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SMALL-SCALE SUCTION DREDGING IN LOLO CREEK AND MOOSE CREEK CLEARWATER AND IDAHO COUNTIES, IDAHO

Record
Of
Decision

December 2006

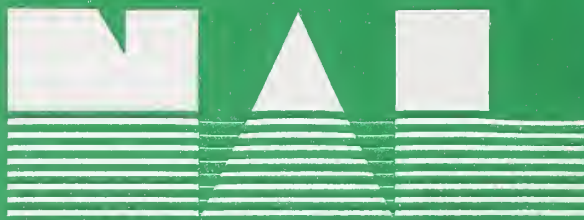


U.S. Forest Service
Clearwater National Forest



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Agriculture**



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Record of Decision
For the Small-Scale Suction Dredging in Lolo Creek and Moose Creek
Final Environmental Impact Statement

Lochsa Ranger District and North Fork Ranger District
Clearwater National Forest
Clearwater County and Idaho County,
Idaho

December 5, 2006

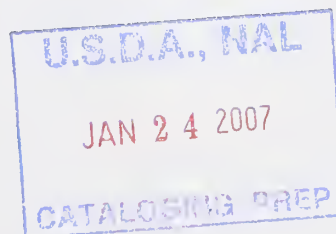
Lead Agency: USDA Forest Service, Clearwater National Forest

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Abstract:

This document describes the decision for the Small-Scale Suction Dredging in Lolo Creek and Moose Creek Final Environmental Impact Statement (FEIS) and the rationale for the decision. The decision is based on the analyses documented in the FEIS (April 2005) and in the Clearwater National Forest Land and Resource Management Plan FEIS (September 1987). After reviewing the effects of the Proposal and Alternatives in the Small-Scale Suction Dredge FEIS, the Deciding Officer for the Clearwater National Forest (NF) has selected Alternative 3. Alternative 3 has also been identified as the Environmentally Preferred Alternative.



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TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
A. INTRODUCTION.....	4
B. ANALYSIS AREA	5
C. AUTHORITY FOR MY DECISION	5
D. WHAT I AM DECIDING	8
E. PURPOSE AND NEED FOR ACTION	8
F. PUBLIC INVOLVEMENT	9
G. TRIBAL CONSULTATION.....	10
H. ENVIRONMENTALLY PREFERABLE ALTERNATIVE	11
I. MY DECISION	11
Terms and Conditions.....	12
Monitoring	14
Lolo Creek Restoration	15
Moose Creek Stream Improvement	15
J. RATIONAL FOR MY DECISION	16
Comparison of Alternative 3 to the Purpose and Need	16
Comparison of Alternative 3 to the Issues.....	17
Effects on Water Quality	17
Effects on Stream Geomorphology.....	17
Effects on Instream Habitat	18
Effects on Fisheries and Other Aquatic Organisms	18
Effects on Threatened and Endangered Fish	19
Effects on Sensitive Species	20
Effects on Aquatic Invertebrates	21
Effects on Nez Perce Treaty Rights and Traditional Uses	21
Effects on Wildlife	22
Effects on Riparian Vegetation	22
Effects on Visual Resources	23
Effects on Noise	23
Effects on Recreation	24
Effects on Socioeconomics	25
Effects on Heritage Resources	25
K. OTHER ALTERNATIVES CONSIDERED IN DETAIL	26
Alternative 1 (No Action)	26
Alternative 2 (Suction Dredging)	27
Alternative 3 (Suction Dredging and Stream Improvements).....	28

L.	CONSISTENCY WITH THE CLEARWATER FOREST PLAN	28
	Aquatics Forest Plan Standard	29
	Wild and Scenic River Eligibility	31
	Consistency with the Forest Plan Lawsuit Settlement.....	31
M.	FINDINGS REQUIRED BY OTHER LAWS	31
	National Forest Management Act of 1976	31
	Forest Service Surface Use Regulations and Guidelines.....	32
	Mining Law of 1872	32
	Organic Administration Act of 1897	33
	Multiple Use Act of 1955	33
	Mining and Mineral Policy Act of 1970	33
	National Environmental Policy Act	33
	Clean Water Act and Idaho State Water Quality Laws	34
	Clean Water Act Section 402	34
	Clean Water Act Section 404	34
	Executive Order 11990	35
	Endangered Species Act	35
	National Historic Preservation Act	35
	Clean Air Act	36
	Environmental Justice	36
	Idaho Stream Channel Protection Act	36
N.	CONSIDERATION OF OTHER INFORMATION	37
	Interior Columbia Basin Ecosystem Management Project	37
	Roadless Initiative	37
O.	REVIEW AND APPEAL OPPORTUNITIES	37
P.	IMPLEMENTATION	39
Q.	REFERENCES	40

