this habitat is high. The proposed action will have minor effects on the quality and function of critical habitat PCEs as described in Section 2.4.1.3. The full suite of management measures proposed by the MNF will ensure that effects to PCEs remain minimal. As improvements to habitat quality accrue over time, critical habitat within the action area will be able to serve its intended conservation role, supporting viable populations of MCR steelhead.

2.7 Conclusion

After reviewing the current status of the listed species and its critical habitat, the environmental baseline within the action area, the effects of the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of MCR steelhead nor destroy or adversely modify critical habitat designated for this species.

2.8 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.[15] Section 7(b)(4) and Section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA, if that action is performed in compliance with the terms and conditions of this incidental take statement.

2.8.1 Amount or Extent of Take

The proposed action will result in cattle entering streams to drink, to move between grazing locations, and to graze the streambank. Cattle will also approach streams and walk beside streams while grazing in riparian areas. Cattle will be in and near stream reaches at times when the reaches are used by juveniles for rearing and migration. MCR steelhead eggs and pre-emergent fry will also be present in the gravel of spawning redds.

As described in detail in the effects section of this document, incidental take is reasonably certain to occur when juveniles are startled by cattle and displaced from preferred areas. On the Beech Creek and Murderers Creek allotments, cattle approaching or entering the water may interfere with adult behaviors. Also as described, incidental take is reasonably certain to occur when redds containing eggs or pre-emergent fry are stepped upon by cattle and the eggs or fry are injured or killed by being crushed or excavated and washed away. Trampled redds are the best indicator of these pathways of incidental take because: (1) Trampled redds have the most biological impact in numbers of individuals seriously injured per episode; (2) trampled redds are indicative of cattle presence and activity at times and places where the other most sensitive MCR behaviors of spawning and early rearing take place; and (3) trampled redds lend themselves to being observed by a monitoring program because 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.

NMFS predicts that not more than two redds will be observed to be trampled in any one year in all allotments combined. NMFS recognizes that the redd monitoring program subsamples spawning reaches as 20% of total, plus MRSAs, so the actual number of redds trampled could possibly exceed the number of observed trampled redds. However, this subsample includes the spawning reaches known to have an appreciable portion of total redds in every year, and will reliably indicate if redd trampling is occurring elsewhere. No steelhead redds have been observed to have been trampled on the MNF since the year 2000. So, while it remains important to ensure the protective measures are effective in protecting redds from trampling, observation of this carefully selected subsample of spawning reaches is adequate to accomplish this. Two MCR

[15] 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.

steelhead redds observed to have been trampled per year is the maximum amount of take anticipated to occur as a result of the proposed action.

Incidental take is also reasonably certain to occur as a result of the habitat impacts of the proposed action. As described in detail in the effects section of this document, cattle grazing has a variety of effects to steelhead habitat in the areas where cattle are likely to access on the allotments identified in the opinion. Compaction of soils and formation of trails accelerates runoff, making high flows higher and low flows lower. Removal of vegetation can reduce stream shade as described in the effects analysis, increasing water temperature and vulnerability to predation. Near-channel grazing and trailing reduces plant vigor and root depth and so reduces bank resistance to erosion in high flows. The mechanical action of hooves alters streambanks and exposes bare soil. Banks may erode more readily, increasing channel width to depth ratio which increases solar heating of the water, and makes juvenile more vulnerable to avian predation. Erosion from uplands and streambanks tends to fill pools needed for resting, hiding and foraging. Fine sediments fill interstitial spaces between gravels, suffocate eggs and pre-emergent fry, and reduce MCR steelhead forage. These pathways of incidental take are many and synergistic. The number of individual MCR steelhead injured by these mechanisms cannot practically be counted. So, NMFS provides an extent of take indicator as a surrogate indicator for the take caused by habitat impacts.

Percent bank alteration is the best extent of take indicator for the habitat pathways of incidental take because: (1) The habitat effects of cattle grazing increase with cattle proximity to streams; (2) all habitat pathways of take will vary in proportion to bank alteration including shade, channel geometry, and run-off; (3) measured streambank alteration is a function of within-season grazing as opposed to other indicators that might require long-term monitoring; and (4) bank alteration is measured by a standardized and repeatable methodology. It is important to point out here that NMFS is not saying that bank alteration is, in itself, take. Nor does bank alteration necessarily and directly cause take of MCR steelhead in every case. Rather, NMFS is certain that the overall habitat effects of grazing cattle on MNF will cause take, and that measured bank alteration is the best currently available single indicator that is proportional to all of those effects.

It is also important to point out that, largely due to NMFS' use of bank alteration as an extent of take indicator in the prior opinion for MNF grazing, some recent research has challenged the standardized "MIM" measuring methodology. None of that research has shown that the established measurement methodology underestimates bank alteration, so any purported imperfections do not increase risk to MCR steelhead. And the research has not yet provided a practical and proven alternative measurement methodology nor has it provided adequately reliable data or findings on the extent of any overestimation. As explained in Appendix D to the BA, the MNF will continue to apply a bank alteration standard with MIM measuring methodology. Accordingly, NMFS adopts the MIM methodology for its extent of take indicator. There is no practical alternative at this time, and, even if there were, it would make no sense to attempt to impose a separate methodology on the MNF who will be applying the MIM methodology. Additionally, the proposed action includes a provision that, should such a practical and proven alternative methodology become available during the five-year term of this opinion, it may be incorporated in the action agency's monitoring program and utilized for purposes of extent of take. See BA Appendix D.

The proposed action includes endpoint indicators of bank alteration, as measured by the established MIM methodology, within established DMAs or other suitable identified locations[16] of 15% for some pastures and 20% for other pastures, depending upon sensitivity of riparian areas. The MNF grazing program is very large and complex and some modest exceedence of endpoint indicators is practically inevitable, and NMFS anticipated some exceedences in our analysis of effects. Frequent and severe exceedences will indicate incidental take in excess of what was contemplated in NMFS' opinion.

Extent of take limitations are:

- Measured bank alteration 21% or more over the endpoint indicators of not more than two DMAs within a calendar year, or
- Measured bank alteration of 14 to 20% over the endpoint indicator of not more than three DMAs within a calendar year, or
- Measured bank alteration of 7 to 13% over the endpoint indicator of not more than six DMAs within a calendar year, or
- Cumulative measured bank alteration over the endpoint indicators of all DMAs added together of not more than 60 percentage points total within any calendar year.
- Exceeding any of these limits will trigger the reinitiation provisions of this opinion.

These bank alteration extent of take limitations represent, respectively, two major overages, three moderate overages, six minor overages, and any commensurate mixed combination of the above plus the overages that are within the margin of measurement error. These overages are not intended by the proposed action but, in a grazing program as large as MNF's, are reasonably likely to occur accidently, do not indicate a program out of control, and do not change the conclusions of NMFS' opinion, above.

Exceeding these extent of take limitations within a calendar year, however, may indicate a grazing program that is facing greater issues of compliance than anticipated, and would be an extent of take that exceeds what is contemplated by the conclusions of the opinion and require further consultation. These indicators are triggers for reinitiation:

- Three or more steelhead redds observed to have been trampled in any year, or
- Measured bank alteration 21% or more over the endpoint indicators of three or more DMAs within a calendar year, or
- Measured bank alteration of 14 to 20% over the endpoint indicator of four or more DMAs within a calendar year, or
- Measured bank alteration of 7 to 13% over the endpoint indicator of seven or more DMAs within a calendar year, or
- Cumulative measured bank alteration over the endpoint indicators of all DMAs added together of 61 or more percentage points total within any calendar year.

[16] MNF employs several types of monitoring location designations. MNF may call a location a DMA, a key area, or something else, depending upon the criteria they used to identify and designate the area. For purposes of brevity in this incidental take statement, we refer to a single location selected for use in each pasture as "DMA" even though many of these locations are not, technically, DMAs, except in term and condition 3.c. below where we address each type of monitoring location.

2.8.2 Effect of the Take

In the accompanying biological opinion, NMFS determined that this level of anticipated take is not likely to result in jeopardy to the species or adverse modification to critical habitat.

2.8.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures to minimize the amount or extent of incidental take (50 CFR 402.02). The MNF shall:

1. Minimize incidental take caused by trampling of MCR steelhead redds and rearing juveniles by performing spawning surveys and protecting redds.
2. Minimize incidental take caused by habitat impacts of the proposed action by performing certain administrative actions when bank alteration endpoint indicators are exceeded.
3. Implement a program of monitoring and reporting to ensure that the amount and extent of take limits are not exceeded.

2.8.4 Terms and Conditions

"Terms and conditions" implement the reasonable and prudent measures (50 CFR 402.14). These must be carried out for the exemption in section 7(o)(2) to apply.

1. To implement reasonable and prudent measure #1 (redd trampling and juvenile disturbance), the MNF shall:

    a. In pastures that will be grazed prior to June 30, perform surveys before turnout on all spawning reaches within the most sensitive riparian areas (MSRA), and on not less than 20% of all other designated critical habitat, to locate and map steelhead redds.
    b. Implement positive measures to protect each mapped redd, including but not necessarily limited to: pasture rest or alternative rotation, exclusion fencing, or protective herding.
    c. Prior to cattle turnout, share redd maps with permittees and coordinate positive measures to be implemented with permittees.

2. To implement reasonable and prudent measure #2 (habitat effects), the MNF shall apply the following interim measures:

    a. Whenever bank alteration is determined to be 1 to 6% in excess of the endpoint indicator, the permittee shall be contacted to plan remedial action. The MNF shall, at a minimum, send a letter to the permittee, with copy to NMFS, documenting the remedial action plan in detail.
    b. Whenever bank alteration is measured at 7 to 13% in excess of the endpoint indicator, MNF shall, at a minimum, issue a notice of non-compliance including a remedy order, with copy to NMFS. If the non-compliance occurs a second time on the same pasture within the five-year term of this opinion, the MNF shall

reduce authorized AUMs by not less than 25% for at least the next scheduled year of grazing or rest the pasture for at least the next scheduled year of grazing.

c. Whenever bank alteration is measured at 14 to 20% in excess of the endpoint indicator, MNF shall, at a minimum, issue a notice of non-compliance including a remedy order, with copy to NMFS, and shall rest the pasture for at least the next scheduled year of grazing or reduce authorized AUMs by not less than 25% for at least the next scheduled year of grazing.

d. Whenever bank alteration is measured at 21% or more above the endpoint indicator, the MNF shall, at a minimum, issue a notice of non-compliance including a remedy order, with copy to NMFS. The MNF shall rest the pasture for at least the next scheduled year of grazing and shall reduce authorized AUMs by not less than 25% for at least the following scheduled year of grazing.