FIGURES

<u>Figure</u>	<u>Page</u>
1-1 Lolo Creek and Moose Creek Study Areas within the Clearwater National Forest	7

LIST OF ATTACHMENTS

- ATTACHMENT 1. BIOLOGICAL ASSESSMENT: THREATENED, ENDANGERED AND PROPOSED SPECIES – Suction Dredging on USFS Lands in the Lolo Creek Drainage, Final Version, January 19, 2006.
- ATTACHMENT 2. BIOLOGICAL ASSESSMENT: THREATENED, ENDANGERED AND PROPOSED SPECIES – Suction Dredging on USFS Lands in the Moose Creek Drainage, Final Version, January 19, 2006.
- ATTACHMENT 3. US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE, Suction Dredging on Forest Service Lands in the Lolo Creek Drainage, Idaho and Clearwater Counties, Idaho – Concurrence, File #104.7000 I 06-0336, February 10, 2006.
- ATTACHMENT 4. UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NATIONAL MARINE FISHERIES SERVICE, Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Small-scale Suction Dredging, Lolo Creek, 1706030616, Clearwater County, Idaho, April 28, 2006.
- ATTACHMENT 5. US DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE, Recreational Class Suction Dredging on USFS lands in the Moose Creek Drainage, Clearwater County, Idaho—Biological and Conference Opinion, File #104.1000 F-06-335, March 7, 2006.
- ATTACHMENT 6. RESPONSE TO COMMENTS

A. INTRODUCTION

This Record of Decision documents the decision to implement an alternative of the Small-Scale Suction Dredging Final Environmental Impact Statement (FEIS). The analysis was prepared in response to the Endangered Species Act (ESA) listing of steelhead and bull trout in Lolo Creek, and bull trout in Moose Creek. Lolo Creek is located on the Lochsa Ranger District, and Moose Creek is located on the North Fork Ranger District of the Clearwater National Forest. This analysis sought to evaluate the proposed action of the approval of suction dredging operations with specific terms and conditions, as well as the no-action alternative and an action alternative that included some watershed restoration components.

Since the 1970's, both creeks have been popular suction dredging destinations. While the number of individuals who actually prospect varies from year to year, miners have established and maintained 17 mining claims on Lolo Creek and 26 on Moose Creek. Ownership of the claims is shared by 18 potential suction dredge operators on Lolo Creek and 38 potential suction dredgers on Moose Creek.

Lolo, Moose, Independence, and Deadwood Creeks (hereafter referred to as Lolo Creek and Moose Creek) are most frequently mined by part-time, small-scale operations using suction dredges with nozzles ranging from two to five inches in diameter and gasoline-powered pumps with up to 15 horsepower motor. Claimant activity ranges from short-term recreational uses (one to two weeks with a campout every year) to season long subsistence mining by individuals who supplement their income by extracting gold from their respective claims.

Until the late 1990s, Lolo Creek and Moose Creek miners conducted their suction dredge operations under Forest Services Regulations by notifying the Forest of their activities through a notice of intent to operate. The State of Idaho Department of Water Resources also required suction dredge operators throughout the State to apply for a recreational suction dredging permit. Attached to the State permit was a list of specific standards and criteria ("best management practices," or BMPs) for resource protection. National Forests in Idaho collectively agreed that operations that implemented the State's BMPs could operate in selected streams with minimal or no effect to fish and water quality.