3. To implement reasonable and prudent measure #3 (monitoring and reporting), the MNF shall:

a. The MNF shall visually inspect riparian livestock use in each steelhead-bearing pasture near the mid-point of the grazing rotation for that pasture, and will conduct applicable Multiple Indicator Monitoring (MIM) on any such pasture if it appears that riparian conditions are approaching one or more move triggers or end-point indicators.

b. For each steelhead-bearing pasture grazed longer than 30 days in the months of August, September, and/or October, the MNF will have at least one additional in-season field compliance check. The number of additional compliance checks will be determined by the length of season in the pasture (*i.e*., 60-day grazing season would have a minimum of two checks).

c. At a minimum, the MNF shall use the following locations and protocols in each grazed steelhead-bearing pasture for end of season end-point indicator monitoring:

i. Pastures with DMA –The MIM protocol will be used to measure Bank Alteration, Stubble Height, and Woody Browse at DMA locations.

ii. Pastures with Key Areas – The MIM protocol will be used to measure Bank Alteration, Stubble Height, and Woody Browse at Key Areas.

iii. Pastures currently with neither a DMA or Key Area because the DMA or Key Area identification guidance cannot be applied– if pastures do not meet the criteria necessary for selection of a DMA or Key Area following MIM TR1737-23, Bank Alteration, Stubble Height, and Woody Browse, if relevant, will be measured using the MIM protocol.

iv. Pastures currently with neither a DMA or Key Area - In pastures that meet the criteria for a DMA or Key Area but where a DMA or Key Area has not yet been identified, the MIM protocol will be used to measure Bank Alteration, Stubble Height, and Woody Browse. As grazing is authorized or resumed in these pastures the identification of the monitoring location for each of these pastures will be determined using the MIM protocol for selecting the DMA or Key Area (MIM TR1737-23) consistent with the MNF's Clarification Memorandum dated February 10, 2012.

d. By February 15th of each year, provide NMFS with an annual report to include, at a minimum:
   i. Allotment and pasture map(s).
   ii. Use data by allotment and pasture to include on/off dates, AUMs, and grazing strategies.
   iii. All monitoring data collected in the prior calendar year, organized into clear tabular format. Include move triggers and endpoint indicators for reference.
   iv. For each allotment, a text description of: any unauthorized use, fence or gate maintenance or condition issues, permit compliance issues.
   v. Any additional available information relevant to grazing permit compliance, move trigger and endpoint indicator data, amount and extent of take conformance or exceedence, steelhead distribution or abundance data on the Forest, and any long-term trend or effectiveness monitoring data or reports for MNF.

e. If the MNF is going to adopt a new streambank alteration measurement methodology, the methodology must be practical and proven. “Practical” here means it can be performed reliably and accurately by MNF range staff. “Proven” means that objective scientific research studies published in peer-reviewed scientific journals find the alternative methodology consistently yields more accurate data. The objective of this term and condition is to ensure that both MNF and NMFS are reasonably certain that any new methodology will be as conservative as the extant MIMS methodology, and will not entail any risks to steelhead or CH not contemplated by the above opinion, before that new methodology is adopted for use in quantifying move triggers and endpoint indicators.

2.9 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02). The following conservation recommendation is a discretionary measure that NMFS believes is consistent with this obligation and therefore should be carried out by the Federal action agency:

- The long-term effects of livestock grazing upon fish habitat remain unclear in some important regards. In a circumstance like the MNF, where the Forest intends that its management not impede recovery of full natural productivity of steelhead habitat, and also intends to provide as much grazing opportunity as is practicable while meeting that objective, these remaining scientific uncertainties come into high relief. The US Forest Service should ensure the performance of a comprehensive research program to investigate the long-term effects on stream habitat of annual livestock grazing. The

> watershed-scale effects of grazing in particular, including possible modification of hydrograph, suppression of palatable tree species, increased sediment yield, and changes in microclimate variables of humidity, air temperature and near-surface wind speed, all warrant further scientific investigation.

This opinion is based upon the best scientific and commercial data available. Subsequent consultations with the MNF will be more effective in conserving listed fishes and providing livestock forage opportunity, if a more comprehensive and objective body of relevant science is available in the future.

Please notify NMFS if the Federal action agency 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.

2.10 Reinitiation of Consultation

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

2.11 “Not Likely to Adversely Affect” Determinations

The MNF determined that their authorization of livestock grazing on the Indian Ridge Allotment was not likely to adversely affect MCR steelhead critical habitat. There is no critical habitat designated on this allotment, but recent information indicates the 300 feet of Indian Creek on this allotment is occupied by MCR steelhead. Critical habitat for MCR steelhead is designated in Indian Creek just downstream from the MNF boundary. A fence is present at the MNF boundary, so cattle grazing on this allotment cannot access this critical habitat.

NMFS concurs with the MNF’s determination for the following reasons: (1) There is no designated MCR steelhead critical habitat within the boundaries of the Indian Ridge Allotment; and (2) due to the use of conservative grazing practices, PDCs, move triggers, and monitoring, any downstream effects from authorizing grazing on the Indian Ridge Allotment will be insignificant.

3. 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. The MSA (section 3) defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding,

or growth to maturity. Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects 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 can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by the MNF and descriptions of EFH contained in the fishery management plans developed by the Pacific Fishery Management Council (PFMC) and approved by the Secretary of Commerce for Chinook salmon (PFMC 1999)**.**

3.1 Essential Fish Habitat Affected by the Project

The proposed action and action area in this opinion is described in the Introduction to this document. This action area includes areas designated as EFH for all life stages of Chinook salmon.

3.2 Adverse Effects on Essential Fish Habitat

Based on information provided by the action agency and the analysis of effects presented in the ESA portion of this document, NMFS concludes that the proposed action will have the following adverse effect on EFH designated for Chinook salmon:

As riparian vegetation is removed by grazing and streamside soils are compacted by hooves, the ability of areas to retain water is decreased. The proposed management techniques, such as herding and use of upland mineral supplements can reduce the amount of time cattle remain in riparian areas. If grazing intensity on riparian areas is properly controlled as proposed, natural freeze-thaw cycles and the natural action of plant roots will alleviate soil compaction. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management.

Livestock grazing and the use of roads in support of grazing management will result in short pulses of turbidity, deposition of cattle waste in riparian areas and streams, and a small increase in stream temperature in certain channel types. The application of the full suite of grazing management measures will ensure that the effects to water quality remain minor. Over time, as riparian conditions improve, stream temperatures are expected to decrease. As streambank condition improves over time, the amount of turbidity created when cattle impact streambanks will also decrease. The proposed action will not create any fish passage obstructions. Livestock grazing and the use of vehicles on and off roads can expose bare soil or generate fine sediments which may enter streams. The proposed action will result in a small amount of fine sediment entering streams. This fine sediment can lead to greater stream substrate embeddedness and a general decrease in habitat quality for Chinook. Establishing proper streambank alteration move triggers and endpoint indicators in combination with the other management measures

intended to reduce the amount of time livestock spend in riparian areas will substantially reduce the amount of the fine sediment introduced into streams. As streambank condition improves over time, the amount of fine sediment created when cattle impact streambanks will decrease.

Improperly managed grazing can remove riparian vegetation and damage streambanks. Without vegetation to slow water velocities, hold the soil, and retain moisture, flooding can cause more erosion of streambanks; streams can becomes wider and shallower and in some cases downcut. The application of the full suite of grazing management measures will ensure that adequate riparian vegetation will be maintained along streambanks to prevent streambank erosion. Establishing and meeting the proper streambank alteration move triggers and endpoint indicators reduces the amount streambank damage and allow banks to stabilize over time. Any effects to floodplain connectivity will be minor. Over time, streams that are currently disconnected from their floodplains will be able to reestablish connectivity as riparian conditions improve. It should be noted however that it can take decades for stream bed elevation to increase enough to reestablish connectivity in streams that are significantly incised.

Livestock grazing can reduce the amount terrestrial and aquatic insect prey available to juvenile Chinook. This reduction is caused by the removal of streamside vegetation or through the introduction of fine sediment into streams. The application of the full suite of grazing management measures limits the amount of vegetation that can be removed from riparian areas and reduces the amount of time livestock spend in riparian areas. Establishing and meeting the proper streambank alteration move triggers and endpoint indicators reduces the amount of the fine sediment introduced into streams. The implementation of these management measures will ensure that any effects to forage will remain minor. In the long term, the grazing strategy proposed by the MNF will allow for development of functioning riparian plant communities which in turn will increase the amount of food available for juvenile Chinook.

Chinook use various stream features such as undercut streambanks, large woody debris, boulders, and overhanging vegetation to provide cover. The removal of riparian vegetation can reduce overhead cover. Streambank alteration by livestock can eliminate undercut banks and improperly managed grazing can suppress the recruitment of large woody debris. The introduction of fine sediments can increase substrate embeddedness, reducing the number of hiding places between cobbles and boulders. The application of the full suite of grazing management measures limits the amount of vegetation that can be removed from riparian areas and reduces the amount of time livestock spend in riparian areas. Establishing and meeting the proper streambank alteration move triggers and endpoint indicators reduces amount of damage to streambanks. The implementation of these management measures will ensure that any effects to natural cover will remain minor. In the long term, the grazing strategy proposed by the MNF will allow for development of functioning riparian areas and more complex stream habitat which in turn will increase the amount of cover available to Chinook.

Beyond the above known and predominantly short-term effects, long-term effects of livestock grazing upon fish habitat remain not entirely clear in some regards. Ensuring compatibility between restoration of full natural productivity of Chinook in the John Day Basin, and a valuable contribution to the cattle growing industry of Grant County, may require a more comprehensive scientific understanding of all grazing effects at the watershed scale. Examples of these

watershed effects might include survival of cottonwood and aspen seedlings and root sprouts, hydrography, surface groundwater interchange, and microclimate variables of wind speed, humidity and air temperature.

3.3 Essential Fish Habitat Conservation Recommendations

NMFS expects that full implementation of these EFH conservation recommendations would protect, by avoiding or minimizing the adverse effects described in Section 3.2 above, approximately 366 acres of designated EFH for Pacific Coast salmon.

1. Protect EFH from effects of riparian grazing in excess of the intensity intended by the proposed action by implementing the administrative responses detailed in terms and conditions 2.a. through 2.d. above.

2. Ensure that the effects of grazing do not exceed those predicted by effects analyses of BAs and above by performing the monitoring and reporting requirements given by terms and conditions 3.a. and 3.c., above.

3. To improve scientific understanding regarding possible long-term watershed-scale effects of grazing, about which less is known than the short-term proximal effects, the US Forest Service should carry out a comprehensive research program to investigate the effects on stream habitat of annual livestock grazing including, but not limited to, modification of hydrograph, suppression of palatable tree species, increased sediment yield, and changes in microclimate variables of humidity, air temperature and near-surface wind speed.

These conservation recommendations are a subset of the ESA terms and conditions above, plus the ESA section 7(a)(2) conservation recommendation given above.

3.4 Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, the Federal action agency must provide a detailed response in writing to NMFS within 30 days after receiving an EFH Conservation Recommendation from NMFS. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of NMFS' EFH Conservation Recommendations, unless NMFS and the Federal action agency have agreed to use alternative time frames for the Federal action agency response. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NMFS Conservation Recommendations, the Federal action agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects, 50 CFR 600.920(k)(1).

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.

3.5 Supplemental Consultation

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

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

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

4.1 Utility: Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users are the Malheur National Forest and their applicant cattle growers.

An individual copy was provided to the Malheur National Forest. 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.

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

4.3 Objectivity:

Information Product Category: Natural Resource Plan.

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

5. LITERATURE CITED

Al-Chokhachy, R., B. B. Roper, and E. Archer. 2010. Using a multimetric approach to evaluate the abiotic condition of streams in the upper Columbia and Missouri river basins. Transactions of the American Fisheries Society 139:1041–1059.

Ballard, T. M., and W. C. Krueger. 2005. Cattle and salmon II: interactions between cattle and spawning spring Chinook salmon (Oncorhynchus tshawytscha) in a northeastern Oregon riparian ecosystem. Rangeland Ecology and Management 58:274–278.

Barton, D.R., W.D. Taylor, and R.M. Biette. 1985. Dimensions of riparian buffer strips required to maintain trout habitat in southern Ontario streams. North American Journal of Fisheries Management. 5:364-378.

Battin, J., M.W., Wiley, M.H. Ruckelshaus, R.N. Palmer, E. Korb, K.K. Bartz, and H. Imaki. 2007. Projected Impacts of Climate Change on Salmon Habitat Restoration. PNAS Vol. 104 No. 16.

Behnke, R. J. and M. Zarn. 1976. Biology and management of threatened and endangered western trouts. General Technical Report RM-28. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experimental Station, Fort Collins, Colorado.

Bell, M.C. 1986. Fisheries handbook of engineering requirements and biological criteria. U.S. Army Corps of Engineers, Office of the Chief of Engineers. Fish Passage Development and Evaluation Program. Portland, Oregon.

Bengeyfield, P. 2006. Managing streams with cows in mind. Rangelands 28:3–6.

Bengeyfield, P. and D. Svoboda. 1998. Determining allowable use levels for livestock movement in riparian areas. Proceedings of the Specialty Conference on Rangeland Management and Water Resources. American Water Resources Association; 27-29, May 1998. Middleburg, VA, USA: American Water Association.

Berg, L., and T.G. Northcote. 1985. Changes In Territorial, Gill-Flaring, and Feeding Behavior in Juvenile Coho Salmon (Oncorhynchus kisutch) Following Short-Term Pulses of Suspended Sediment.@ Canadian Journal of Fisheries and Aquatic Sciences 42:1410-1417.

Bjornn, T.C., and D.W. Reiser. 1991. Habitat requirements of salmonids in streams. Pages 83-138 in W.R. Meehan, editor: Influences of forest and rangeland management on salmonid fishes and their habitats. American Fisheries Society Special Publication 19:83-138.

Bindoff, N.L., J. Willebrand, V. Artale, A, Cazenave, J. Gregory, S. Gulev, K. Hanawa, C. Le Quéré, S. Levitus, Y. Nojiri, C.K. Shum, L.D. Talley and A. Unnikrishnan. 2007. Observations: Oceanic Climate Change and Sea Level. P. 385-432 in: Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.). Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA

Bottom, D. L., K. K. Jones, and M. J. Herring. 1984. Fishes of the Columbia River estuary. Columbia River Estuary Data Development Program. 113 p.

Brown, G.W.1972. An improved temperature model for small streams. Water Resources Research Institute Report 16, Oregon State University, Corvallis, Oregon.

Bunte, K. and S.R. Abt. 2001. Sampling surface and sub-surface particle size distributions in wadeable gravel- and cobble-bed streams for analysis in sediment transport, hydraulics, and streambed monitoring. General Technical Report RMRS-GTR-74. U.S. Department of Agriculture, Forest Service, Rocky Mountain Experiment Station. 450 pp.

Bureau of Land Management. 1996. Utilization Studies and Residual Measurements. Interagency Technical Reference. BLM/RS/ST-96/004+1730.

Burton, D. 2010. Pros and Cons of Multi-species Grazing. AgWeb. <http://www.agweb.com/article/Pros_and_Cons_of_Multi-species_Grazing__192356/>.

Burton, E.C., Gray M.J., Schmutzer A.C. & Miller D.L. 2009. Differential responses of postmetamorphic amphibians to cattle grazing in wetlands. Journal of Wildlife Management, 73(2): 269-277.

Burton, T. A., S. J. Smith and E. R. Cowley. 2011. Multiple Indicator Monitoring (MIM) of Stream Channels and Streamside Vegetation. Technical Reference 1737-23. BLM/OC/ST-10/003+1737+REV.U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, CO. 155 pp.

Carmichael, R. 2006. *Draft* recovery plan for Oregon's middle Columbia River steelhead: Progress Report. January 17, 2006. http://www.nwr.noaa.gov/Salmon-Recovery-Planning/Recovery-Domains/Interior-Columbia/Mid-Columbia/upload/mid-C-stlhd-recov-draft.pdf

Case, R.L., Kauffman J.B. 1997. Wild ungulate influences on the recovery of willows, black cottonwood, and thin-leaf alder following cessation of cattle grazing in northeastern Oregon. Northwest Sci71:115-126

Chapman, D.W. and R.L. Demory. 1963. Seasonal changes in the food ingested by aquatic insect larvae and nymphs in two Oregon streams. Ecology. 44:140-146.

Clary, W. P. and B. F. Webster. 1989. Managing grazing of riparian areas in the Intermountain Region. General Technical Report INT-263, U.S. Dept. of Agriculture, USFS, Intermountain Research Station, Ogden, Utah. 11 p.

Clary W.P. and G.D Booth. 1993. Early season utilization of mountain meadow riparian pastures. Journal of Range Management. 46(6): 493-497.

Clary, W.P and C. I. Thorton. and S.R. Abt. 1996. Riparian stubble height and recovery of degraded streambanks. Rangelands. 18(4). 4p.

Clary, W.P and W.C. Leininger. 2000. Stubble height as a tool for management of riparian areas. Journal of Range Management. 53 (6): 562-573.

Cowley, E.R. 2002. Guidelines for Establishing Allowable Levels of Streambank Alteration. USDI, BLM, Idaho State Office. Boise, ID. March 2002. http://www.fs.fed.us/rm/boise/research/techtrans/projects/pacfish/Allowable%20Levels%20of%20Streambank%20Alteration.pdf

Cowley, E.R. and T. Burton. 2002. Monitoring the current year streambank alteration. USDI, BLM, Idaho State Office. Boise, ID. March 2002.

.

Cummins, K. W. 1974. Structure and function of stream ecosystems. BioScience 24:631-641. (Citation Classic)

EPA (United States Environmental Protection Agency). 1993. Monitoring protocols to evaluate water quality effects of grazing management on western rangeland streams. Region 10, Seattle, WA. 179 p.

Finck, R., C. Marlow, and J. Borkowoski. 2000. Stubble height as a criteria for water quality. International Conference on Riparian Ecology and Management in Multi-land Use Watersheds. August. 5p.

Fleischner, T. L. 1994. Ecological costs of livestock grazing in Western North America. Conservation Biology 8:629-644.

Ford, M.J. (ed.), T. Cooney, P. McElhany, N. Sands, L. Weitkamp, J. Hard, M. McClure, R. Kope, J. Myers, A. Albaugh, K. Barnas, D. Teel, P. Moran, and J. Cowen. 2010. Status review update for Pacific salmon and steelhead listed under the Endangered Species Act: Northwest. Draft U.S. Department of Commerce, NOAA Technical Memorandum NOAA-TM-NWFSC-XXX.

Gillen, R.L., W.C. Krueger, and R.F. Miller. 1985. Cattle use of riparian meadows in the Blue Mountains of Northeastern Oregon. Journal of Range Management 38(3): 205-209.

Gregory, J.S. and B.L. Gamett. 2009. Cattle trampling of simulated bull trout redds. North American Journal of Fisheries Management 29:361-366.

Green, D.M. And J.B. Kauffman. 1995. Succession and livestock grazing in a northeast Oregon riparian ecosystem. Journal of Range Management 48(4): 307-313.

Hall, C.H. and L. Bryant. 1995. Herbaceous stubble height as a warning sign of impending cattle grazing damage to riparian areas. USDA Forest Service General Technical Report PNW-GTR-362. 10 p.

Hayslip, G.A. 1993. EPA Region 10 in-stream biological monitoring handbook. U.S. Environmental Protection Agency-Region 10, EPA 910/9-92-013.

Heitke, J.D., R.C. Henderson, B.B. Roper, and E.K. Archer. 2008. Evaluating Livestock Grazing Use with Streambank Alteration Protocols: Challenges and Solutions. Rangeland Ecology & Management, 61(6):647-655. http://www.bioone.org/doi/full/10.2111/08-024.1

Henjum, M. G., J. R. Karr, D. L. Bottom, D. A. Perry, J. C. Bednarz, S. G. Wright, S. A. Beckwitt, and E. Beckwitt. 1994. Interim protection for late-successional forests, fisheries, and watersheds: national forests east of the Cascade Crest, Oregon, and Washington. The Wildlife Society, Bethesda, Maryland.

IC-TRT (Interior Columbia Technical Recovery Team). 2003. Working draft. Independent populations of Chinook, steelhead, and sockeye for listed evolutionarily significant units within the Interior Columbia River domain. NOAA Fisheries. July.

ICTRT (Interior Columbia Technical Recovery Team). 2007. Required Survival Rate Changes to Meet Technical Recovery Team Abundance and Productivity Viability Criteria for Interior Columbia River Basin Salmon and Steelhead Populations. ICTRT Review Draft. Nov. 30, 2007. Available at: http://www.nwfsc.noaa.gov/trt/col_docs/ictrt_gaps_report_nov_2007_final.pdf

IPCC (Intergovernmental Panel on Climate Change). 2007. Climate Change Report.2007. Available at: http://www.ipcc.ch/ipccreports/assessments-reports.htm

ISAB (Independent Scientific Advisory Board). 2007. Climate change impacts on Columbia River Basin fish and wildlife. ISAB Climate Change Report, ISAB 2007-2, Northwest Power and Conservation Council, Portland, Oregon.

Jaindl, R. 2006. Administrator Natural Resources Division Oregon Department of Agriculture. Letter to Bud McGirr Regarding potential CAFO run-off complaint, September 6, 2006.

Kauffman, J.B., W.C. Krueger, and M. Vavra. 1983. Effects of late season cattle grazing on riparian plant communities. Journal of Range Management 36(6):685–691.

Kerschner, J.L., B.B. Roper, N. Bouwes, R. Hendersen, E. Archer. 2004. An analysis of stream habitat conditions in reference and managed watersheds on some federal lands within the Columbia River Basin. North American Journal of Fisheries Management 24: 1363–1375.

Lee, D. C., J. R. Sedell, B. E. Rieman, R. F. Thurow, J. E. Williams, and others. 1997. Broadscale Assessment of Aquatic Species and Habitats. Pages1057-1496 in S. J. Arbelbide, editor. An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins: Vol. III. USDA Forest Service General Technical Report PNW-GTR-405.

Leonard, S., G. Kinch, V. Elsbernd, M. Borman, and S. Swanson. 1997. Riparian area management. TR 1737 14. Grazing management for riparian wetland areas. USDI Bureau of Land Management and USDA Forest Service. 63 p.

Li, H.W., G.A. Lamberti, T.N. Pearsons, C.K. Tait, and J.L. Li. 1994. Cumulative effects of riparian disturbances along high desert trout streams of the John Day Basin, Oregon. Transactions of the American Fisheries Society 123:627-640.

Li, H.W., T.N. Pearsons, C. K. Tait, J. L. Li, and R. Gaither. 1991. Approaches to evaluate habitat improvement programs in streams of the John Day basin. Completion Report. Oregon Cooperative Fishery Research Unit. Department of Fisheries and Wildlife. Oregon State University, Corvallis, Oregon.

Lisle, T.E. 1987. Using "Residual Depths" to monitor pool depths independently of discharge. Research Note PSW-394. U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station. 4 pp.

Lyford, J.H., Jr. and S.V. Gregory. 1974. The dynamics and structure of periphyton communities in three Cascade Mountain streams. Congress in Canada 1974: 19(3).

Malheur National Forest (MNF). 1995d. Laycock Creek level II stream survey report.

Malheur National Forest (MNF). 2007. Biological assessment for grazing activities on the Rail Creek Allotment. Prairie City Ranger District. September 28, 2007, pp. 27.

Maloney, S.B., A.R. Tiedemann, D.A. Higgins, T.M. Quigley, and D.B. Marx. 1999. Influence of stream characteristics and grazing intensity on stream temperature in eastern Oregon. USDA Forest Service General Technical Report PNW-GTR-459. 19 p.

McElhany, P., M. Ruckelshaus, M. J. Ford, T. Wainwright, and E. Bjorkstedt. 2000. Viable Salmon Populations and the Recovery of Evolutionarily Significant Units. U. S. Department of Commerce, National Marine Fisheries Service, Northwest Fisheries Science *Center, NOAA Technical Memorandum NMFS-NWFSC-42.* 156 p. *http://www.nwfsc.noaa.gov/publications/techmemos/tm42/tm42.pdf*

McIntosh, B.A., J.R. Sedell, J.E. Smith, R.C. Wissmar, S.E. Clarke, G.H. Reeves, and L.A. Brown. 1994. Management history of eastside ecosystems: Changes in fish habitat over 50 Years, 1935 to 1992. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-321. February.