In 1997, steelhead trout was listed as a threatened species within the Snake River drainage under the Endangered Species Act (ESA). In 1998, bull trout was also listed as a threatened species within the Snake River drainage. Steelhead trout occur in Lolo Creek, and bull trout occur in both Lolo Creek and Moose Creek. Steelhead trout are not found in Moose Creek due to the downstream migration barrier created by Dworshak Dam.

After the 2001 mining season, the Clearwater National Forest consulted, under Section 7 of the ESA, with National Oceanic and Atmospheric Administration Fisheries (NMFS) and U.S. Fish and Wildlife Service (USFWS) concerning the effects of small-scale suction dredging on these threatened species. In Moose Creek, USFWS was consulted because of the presence of bull trout. In Lolo Creek, both USFWS and NMFS were consulted because of the presence of bull trout and steelhead trout (FEIS, Chapter 5, p. 5-5). The Forest withheld approval of all Plans of Operations for dredging in Lolo Creek or Moose Creek until the consultation and appropriate

NEPA analyses were completed. Consequently, no authorized suction dredging has occurred in either drainage since the 2001 mining season.

In a 2006 Biological Assessment (BA) completed by the Forest for Lolo Creek (US Forest Service, Clearwater NF, 2006a), the determination was made that suction dredging was “likely to adversely affect” steelhead trout, but was “not likely to adversely affect” Lolo Creek bull trout. In a BA for Moose Creek, the Forest determined that suction dredging was “likely to adversely affect bull trout”. In their respective 2006 Biological Opinions (BO), NMFS and USFWS agreed with the Forest Service’s determinations (NMFS, 2006 and USFWS, 2006). Both agencies concluded that suction dredging would not jeopardize the continued existence of either species. Each BO included incidental take statements with non-discretionary reasonable and prudent measures to avoid or minimize take, and mandatory terms and conditions to implement those measures. In Chapter 2 of the FEIS each agency’s reasonable and prudent measures, terms and conditions, and recommendations discussed in the Forest’s 2006 Biological Assessments for Lolo Creek and Moose Creek are consolidated into 30 specific measures (terms and conditions) that minimize environmental impacts to the threatened fish and their habitat and avoids or minimizes incidental take (FEIS, Chapter 2, p.2-1).

The FEIS and the project file are available for public review at the Forest Supervisor’s Office in Orofino, Idaho.

B. ANALYSIS AREA

The Clearwater National Forest is located on the west side of the Bitterroot Mountains in north central Idaho (Figure 1-1). The Lolo Creek study area is within the Lochsa Ranger District, while the Moose Creek study area is within the North Fork Ranger District.

The analysis areas where the proposed suction dredging sites are located are in specified reaches of Lolo Creek and Moose Creek, including two Moose Creek tributaries, Independence Creek and Deadwood Creek. A legal description is as follows and is further illustrated by Figure 1-1.