McIver, J.D., and M.L. McInnis. 2007. Cattle grazing effects on macroinvertebrates in an Oregon mountain stream. Rangeland Ecology and Management 60: 293-303.

Myers, T.J. 1995. Impact of deferred rotation grazing on stream channel characteristics in central Nevada: a case study. North American Journal of Fisheries Management 15: 428-439.

Newcombe C. P. and J.O.T. Jensen. 1996. Channel Suspended Sediment and Fisheries: A Synthesis for Quantitative Assessment of Risk and Impact. North American Journal of Fisheries Management. 16: 693-727.

Northwest Power and Conservation Council (NPCC). 2005. John Day Subbasin Plan. Prepared by Columbia-Blue Mountain Resource Conservation and Development Area for The NPCC. http://www.nwcouncil.org/fw/subbasinplanning/johnday/plan/PlanRevised.pdf

NMFS (National Marine Fisheries Service). 2004. Initial Assessment of NMFS' Critical Habitat Analytical Review Teams (CHARTs) for 13 Evolutionarily Significant Units of Pacific Salmon and *O. mykiss* (November 2004), including Appendix K: Initial CHART Assessment for the Middle Columbia River Steelhead.

NMFS. 2007b. 2007 Report to Congress: Pacific Coastal Salmon Recovery Fund, FY 2000-2006. National Marine Fisheries Service, Silver Spring, Maryland.

NMFS. 2009. Middle Columbia River steelhead distinct population segment ESA recovery plan. November 30. Northwest Region, Seattle, Washington.

NOAA Fisheries. 2011. Biennial report to Congress on the recovery program for threatened and endangered species October 1, 2008 – September 30, 2010. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Washington, D.C.

NPCC (Northwest Power and Conservation Council). 2005. John Day Subbasin Revised Draft Plan. March. Available at: http://www.nwcouncil.org/fw/subbasinplanning/johnday/plan/

Oregon Department of Environmental Quality (ODEQ). 1995. 1992-1994 water quality standards review. Standards and Assessment Section, ODEQ, Portland, Oregon.

ODEQ (Oregon Department of Environmental Quality). 2006. Oregon's 2004/2006 Integrated Report. Portland. Available at: http://www.deq.state.or.us/wq/assessment/rpt0406/search.asp

Overton, C.K., J.D. McIntyre, R. Armstrong, S.L. Whitwell, and K.A. Duncan. 1995. User's guide to fish habitat: descriptions that represent natural conditions in the Salmon River Basin, Idaho. USDA Forest Serv. Gen. Tech. Rep. INT- GTR-322. Ogden, Utah.

Peterson, D.P., B.E. Reiman, M.K. Young, J.A. Brammer. 2010. Modeling predicts that redd trampling by cattle may contribute to population declines of native trout. Ecological Application 20(4): 954-966.

Pfankuch, D.J. 1978. Stream reach inventory and channel stability evaluation, a watershed management procedure. U.S. Department of Agriculture, Forest Service, Northern Region. Missoula, MT.

Platts, W. S. 1991. Livestock grazing. pp. 389-424 in Meehan, ed., Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. American Fisheries Soc., Bethesda, Maryland. 751 p.

Platts, W. S., and R. F. Raleigh. 1984. Impacts of grazing on wetlands and riparian habitat. Pages 1105-1117 *in* Developing strategies for rangeland management. National Research Council/National Academy of Sciences, Westview Press, Boulder, Colorado.

Platts, W.S., and R.L. Nelson. 1989. Stream canopy and its relationship to salmonid biomass in the intermountain west. North American Journal of Fisheries Management. 9:446-457.

Powell, G.W., K.J. Cameron, and R.G. Newman. 2000. Analysis of Livestock Use of Riparian Areas: Literature Review and Research Needs Assessment for British Columbia. Work Paper 52. Victoria, B.C.

Rieman, B.E., D. Isaak, S. Adams, D. Horan, D. Nagel, C. Luce, D. Myers. 2007. Spatial variation in anticipated climate change effects on bull trout habitats across the interior Columbia River basin. Transactions of the American Fisheries Society 136 :1552–1565.

Rinne, J.N. 1990. The utility of stream habitat and biota for identifying potential conflicting forest land use: Montane riparian areas. Forest Ecology and Management, 33/34: 363-383.

Rosgen, D. 1996. Applied river morphology. Wildland Hydrology. Pagosa Springs, CO.

Rosgen, D. and L. Silvey. 1998. Field Guide for Stream Classification. Second Edition. Wildland Hydrology Books. Pagosa Springs, Colorado.

Scheuerell, M.D., and J.G. Williams. 2005. Forecasting climate-induced changes in the survival of Snake River spring/summer Chinook salmon (*Oncorhynchus tshawytscha*). Fisheries Oceanography 14:448-457.

Servizi, J.A., and D.W. Martens. 1991. Effects of temperature, season, and fish size on acute lethality of suspended sediments to coho salmon. Canadian Journal of Fisheries and Aquatic Sciences 49:1389-1395.

Sheer, Mindi B. et al. 2008. Development and Management of Fish Intrinsic Potential Data and Methods: State of the IP 2008 Summary Report.

Spence, B.C., G.A. Lomnicky, R.M. Hughes, and R.P. Novitzki. 1996. An ecosystem approach to salmonid conservation. ManTech Environmental Research Services, Inc., Corvallis, Oregon, to National Marine Fisheries Service, Habitat Conservation Division, Portland, Oregon (Project TR-4501-96-6057).

Tait, C.K., J.L., Li, G.A. Lamberti, T.N. Pearson, and H.W. Li. 1994. Relationships between riparian cover and community structure of high desert streams. Journal of North American Benthological Society 13:45-56.

Thompson, W.H., R.C. Erhart, P.L. Hansen, T.G. Parker, and W.C. Haglan. 1998. Assessing health of a riparian site. Rangeland Management and Water Resources (Proceedings). American Water Resources Association. Reno, NV.

USDA Forest Service. 2001a. Malheur National Forest 2000 annual end of year grazing reports for bull trout watersheds. Malheur National Forest, John Day, OR.

USDA Forest Service. 2001b. Malheur National Forest biological assessments for 2001 grazing management (Middle Fork John Day River, Upper John Day River, North Fork Malheur River, Middle Fork Malheur River). Malheur National Forest, John Day, OR.

U.S. Environmental Protection Agency (EPA). 1993. Monitoring protocols to evaluate water quality effects of grazing management on western rangeland streams. Region 10, Seattle, WA. 179 p.

USGCRP (U.S. Global Change Research Program). 2009. Global Climate Change Impacts in the United States. Cambridge University Press, New York.

Waters, Thomas. 1995. Sediment in streams: sources, biological effects and control. American Fisheries Society Monograph 7.

Winward, A.H. 2000. Monitoring the vegetation resources in riparian areas. General Technical Report RMRS-GTR-47. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 49 pp.

Wissmar, R.C., J.E. Smith, B.A. McIntosh, H.W. Li, G.H. Reeves, and J.R. Sedell. 1994. Ecological health of river basins in forested regions of eastern Washington and Oregon. USDA Forest Service, General Technical Report PNW-GTR-326. 65 pp.

Wright, K.K. and J.L. Li. 2002. From continua to patches: examining stream community structure over large environmental gradients. Canadian Journal of Fisheries and Aquatic Sciences 59: 1404-1417.

Zabel, R.W., M.D. Scheuerell, M.M. McClure, and J.G. Williams. 2006. The interplay between climate variability and density dependence in the population viability of Chinook salmon. Conservation Biology 20:190-200. Available at: http://www3.interscience.wiley.com/cgi-bin/fulltext/118564085/PDFSTART

APPENDIX
To NMFS Number 2011/05362
Responses to Comments

On February 16, 2012, the National Marine Fisheries Service (NMFS) made available a pre-decisional draft opinion regarding grazing on 21 allotments on the Malheur National Forest (MNF) to MNF, their grazing permit applicants, and the Oregon Natural Desert Association (ONDA) for review and comment pursuant to order of the Oregon District Court dated January 4, 2012. At the same time, NMFS provided the draft to the Confederated Tribes of Warm Springs (CTWS) at CTWS' request, pursuant to the US Commerce Department's *Secretarial Order: American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act.*

Comments were received from each of these entities by March 12, 2012, totaling 265 individual comments. Many of the comments pointed out factual or typographical errors in the draft which NMFS has corrected. Some comments NMFS did not agree with the proposed change or was unable to verify the change before the opinion had to be finalized to meet the court-ordered deadline of April 2. Other comments made suggestions or expressed concerns about the analyses in the draft. Significant substantive comments are synopsized below, and NMFS responds to each synopsis.

Factual Observations and Questions

Comment: One commenter recommended that the opinion include a table of the permitted and actual number of AUMs grazed each year over the past twenty years to help predict how many cows are expected to be grazing the allotments during 2012-2016 and also questioned whether greater levels of grazing were authorized for this opinion compared to the prior 2007 biological opinion.
Response: NMFS analyzed effects based on the proposed AUMs and understands that as livestock density increases, MNF and permittees will have to expend greater effort to ensure that endpoint indicators are not exceeded. The MNF confirmed that the permitted AUMs on each allotment are the same for 2012-2016 as they were for the 2007-2011 consultation. The MNF has built in well-defined adaptive management responses that ensure to the extent exceedences occur, they will be addressed with an appropriate on-the-ground response that addresses any resource condition concern arising from such exceedence. The recommended table might indeed be informative, but such a table was not provided by MNF and NMFS does not find it necessary for the opinion analyses.

Comment: One commenter asked why the Bear Allotment was not included in the biological opinion when Mosquito Creek is highlighted on the distribution maps for steelhead and the allotment is tied to current grazing operations on the Lower and Upper Middle Fork allotments.
Response: The MNF proposed that the Bear Allotment was NLAA MCR steelhead and critical habitat, and NMFS concurs with that finding in its letter of concurrence. Critical habitat is designated on Mosquito Creek and on the MFJDR in the C1 and C2 pasture. These 2.45 miles of Mosquito Creek critical habitat lead down to a flat 200-foot floodplain delta at its confluence with the MFJDR. In this short reach it has no channel, instead flowing overland in sheet flow,

and thereby blocking fish access into the creek from the MFJDR. Cattle will be excluded from the MFJDR in the C1 Pasture using electric fence with a water gap at the upstream end of the pasture. Grazing will not be authorized on the C2 Pasture through 2015, due to restoration work on the MFJDR. An IDT evaluation will be conducted prior to the 2016 grazing season to evaluate the reauthorization of grazing in this pasture. For additional information, see NMFS' letter of concurrence regarding the Bear Allotment (refer to NMFS No.: 2011/05362).

Comment: One commenter asked if fence maintenance required before turnout includes riparian fence exclosures and noted that when cattle are driven through the Mosquito Riparian Pasture in the Lower Middle Fork Allotment they may result in more utilization than desired unless they are limited by time or AUM capacity.
Response: The opinion has been changed to show that maintenance on interior fences includes riparian exclosures. The Project Design Criteria (PDC) for allotments that allow cattle to be driven through riparian exclosures during movement between pastures include the requirement that livestock not be allowed to linger or be held overnight within the riparian pasture. This PDC was inadvertently left off of the proposed action for the Mosquito Riparian Pasture in the Lower Middle Fork Allotment. The following footnote will be added to the opinion: "When livestock are driven through the Whiskey Riparian Pasture they will not be allowed to linger and there will be no overnight livestock holding within the pasture."

Comment: Two commenters noted that the Smith Creek tributary to Fox Creek in the Fox Allotment is designated critical habitat for MCR steelhead but is actually not hydrologically connected to Fox Creek.
Response: The opinion has been updated with this information about Smith Creek; however, designations of critical habitat for MCR steelhead may only be revised through a rulemaking process under the Endangered Species Act.

Comment: One commenter disagreed that there are 1.3 miles of Ennis Creek critical habitat in the John Day Allotment because it dries up and has a culvert barrier to juvenile passage. Another commenter felt the description of Ennis Creek in the Activities section of the John Day Allotment Environmental Baseline was contradictory, proposed that NMFS look at the stream survey and remove the critical habitat designation for Ennis Creek, and asked how to get the critical habitat designation removed from any stream.
Response: The Ennis Creek description notes that there are no passage barriers to spawners but there is a culvert passage barrier to juveniles. The words "at low flows" have been added to this sentence in the opinion. As a practical matter, removing the critical habitat designation from Ennis Creek would not change any of the requirements for the Lower Ennis Creek Pasture because the pasture also has Clear Creek critical habitat. Critical habitat was established for MCR steelhead based primarily on ODFW surveys and professional judgment. Revisions to critical habitat for MCR steelhead may only be made through a rulemaking process under the Endangered Species Act. Citizens may petition NMFS to review a critical habitat designation.

Comment: One commenter asked that the references documenting the information that led to NMFS' August 15, 2011, conclusion that MCR steelhead should retain its threatened listing classification be included in the opinion.
Response*:* The 5-year status review for MCR steelhead is summarized in Federal Register notice 76 FR 50448. The notice directs readers to the 5-year review report, the science team report and additional information used in the listing conclusion to the NMFS Northwest Region website http://www.nwr.noaa.gov/ .

Comment: One commenter noted that the John Day River Subbasin Revised Plan identified habitat diversity, flow, sediment load and temperature as limiting factors for the Beech Creek tributary to the Upper John Day River, but that Beech Creek is not 303(d) listed for temperature, sediment or anything else.
Response: The Clean Water Act Section 303(d) requires DEQ to prepare a list of water bodies that do not meet water quality standards and where Total Maximum Daily Loads will be developed. DEQ began the data assessment process by preparing a draft Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters and issuing a call for data. Beech Creek is listed in Category 3 (*i.e.*, insufficient data to determine whether a designated use is supported) for temperature and sediment. Subbasin plans used information, including professional consensus that is not necessarily the same as data utilized by DEQ for 303(d) listing.

Comment: One commenter requested additional information about the "special study" that was the source for the data presented in Table 41.
Response: For the environmental baseline, NMFS summarized effectiveness monitoring data where there were two time series points. There is not a PIBO EM site in the Roundtop Allotment but the Roundtop BA provided the data collected for East Fork Beech Creek in the Tinker Creek Pasture by the PIBO EM team for a special study with the following caveat: "Information from this site is being included as there are no long-term Integrator (I) reaches within randomly selected watersheds or Designated Monitoring Area (DMA) reaches that lie within pastures contained by the randomly selected watersheds." NMFS is not aware of whether this special study data has yet been published in a Forest Service paper. The data has limited utility for NMFS because measurements will not be repeated at this site.

Comment*:* One commenter stated that Laycock, Fields and Wiley Creek 5th field HUCs are not in the Mt Vernon Allotment.
Response*:* NMFS contacted the MNF and asked that they double check this. MNF did so and confirmed that these three HUC 5s do overlap the Mt Vernon Allotment.

Comment: Three commenters disputed the description of how stubble height and bank alteration standards were exceeded on the Belshaw Riparian Pasture in 2008. Two of the commenters provided an alternate explanation.
Response*:* NMFS used the explanation provided in the 2008 End of Year report in the draft. Since the MNF confirms that this explanation is not accurate, it has been removed from the Opinion.

Comment: One commenter questioned the assertion that "in the Blue Mountains of eastern Oregon, regrowth of herbaceous vegetation does not normally occur after July (Gillen *et al*. 1985)" and asked that it be removed from the opinion. This commenter also stated that reductions in streambank cover features related to fish production apply to over-grazing and do not necessarily apply to managed, proper grazing and that there is no discussion of the effects of managed grazing.
Response: The paragraph on regrowth after July has been updated in the opinion. NMFS analyzed the effects of grazing managed per the requirements in the proposed action. Over-grazing would be grazing outside of these requirements. The opinion describes the effects of over-grazing as documented by existing literature to help illustrate the importance of the managed grazing proposed by the MNF and relied upon by NMFS in its effects analysis.

Comment: One commenter asked: "If things are so bad, how can habitat surveys show so much improvement and spawning surveys be so high in the last 3 years?" in response to these sentences in the opinion: "The information presented in the environmental baseline section (Section 2.3) indicates that many streams within the action areas are degraded due to past land management practices. Recent information from effectiveness monitoring efforts indicates that some attributes of stream habitat quality are improving while habitat quality in some streams remains static." The commenter did not suggest any change to the opinion.
Response: The opinion and the BAs noted where quantitative measurements of habitat features appear to be improving and where they appear to be static. Most effectiveness monitoring data is collected at five year intervals. Effectiveness monitoring sites currently have two data points or are scheduled for monitoring early in the term of this opinion. Available data are presented in the environmental baseline. The MNF provided other information in their BAs such as assessments based on professional opinion and information from photo-points to support their assessment that some riparian areas are improving.

Comment: One commenter noted that there is not a DMA in the Belshaw Creek Pasture as claimed in Table 13.
Response: NMFS checked with the MNF and the commenter is correct. The DMA that was in the Belshaw Creek Pasture is now within the Belshaw Riparian pasture. Table 13 has been revised to show that a monitoring site for endpoint indicators will be established in the Belshaw Creek Pasture before 2012 monitoring.

Comment: One commenter disagrees with the length of critical habitat and MSRA on Hall Creek, Dixie Creek and Standard Creek in the Dixie Allotment and states that some of the critical habitat is on private property and BLM property.
Response: NMFS used the critical habitat and MSRA lengths provided in the BAs. Upon inquiry, the MNF indicated that the referenced critical habitat stream lengths do include critical habitat on BLM and private property. A note in Table 27 of the opinion was added to acknowledge this circumstance. As a practical matter, however, it is the presence of critical habitat and MSRA, rather than the length, that establishes the grazing and monitoring requirements in a pasture. Thus, the pasture standards would be the same regardless of changes to the identified stream length.

Water Temperature

Comment: One commenter said that in the discussion of global climate change lacked acknowledgement that many streams on the allotments exceed water quality standards because of the loss of streamside vegetation shade due to grazing and the widening of channels due to bank impacts and the removal of streamside vegetation. This commenter noted that these effects were reasonably discussed later in the document but that NMFS doesn't use this to push the Forest Service to do a better job of recovering degraded riparian areas. The commenter also questioned the opinion's analysis of the impacts of MNF's authorized grazing on stream temperature.
Response: The opinion and BAs provide a description of current riparian conditions on the allotments and also reference where appropriate historic actions that have contributed to those conditions. NMFS agrees that stream temperature may be affected by livestock grazing indirectly through reduction of shade. The opinion describes why these effects are expected to be minor. We also concluded that the proposed grazing strategy will allow for improvements in riparian condition over time. The MCR steelhead Recovery Plan predicts that improvements in riparian vegetation (as reflected in the effectiveness monitoring parameters of wetland rating and percent cover) will follow the reduction in high W/D and corresponding increase in the floodplain water table. However, it would be impractical to regulate grazing with temperature monitoring directly because water temperature is affected by so many other variables, and because measurable water temperature effects follow so far after the grazing activities that cause them. However, shade, channel geometry and runoff correlate with streambank alteration, and measured streambank alteration is a function of within-season grazing, so it serves as a practical control for effects to future water temperature, along with the other grazing standards.

Comment: Several commenters disagree with isolating the effects of grazing on stream water temperature from all of the other variables that influence the stream water temperature at any location. Two commenters took exception to the reference to Li *et al*. (1994) on the relationship between shade and stream water temperature. One of these commenters included a discussion of improvements in the John Day Allotment of McClellan Creek habitat and steelhead returns since 1978, and especially over the past 3 years using only percent utilization standards to manage grazing.
Response: Livestock grazing affects some but not all of the variables that influence water temperature. In particular, grazing can reduce riparian vegetation that absorbs incoming short wave radiation. As described in the opinion, this effect is greatest on small stream channels where herbaceous vegetation provides shade. Riparian vegetation also affects the air temperature, humidity and wind speed near the stream which in turn affect evaporation, conduction, ground temperature and thereby stream water temperature. The high width to depth ratio of some MNF streams, that increases the solar radiation intercepted by slow, shallow water, is in part attributed to the legacy effects of grazing. Grazing does not affect other variables that determine stream temperature such as elevation, topography, the orientation of the sun relative to the stream or the temperature of mixing water from ungrazed watersheds. Fish are exposed to and affected by the temperature of the water including any increment of temperature increase in water associated with the variables that are influenced by grazing. NMFS is obliged to analyze these effects of grazing on MCR steelhead. However, NMFS did not attempt to assign a fraction of a water temperature to any of these variables and does not propose using temperature to regulate grazing. Temperature limited streams are noted in the environmental baseline section of

the opinion, but they do not in and of themselves establish more stringent grazing standards in a pasture. The commenter attributes habitat and abundance improvements to meeting percent utilization standards but since 2007, these pastures would have also had stubble height, woody browse and streambank alteration standards controlling grazing.

Comment: One commenter states that stream capability is an important component of temperature missing from the effects analysis, that eastern Oregon streams are naturally above established stream temperature standards, that ODEQ is legally required to reassess the appropriateness of streams listed as water quality impaired due to temperature exceedences and that NMFS should at least mention this dynamic. This commenter also said that the rate of heat transfer is a function of the temperature gradient between two fluids, air temperature is an inverse function of elevation and that stream channel morphology affects stream water temperature by the flow rate.
Response: MNF and NMFS noted streams that are currently 303d listed in the environmental baseline but MNF did not propose stricter standards in pastures with 303d listed streams. Most monitored streams have high width to depth ratios that are decreasing as they recover and which would be consistent with a higher flow rate and thus lower heat transfer. The opinion concluded that the proposed grazing strategy will improve the condition of riparian vegetation and streams which will lead to reduced stream temperatures over time.

Comment: One commenter said that the 7-day average temperature exceeding 64.4^{o}F on Bear Creek in the Dixie Allotment must have been taken on private land because on the MNF Allotment the creek is heavily shaded by standing and down trees so that the maximum temperature is less than 57°F.
Response: The environmental baseline section of the opinion notes streams that are 303(d) listed. The MNF provided the location of some but not all temperature monitoring sites so the site for Bear Creek may indeed be on private land. A water temperature difference of 8°F in a flowing stream rarely occurs in less than several miles distance.

<u>Stubble Height</u>

Comment: One commenter remarked that the stubble heights for early season grazing of 5-inch move trigger and 4-inch end point indicator are inexplicably low.
Response: Endpoint indicators were identified by the MNF as part of the proposed action. After reviewing the available information, we concluded the stubble height endpoint indicators identified for early and late season grazing were adequate to ensure that plant vigor is maintained and adverse habitat effects caused by the proposed action are minimal. The MNF's endpoint indicators for stubble height are consistent with recommendations made by Hall and Bryant (1995), Clary and Webster (1989), Clary and Booth (1993), Clary *et al.* (1996), Clary and Lenninger (2000), and Fink *et al.* (2000). See literature cited section of opinion for full citations. Setting and meeting the appropriate standards will: (1) Prevent significant grazing of bank stabilizing vegetation (Hall and Bryant 1995); (2) allow enough streamside vegetation to trap and stabilize fine sediments (Clary *et al.* 1996; Clary and Webster 1989); (3) prevent unwanted browsing of woody vegetation (Hall and Bryant 1995; Clary and Lenninger (2000); and (4) prevent streambank damage (Platts and Nelson 1989). We also noted that for early season

grazing, some regrowth of herbaceous vegetation can be expected, so a shorter stubble height is appropriate.

***Comment**:* The permittees commented that the draft opinion took the position that stubble height from height-weight curves are generally greater than 4 to 6 inches. The permittees stated information collected by their consultants and shared with the MNF indicates shorter stubble heights might be appropriate to meet the MNF's allowance of approximately 35-45% plant utilization by livestock.
***Response**:* We reviewed the available information on height-weight curves for plants commonly found in riparian areas throughout the action area for this consultation. A Forest Service document (Cowley *et al.* 1999) contains height-weight curves that confirm that 35-45% utilization of plants such as Kentucky bluegrass (*Poa pratensis*), Nebraska sedge (*Carex nebraskensis*), and Baltic rush (*Juncus balticus*) general results in 4 to 6 inches of residual stubble height. We recognize that site specific conditions can affect height-weight relationships, but we are not aware of any information indicating shorter stubble heights are appropriate to manage grazing within the action area for this consultation. Additionally, as explained in the previous response, the available information indicates stubble heights of 4 to 6 inches or greater are associated with maintenance and recovery of riparian areas. We are not aware of any information indicating shorter stubble heights are appropriate to achieve this outcome. Additionally, it is the MNF that has adopted reasonably conservative stubble height standards as part of the proposed action, and NMFS evaluated the proposed action in light of those standards.

***Comment**:* The permittees state "The draft BiOp's insistence on a 6 inch endpoint for late season grazing is also not supported by conditions on the MNF or by the best available science. A University of Idaho study found that a 6 inch stubble height is not an appropriate or meaningful measure of grazing impacts. NMFS is aware of this study and should conform the BiOp to it."
***Response**:* The opinion does not impose any minimum stubble height. The MNF proposed a 6-inch stubble endpoint indicator for grazing in certain situations including mid to late season grazing. We conducted our analysis of the effects of the MNF's action as proposed. We conclude that a 6-inch stubble height for late season grazing, in conjunction with the other elements of the proposed action, was adequate to achieve improvement of riparian areas.

The University of Idaho report on stubble height is a set of recommendations made by range management specialists and biologists on the use of stubble height as a grazing management indicator. No new data were collected or analyzed during this study and the report was not published in a peer-reviewed journal. Nevertheless, the report does recommend against the use of stubble height as a sole indicator of the impacts of grazing. We agree and note the MNF is using two other endpoint indicators, shrub browse and streambank alteration, in addition to using stubble height. The University of Idaho report also stressed the importance of conducting long-term monitoring of riparian and stream attributes in addition to monitoring short-term indicators such as stubble height. Consistent with this recommendation, the MNF proposes to consider the results of long term (PIBO) monitoring to assess the success of their grazing management.

***Comment**:* Two commenters challenge a statement in the opinion that regrowth of herbaceous vegetation does not normally occur after July. One of those commenters say the draft mischaracterized the results of Gillen *et al* (1985).
***Response**:* We have edited the opinion to clarify the statement and the results of Gillen *et al*.

Woody Browse

***Comment**:* One commenter asserted that riparian shrub recovery should be made a priority on almost all allotments and that shrub browse endpoint indicators proposed by the MNF are too high to achieve this outcome.
***Response**:* NMFS agrees that recovery of riparian shrubs is a priority in some stream reaches. As described in the opinion, our analysis indicates the proposed grazing management will allow for improved riparian conditions, including shrub recovery. We also noted that conservative stubble height end-point indicators for mid- to late season grazing reduces woody shrub browse along with the other conservation measures of the proposed action intended to limit the time cattle spend in riparian areas. We also acknowledged, in some areas, the proposed action may slow recruitment of cottonwood galleries. We concluded this reduction is not expected to have a significant effect on MCR steelhead survival. This is because in most of the action area, conifers provide large woody debris and the proposed action will have no effect on conifer recruitment. The areas where large woody debris recruitment will be suppressed (cottonwood galleries) are found in only a few locations throughout the action area. Many of the areas where cottonwood galleries could be expected to form are found on mainstem reaches of the Upper and Middle Fork John Day rivers. Most of these reaches are on private land or on lands acquired for conservation. The suppression of recruitment possibly caused by the proposed action will have an insignificant effect on current and future large woody debris levels when measured at the watershed scale.

***Comment**:* A commenter stated that the analysis in the draft generally ignores the character of riparian vegetation within the action area. The commenter further asserts that the draft fails to identify the extent to which riparian plant communities have been impaired by historical grazing practices.
***Response**:* In the integration and synthesis section of the opinion, we state "*The information presented in the environmental baseline section (section 2.3) indicates that many streams within the action areas are degraded due to past land management practices*." Much of the information presented in the opinion's status of critical habitat sections and the environmental baseline section as well as the BAs clearly indicates that many streams in the John Day River basin have been degraded by past and ongoing land management, including historic grazing. We conducted our analysis informed by the knowledge that steelhead habitat is degraded in many streams throughout the action area.

***Comment**:* One commenter believed that the derivation of the 30-50% endpoint indicator for shrub browse was unclear. They also noted the opinion does not identify a methodology to measure shrub browse.
***Response**:* The BAs provide that: "*Based on the best available science, applied science publications, and professional judgment, the Forest interdisciplinary team selected initial values for each indicator. The season of use determined the initial values of endpoint indicators for*

woody shrub use and stubble height of greenline vegetation. The early season initial values for shrub use and stubble height are 50% and 4 inches, and the late season initial values for shrub use and stubble height are 40% and 6 inches, respectively." The MNF proposes to use the Multiple Indicator Monitoring (MIM) protocol to measure woody shrub. Based on what the MNF proposed, using this methodology, light to moderate grazing results in 50-79% retention of available annual leader growth.

***Comment**:* A commenter observes that agencies seem unwilling to change grazing practices to attain recruitment of cottonwoods. The commenter also questions NMFS' conclusion that a reduction in large woody debris (from reduced cottonwood recruitment) would not affect survival of steelhead.
***Response**:* The proposed action includes measures to limit browsing of woody plants including cottonwoods. The endpoint indicators for shrub browse allow 50% utilization for early season grazing and 40% for mid- to late season grazing. Many of the other grazing management measures such as herding and use of upland mineral supplement limit the amount of time livestock spend in the riparian area and also help reduce shrub browse. Similarly, the stubble height and streambank alteration indicators further limit potential for shrub browse since whichever indicator is approached first will necessitate cattle removal from the pasture. The BA and opinion do acknowledge however, that the proposed action will result in some reduction in cottonwood recruitment. We concluded this reduction is not expected to have a significant effect on MCR steelhead survival. This is because in most of the action area, conifers provide large woody debris and the proposed action will have no effect on conifer recruitment. The areas where large woody debris recruitment will be suppressed (cottonwood galleries) are found in only a few locations throughout the action area. Many of the areas where cottonwood galleries could be expected to form are found on mainstem reaches of the Upper and Middle Fork John Day rivers. Most of these reaches are on private land or on lands acquired for conservation. The suppression of cottonwood recruitment caused by the proposed action will have an insignificant effect on current and future large woody debris levels when measured at the watershed scale.

***Comment**:* One commenter expressed skepticism regarding NMFS' conclusion that plant communities in the subject allotments will continue to recover, improving MCR steelhead habitat. The commenter states it is unclear how this can be guaranteed.
***Response**:* After reviewing the available information, we conclude that the proposed grazing management is likely to allow for vegetative recovery in riparian areas. Our threshold for such conclusions is reasonable scientific certainty.

***Comment**:* One commenter observed that monitoring results over the past few years on rested pastures in the MNF show that browse on woody plants is higher on rested pastures than on pastures that are being grazed. The commenter infers that cattle grazing may reduce wildlife browsing, and that this is a beneficial effect of grazing that should be acknowledged.
***Response**:* The observation is interesting. The referenced data has not been analyzed for statistical significance, and NMFS notes that data on rested pastures tends to be relatively sparse and might be biased toward collecting bank alteration data in areas of known elk concentrations, which might also affect browse. NMFS does not believe there is yet adequate information to rely on the observation that authorizing grazing in otherwise closed areas would lead overall to a decrease in browsing in riparian habitat and anticipates any such inference to be drawn would

turn on the particular circumstances of a given pasture. NMFS supports collection of data in rested pastures for comparison purposes, and recommends that MNF consider including this hypothesis in the research NMFS recommends in the opinion, Sections 2.9 and 3.3.3.

Streambank Alteration

Comment: One commenter believes that permissible bank alterations are too high, and should not exceed 10%. Another commenter felt that each stream should be assigned unique bank alteration limits.
Response: The MNF and NMFS have extensively analyzed the available scientific literature and field data collected from the MNF. These analyses are described in the opinion and BAs. The proposed action includes in-season bank alteration move triggers of 10% for pastures that include most sensitive riparian areas (MRSA) and 15% endpoint indicators for the same pastures. Pastures without MRSA have a 15% bank alteration move trigger and 20% endpoint indicator. NMFS is confident that these bank alteration limits, taken together with the many other management measures of the proposed action, will allow recovery of properly functioning conditions of steelhead habitat and will appropriately minimize the impact of the incidental take. NMFS is unaware of any analytical procedure that would lend itself to assigning unique permissible bank alterations to individual streams, believes it is unfeasible for the Forest Service to undertake such an effort, and sees no clear conservation value in doing so anyway.

Comment: One commenter proposes that MNF should perform selective exclosure experiments to elucidate the impacts attributable to each of cattle, wild horses, and elk.
Response: The proposed experiment exceeds the scope of the action upon which NMFS consulted. NMFS concurs that this type of experimentation could provide useful information, and recommends that MNF consider including such in the comprehensive research program recommended by NMFS in Sections 2.9 and 3.3.3.

Comment: One commenter expressed concern about NMFS use of bank alteration as an extent of take indicator.
Response: NMFS provides its explanation of why NMFS is using bank alteration as an extent of take in Section 2.8.1. Consistent with the MNF's adaptive management, NMFS also has built into its bank alteration extent of take indicator flexibility for potential exceedences. Consistent with the MNF's proposed standards and monitoring strategy and the best available scientific information, bank alteration provides the best practical extent of take indicator available, and no commenter has offered a practical alternative to bank alteration. Additionally, in the event a superior methodology for measuring bank alteration is identified, the proposed action, opinion, and incidental take statement are designed to potentially adopt such a methodology.

Comment: One commenter objected to the impacts of elk reducing their permissible cattle utilization of some pastures. Another commenter opined that elk are doing a lot of damage with respect to bank alteration and stubble height.
Response: NMFS is aware that elk are widespread throughout the action area and have some effects that are similar to cattle grazing effects. The environmental baseline section and integration and synthesis section have been revised to further address the potential effects of elk and deer in the action area. Additionally, the MNF is managing grazing to account for the

potential effects of elk and deer. For example, NMFS notes on page 13 of the opinion that "*Streambank alteration resulting from wild ungulates or unauthorized use in a pasture grazed by the permittee is added to the streambank alteration from the permittees livestock for adaptive management actions.*"

Miscellaneous Science Questions

Comment: One commenter said that deferred rotation and rest rotation grazing strategies are unlikely to allow ecosystem recovery of plant communities and noted that the draft does not talk about attaining a near-natural rate of recovery by limiting environmental effects to those that do not carry through to the next year, avoiding cumulative negative effects.
Response: Some allotments are managed with deferred rotation or rest rotation grazing strategies that likely maximize herbaceous plant productivity based on the judgment and experience of MNF range experts. As noted in the opinion, some information shows that these grazing strategies can lead to improvements in riparian condition. NMFS also agrees that pasture rest is a valuable mechanism for ecosystem recovery and the adaptive management process mandates extra pasture rest when streambank alteration is exceeded by set amounts. NMFS conducted an independent effects analysis under the Endangered Species Act that does not analyze whether the MNF is in compliance with its own applicable plans, regulations, policies, etc., including any applicable requirements of PACFISH.

Comment: One commenter said that the Adaptive Management section talks about desired conditions and upward trends but not "near natural rates of recovery" and that upward trend appears to be a judgment call by the agency.
Response: See above response for discussion of compliance with PACFISH. Upward trend generally refers to an improvement in one of the PIBO EM habitat parameters. Some of the channels in the MNF have high width to depth (W/D) ratios which limits the ability of other habitat parameters to improve. A reduction in W/D is considered the first step in channel recovery and is an upward trend. Measuring a recovery rates is a long-term problem that must be addressed when there is statistical evidence of slower recovery rates in grazed than ungrazed pastures.

Comment: The loss of overhanging banks (*i.e.*, undercut banks in the terminology of NMFS) is one of the major impacts that cattle have on stream channels. In doing so they remove important refugia that are used by fish, in turn causing stream widening and increased stream temperature. Recovery of overhanging vegetation and overhanging banks must be a high priority in the recovery of fish habitat.
Response: Streambank alteration endpoints are selected to minimize the risk of erosion from streambank shearing by livestock. Some monitored MNF stream channels have high W/D and the recovery of other habitat parameters including undercut banks and cover will depend on the gradual reduction of W/D toward a value of 10 or less. While many processes influence W/D ratios, NMFS anticipates the proposed action will allow stream channels in the action area to improve over time and this improvement in W/D is shown at most effectiveness monitoring sites from 2000 to 2011.

Comment: One commenter said that the effects of the action and effects of critical habitat sections are "refreshingly forthright about the threats livestock grazing poses to fish habitat" but prescriptions are inadequate to address threats.
Response: Enforcement of endpoints indicators through monitoring coupled with continuous improvements in fences and upland water sources and other techniques intended to limit livestock use of riparian areas have a good track record of controlling the effects of livestock grazing on public land grazing allotments. The MNF has made a serious commitment to ensure standards will be monitored for and met and where there are exceedences or other resource condition issues, the MNF is firmly committed to addressing them to ensure MCR steelhead and critical habitat are adequately protected.

Comment: One commenter stated that bare ground is necessary for soil particle detachment and that hoof impact along riparian areas would not cause enough bare ground to contribute enough fine should particles across the relatively flat floodplain for the level of turbidity and embeddedness described in this section. Another commenter said there is no science to backup relationships between cattle grazing and effects.
Response: The opinion describes the effects of grazing and basis for its analyses, including impacts to turbidity, embeddeness, and other riparian features. Additionally, NMFS can recommend one especially responsive publication at Al-Chokhachy *et al*, 2010. See literature cited section of opinion for full citation. This paper, in turn, cites many more relevant published studies.

Comment: Two commenters felt the Opinion did not address the beneficial effects of livestock grazing with regard to reduction of potential wildfire fuel, nutrient cycling, food production, reducing woody browse by wildlife, as well as negative effects of fish biologist activities.
Response: The opinion analyzes the potential impact of monitoring activities by biologists. NMFS does not believe the other identified effects are either relevant (*e.g*. world food production) or ripe for consideration (*e.g*., reducing woody browse by wildlife, see response to comment above) or results in a significant benefit to MCR steelhead or critical habitat (*e.g*., wildfire suppression or nutrient cycling). For example, the suppression of wildfire by the removal of fuel may reduce the short term increase in sediment to streams from upland erosion but wildfire also has a long term role in creating and maintaining habitat diversity. According to Liebig's Law of the Minimum, increasing the aqueous phase concentrations of nitrogen and phosphorus might translate into a local increase in MCR steelhead abundance if populations were at or near the streams natural carrying capacity for rearing juveniles but the actual benefit of nutrients at each trophic level is unpredictable in complex food webs. Also, any potential increase in productivity due to increased nutrient input (fecal deposits) may be offset by reductions in dissolved oxygen resulting from increased biological activity from bacteria breaking down deposited nutrients. In any event, any additional beneficial effects would only further support the no jeopardy and no adverse modification conclusions reached for the proposed action in the opinion.

Comment: One commenter addresses the incidental take statement and posits that the opinion does not take into consideration that MCR steelhead have adapted through natural selection to the presence of cattle in its environment.

***Response**:* With regard to the take statement, it may assist the commenter to understand that there is a difference between a finding of incidental take of individual listed species and jeopardy to an entire species under the ESA. In simplified terms, NMFS first evaluates in a biological opinion whether a proposed action will jeopardize a listed species or adversely modify its critical habitat. Then, if a no jeopardy/no adverse modification conclusion is reached, NMFS issues an incidental take statement for the anticipated incidental take of individual animals of the species. Here, the opinion says the proposed MNF action is no jeopardy for the entire MCR steelhead species and then provides an incidental take statement for the individual steelhead likely to be taken. NMFS is unaware of a body of science establishing that steelhead have adapted to a sympatric distribution of cattle, or to any other anthropogenic perturbation of the past two centuries. However, to the extent the comment is suggesting no take statement should be issued because steelhead as a species are not at risk from grazing, it appears to confuse the distinction between the jeopardy inquiry of a biological opinion and the functions of an incidental take statement.

***Comment**:* One commenter suggested adding elk and deer effects to the cumulative effects and integration and synthesis sections.
***Response**:* Wild ungulates have lived in the action area since time immemorial and, to the extent they may have similar effects as cattle grazing, those effects are properly described in the environmental baseline section, which description NMFS has added. Cumulative effects would only occur if ODFW decided to significantly increase elk or deer populations in the action area by curtailing hunting. NMFS has no information that ODFW intends to do so. Regardless of whether impacts of elk and deer are referenced in the environmental baseline or cumulative effects, however, those effects are addressed collectively in the integration and synthesis section and NMFS's ultimate conclusions.

***Comment**:* One commenter stated that the opinion should compare the strength of the John Day major population group to other such groups. The commenter also stated that much of the critical habitat considered in the opinion is located at high elevation and is free from some impacts noted in the status of critical habitat section in the opinion.
***Response**:* We do not believe it is necessary for our jeopardy analysis to compare the strength of the John Day major population group to other such groups. Rather, we compare the current status of this major population group to the recovery criteria identified in the MCR Steelhead Recovery Plan. The opinion describes, in detail, the circumstances under which this major population group would be considered to be viable (i.e., recovered). We note in the opinion, that two of the four populations (North Fork and South Fork) affected by the proposed action have achieved the status necessary to contribute to major population group recovery. We also note that the other two affected populations (Middle Fork and Upper John Day) are improving and approaching their recovery goals. We considered the status of these populations when reaching our no-jeopardy conclusion for the entire MCR steelhead DPS. In regards to critical habitat, we agree that much of the critical habitat addressed by the opinion is at moderate to high elevation. However, as noted in the opinion, the condition of this critical habitat varies and much of this habitat has been degraded by past land management activities.

***Comment**:* One commenter noted that many streams affected by the proposed action have roads in close proximity and sediment from roads often enters streams.

***Response**:* Both the BAs and opinion state that roads in riparian areas and overall high watershed road density has degraded stream habitat in action area. Our jeopardy and adverse modification conclusions were made after considering this fact. The grazing management proposed by the MNF and analyzed in our opinion is intended to allow for improvement of riparian areas and stream channels. This management is not intended to mitigate for the effects of roads. This was acknowledged in our opinion.

Most Sensitive Riparian Areas (MSRAs)

Comment: One commenter said that MNF has not confirmed that identified MSRAs meet the criteria for MSRA or offered a quantitative estimate of the MSRAs' contribution to the steelhead population. They said that NMFS should require MNF to review the MSRAs locations in the field and insure they are only located in areas that are truly important to steelhead production. Another commenter said that a 2007 USFS stream survey found no potential spawning habitat in the 0.6 miles of East Fork Beach Creek in the John Day Allotment. MNF requested that NMFS include a statement in the opinion to the effect that MSRAs may be adjusted within the five year term of the opinion as ground-truthing occurs. They suggest using a statement from the BAs; "MSRAs can be adjusted or deleted from the mapping model if spawning surveys or model validation fail to detect the presence of spawning steelhead or cattle preference of these areas."
Response: NMFS believes that the designation of MSRA and the additional steelhead protective measures in MSRA pastures is an important conservation measure by MNF to address the effects of livestock grazing. NMFS also believes that protocol used to designate MSRA is sound and credible. NMFS recognizes that model predictions need to be ground truthed and that this is an ongoing process. The statement requested by MNF is in Appendix G. Appendix G describes the process MNF used to originally assign MSRA to critical habitat for the Biological Assessments. The statement did not suggest MSRAs should be revised during the term of the opinion and NMFS does not believe it was included as part of the proposed action. Field observations supporting adjustments, additions or deletions to MSRAs gathered during the term of this opinion should be proposed as MSRA revisions in the BAs of future consultations.

Adaptive Management and Incidental Take Statement

***Comment**:* One commenter pointed out that the proposed response of "… rest the pasture for at least the next year …" is not relevant to rest rotation pastures that are rested alternate years.
***Response**:* We address this by modifying the language of the terms and conditions to read "… rest the pasture for at least the next scheduled year of grazing…" NMFS believes this change is appropriate to minimize potential for incidental take. It will ensure that a pasture has adequate time to recover from the level of exceedence associated with the response.

***Comment**:* One commenter suggested NMFS define "recurring non-compliance" and describe how it might lead to suspension of AUMs or cancellation of grazing permit.
***Response**:* The MNF BAs provide for adaptive management as part of the proposed action. The MNF contemplates a variety of responses to non-compliance depending on the type of non-compliance and other factors as specified, and we refer the commenter to the BAs for more detail. The opinion relies on adaptive management in assessing effects of the action. NMFS also

includes some minor modifications to a portion of the adaptive management in term and condition number 2 of the incidental take statement.

***Comment**:* One commenter asserts that the response for a second incidence of non-compliance of any kind is too broad.
***Response**:* NMFS views this comment as a clarification by the MNF of the proposed adaptive management framework. NMFS accordingly revised the opinion and related terms and conditions to respond to the clarification. This change is consistent with the purpose of the MNF's bank alteration adaptive management and focus on the bank alteration endpoint indicator.

***Comment**:* Several commenters observed that the cumulative extent of take limit of 50 percentage points over endpoint indicators was disproportionately small when compared to the preceding indicators of six minor, three moderate, or 2 major overages, especially considering that the cumulative limit includes overages of 1% to 6%.
***Response**:* NMFS partially agrees with the observation and has increased the cumulative overage limit to 60 total percentage points to make it more commensurate with the other limits. However, the 60 total percentage points functions as an independent extent of take indicator. Thus, for example, if there were 6 minor overages each of 12%, the total of 72% would exceed the 60% total extent of take and act as a trigger for reinitiation although it did not exceed the minor extent of take indicator of "7 to 13% over the endpoint indicator of not more than six DMAs within a calendar year." NMFS consider these amounts to be within the scope of the opinion's effects analysis.

***Comment**:* Several commenters felt that bank alteration endpoint indicator overages of 1% to 6% should not be counted at all toward any extent of take limitation because this is within a purported measurement margin of error.
***Response**:* NMFS does not agree that a change is required. The MNF's adaptive management framework and NMFS related terms and conditions in the incidental take statement address purported over-estimation in bank alteration by not specifying a specific on-the-ground MNF response for an exceedance up to 6%. However, NMFS believes it is appropriate to still account for these smaller exceedences when considering bank alteration across the allotments for purposes of extent of take reinitiation triggers and is concerned that obviating any accounting of these overages would have the effect of simply increasing all bank alteration endpoint indicators by 6%. End of year monitoring reports from prior years do not show an excess of overages per year in the 1% to 6% range. If this circumstance becomes much more common in the future, then the MNF grazing program would likely be having effects greater than NMFS contemplates in our opinion.

***Comment**:* One commenter expressed concern that terms and conditions 2c and 2d are inconsistent with Forest Service Handbook guidelines by not providing permittees a year to remedy exceedances of endpoint indicators, regardless of severity, before any administrative response can be applied.
***Response**:* Terms and conditions 2c and 2d are consistent with the MNF's own clarifications of their adaptive management system, and NMFS believes such responses are within the authority of the MNF.

***Comment**:* One commenter points out that the terms and conditions of the incidental take statement impose several minor changes to the proposed action with regard to MNF responses and monitoring. The same commenter suggests the annual report be provided to NMFS in draft for review and comment prior to being made final.
***Response**:* The NMFS is aware that our terms and conditions make several minor modifications to the proposed action which NMFS deems appropriate to minimize the impact of the take. In response to this comment, term and condition 2d was modified slightly to make it more consistent with the MNF's proposed action. Term and condition 3b was edited to allow for late season visual inspections rather than mandatory MIM measurements as suggested. Term and condition 3c was modified to exclude any ungrazed pastures as suggested because the impact of take is best minimized by focusing monitoring on grazed pastures. NMFS does not believe review and comment upon draft annual reports will be necessary.

***Comment**:* One commenter requested clarification of the intent of term and condition 3e.
***Response**:* MNF and NMFS are aware of ongoing research efforts to elucidate the purported over-estimation of bank alteration by the standard MIMS measurement protocol. NMFS agrees with MNF that, to date, that research has not identified a precise and consistent measurement bias, nor has the research provided a useful alternative measurement methodology. The opinion contemplates that such may be established within the five-year term of the opinion and, if sufficiently vetted, may replace the existing methodology. The intent of term and condition 3e is to ensure that, while we cannot describe a prospective new measurement methodology today, we can describe certain specific criteria that will be met to ensure that a new methodology will not entail risk to MCR steelhead or critical habitat beyond what is analyzed in the opinion.

***Comment**:* One commenter objected to the complexity of the monitoring site definitions presented in term and condition 3c.
***Response**:* NMFS acknowledges that the several different species of monitoring site types seems unnecessarily complicated. This circumstance is based on the proposed action as presented by MNF. NMFS term and condition 3c reflects the MNF's proposed types of monitoring sites, and NMFS does not believe that terms and conditions of the incidental take statement is the best place to improve these site type definitions. Since the grazing program depends upon monitoring for move triggers and endpoint indicators, it is very important that at least one appropriate monitoring location be identified in each pasture that will contain both cattle and steelhead. NMFS hopes that, in future consultations on these activities, MNF will be able to simplify its site type definitions.

Monitoring

***Comment**:* One commenter noted that the proposed grazing management program includes considerable monitoring and in order to be successful, the proposed monitoring must be carried out by the MNF. They also recommend the establishment of control sites to determine the impacts of ungulate browsing/grazing.
***Response**:* We agree the proposed action includes extensive monitoring. As explained in the opinion, the MNF has committed to complete the monitoring as proposed and our effects analysis was completed accordingly. NMFS concurs that the type of experimentation suggest by the commenter could provide useful information, and recommends that MNF consider including

such experiments in the comprehensive research program recommended by NMFS in Sections 2.9 and 3.3.3 of the opinion.

***Comment**:* One commenter expressed skepticism that MNF will successfully complete all of the proposed monitoring. They also recommend making monitoring results available on a public website.
***Response**:* The MNF has committed to complete the proposed monitoring. Over the last three years 2009-2011, the MNF has successfully completed monitoring except for three instances in 2011 when early snowfall rendered several monitoring sites inaccessible. We believe the available information indicates the monitoring will be carried out as proposed. The MNF has provided us end-of-year monitoring reports for every year of the term of the previous consultation, 2007-2011. The MNF would have to consider the merits of making monitoring data available on a public website. NMFS does not view the issue as being relevant to interagency consultation or our biological opinion.

***Comment**:* One commenter states that claims in the BAs and opinion regarding riparian and stream channel recovery are unfounded.
***Response**:* The MNF provided information, including effectiveness monitoring data and professional judgment, in their BAs indicating that in some areas riparian and stream conditions are improving. NMFS' opinion acknowledges that the PIBO effectiveness program has been going on for only 10 years and that there are only two data points for most sites to establish a trend. For some sites there is information indicating that stream and riparian conditions are improving. In other areas available information indicates that conditions are static. We describe this in our opinion and our effects analysis is conducted accordingly.

***Comment**:* One commenter opines that the lack of reference sites in eastern Oregon indicates that almost all areas have been degraded by cattle grazing. They note the lack of reference sites makes it difficult to determine when the MNF is achieving "near-natural rates of recovery."
***Response**:* We agree that many areas in eastern Oregon have been affected by historic and ongoing livestock grazing. There are, however, suitable reference sites in Eastern Oregon (encompassing multiple basins in addition to the John Day) and the PIBO effectiveness monitoring program collects data at these sites. The publications of the PIBO program compare conditions at managed and reference sites and examine how trends in stream and riparian condition vary between the two.

***Comment**:* Two commenters suggest that the MNF should conduct temperature monitoring in streams in the action area.
***Response**:* We acknowledged in the opinion that many streams in the action area suffer from high summer water temperatures. We also noted that stream temperature is affected by a number of factors including the presence of roads and historical land management such as wide-spread logging of riparian areas. In our effects analysis, we concluded the proposed action would lead to improvements in riparian condition and development of additional stream shade over time. The MNF did not propose to collect stream temperature data as part of their action, and we concluded the action was not likely to jeopardize the continued existence of MCR steelhead or adversely modify their critical habitat. We also determined that the addition of stream temperature

monitoring through the terms and conditions of our ITS was not necessary to reduce the impact of take of MCR steelhead caused by the proposed action.

***Comment**:* A commenter states that the opinion contains no evidence the MNF is complying with MIS or PACFISH. They ask if such evidence will be presented in the final opinion.
***Response**:* When presented with a proposed action for the purposes of section 7 of the ESA, we consider the status of species, the environmental baseline, the effects of the action, and any cumulative effects in determining whether the proposed action will result in jeopardy or adverse modification of critical habitat. Thus, we conduct an independent jeopardy analysis, and it is not incumbent upon us to consider the proposed action's compliance with other land management directives as part of our analysis. This approach has been upheld in previous litigation. See earlier responses re PACFISH above as well.

***Comment**:* One commenter feels that the use of the terms "key reach" and "representative reach" are troubling, and that MIM monitoring should occur only at DMAs. They further state the DMAs established according to the MIM protocol should be sufficient.
***Response**:* Monitoring at key reaches and representative reaches is part of the proposed action, not originally imposed by terms and conditions of our ITS. The MNF proposes to conduct monitoring at these sites because there are many pastures that contain MCR steelhead habitat but have no established DMAs. In order to utilize in-season move triggers and assess compliance with endpoint indicators, monitoring must occur somewhere within these pastures. As described earlier, NMFS acknowledges that the several different species of monitoring site types seems unnecessarily complicated for the longer term. This circumstance is what MNF presents to NMFS in the proposed action however, and NMFS does not believe that terms and conditions of the incidental take statement are the best place to improve these site type definitions. Since the grazing program depends upon monitoring for move triggers and endpoint indicators, it is very important that at least one appropriate monitoring location be identified in each pasture that will contain both cattle and steelhead. NMFS hopes that the MNF will present simpler and more consistent monitoring site definitions in future consultations.

***Comment**:* One permittee commented that they should be involved in the selection of monitoring sites.
***Response**:* The selection of key reach sites is the responsibility of the MNF. NMFS' understanding is that the MNF has sometimes been amenable to involving permittees in identification of monitoring sites in the past.

<u>Miscellaneous</u>

***Comment**:* One commenter opined that the draft presented no solid scientific facts.
***Response**:* Before issuing an opinion, NMFS analyzes all of the best scientific and commercial data available. Prior to issuance of the draft, we reviewed available information on the effects of livestock grazing on anadromous fish and their habitat; the biology, status, and life history of the MCR steelhead; aquatic habitat conditions within the John Day River basin; and other information with bearing upon our conclusions. The opinion cites over 90 scientific publications including books, journal articles, and agency reports. NMFS is confident the opinion is based on the best scientific and commercial data available.

***Comment**:* One permittee noted the biological opinion identifies numerous threats to anadromous fish such as climate change, roads, grazing, timber harvest, and urbanization, but did not mention other threats such as ocean harvest, tribal harvest, impacts from wildlife, and damage caused to streams by winter icing.
***Response**:* Harvest is a threat to some species of salmon and steelhead. However, harvest has not been identified as a major threat to MCR steelhead. The available information does not indicate impacts from wildlife or winter icing are limiting factors or threats to MCR steelhead.

***Comment**:* One commenter asserted that many of the limiting factors identified for MCR steelhead are caused by commerce and industry and the cessation of these activities could cause economic harm to the state and result in only moderate increases in fish production.
***Response**:* NMFS does not agree. Economically important commerce and industries, including cattle growing, need not cease to allow recovery of listed anadromous salmonids. Indeed, with the issuance of hundreds of biological opinions within the range of listed salmon in the Pacific Northwest, NMFS has made an unambiguous statement that a vibrant economy and recovery of robust anadromous salmonid populations are mutually supporting goals. This opinion is a prime example.

***Comment**:* One commenter observed that log weirs placed in Deer Creek in the Murderers Creek Allotment are causing habitat problems and are likely to prevent this stream from reaching proper functioning condition.
***Response**:* We agree that these channel-spanning log weirs, installed several decades ago as a believed-to-be fish habitat enhancement, may now be retarding habitat recovery on Deer Creek. Although effective in creating mid-channel plunge pools, it is clear now that this type of structure can increase W/D ratio by spreading streamflow over their length. Removing this earlier generation of artificial habitat structures is a fairly common modern habitat restoration project type. Whether the MNF would consider undertaking the removal of these structures is beyond the scope of this opinion.

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***Comment**:* One commenter noted that term and condition 3b is inconsistent with the MNFs proposed action.
***Response**:* We are aware of this difference. Term and condition 3b requires that mid-season grazing compliance checks start at the beginning of August and continue through October rather than begin in mid-August. We believe this additional monitoring is appropriate to minimize the impact of take because August is generally the beginning of late season grazing, a time when cattle begin to favor riparian areas over uplands. This additional monitoring will help ensure that endpoint indicators are not exceeded and the effects of the proposed action remain consistent with the effects considered in the opinion.

***Comment**:* One commenter noted that MCR steelhead access is blocked on Bear Creek in the Slide Creek Allotment downstream of the MNF boundary.
***Response**:* The BA for this allotment did not identify such a barrier. We inquired with the MNF as whether such a barrier exists but did not receive a response in time to amend our opinion. We do not anticipate the conclusions of our opinion would not change if it is discovered that this stream is indeed inaccessible to MCR steelhead.

***Comment**:* One commenter stated that the John Young Meadows holding pasture is not accessed through a water gap.
***Response**:* We contacted the MNF to inquire about this comment, but were not able to determine if this was true. If it were true, the effects of grazing on the Murderers Creek Allotment would be slightly less than considered in our opinion. Such a small change would not alter the conclusions of our opinion.

***Comment**:* One commenter asked why the Murderers Creek Allotment was the only allotment identified by the MNF for pre-season inspections.
***Response**:* In their BAs, the MNF did not specifically identify why this was the only allotment to receive pre-season inspections. However, available information would suggest that it is related to issues with wild horses and exceedence of endpoint indicators in the past.