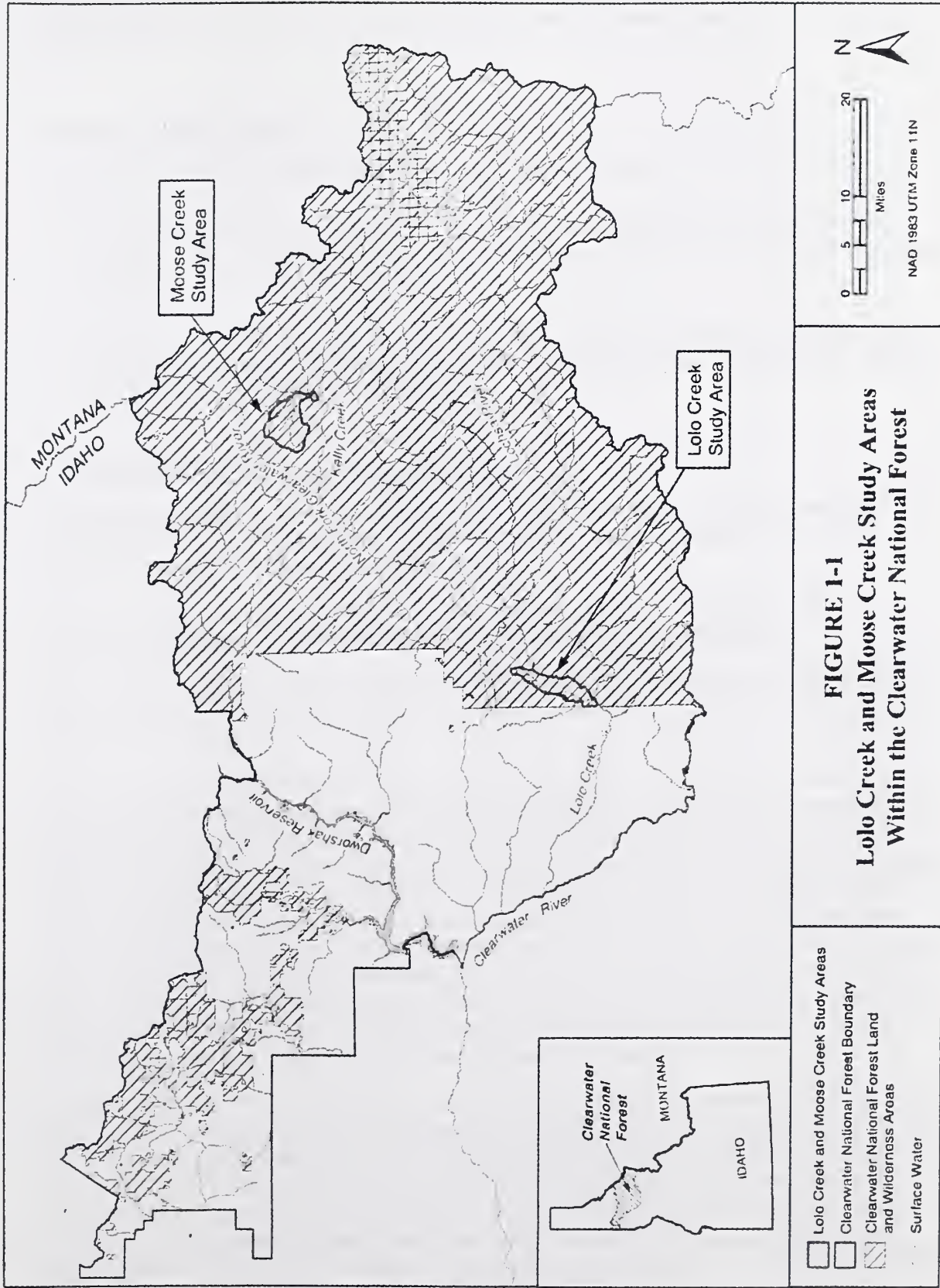
Lolo Creek	Moose Creek <i>(and tributaries Deadwood Creek and Independence Creek)</i>
14 to 17 miles southeast of Pierce, Idaho, in portions of:	Approximately 12 miles east of Kelly Forks Work Center in portions of:
<ul style="list-style-type: none"> ➤ T. 34 N., R. 6 E., Section 5 ➤ T. 35 N., R. 6 E., Sections 10, 16, 17, 20, 29, and 32, Boise Meridian. 	<ul style="list-style-type: none"> ➤ T. 39 N., R. 11 E., Sections 4 and 9 ➤ T. 40 N., R. 11 E., Sections 29, 31, 32, 33, Boise Meridian, Clearwater County, Idaho
All portions of the Lolo Creek study area border Clearwater County and Idaho County	

C. AUTHORITY FOR MY DECISION

As Forest Supervisor of the Clearwater National Forest, I am authorized to manage the Forest in accordance with applicable laws and regulations set forth by congressional legislation and executive policy to include implementation of the Forest Plan. I have been delegated authority

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as the Deciding Official by the Regional Forester for the decisions outlined in this Record of Decision.

D. WHAT I AM DECIDING

I am making the following decisions and documenting them in this Record of Decision:

- Whether or not plans of operation containing specific terms and conditions may be approved for suction dredging in Lolo Creek, Moose Creek and Moose Creek tributaries of Independence and Deadwood Creeks.
- And which, if any, mitigation and monitoring measures are needed to allow the Forest Service to approve such mining Plans of Operations for suction dredging in the project area (FEIS, Chapter 2, p. 2-1 through 2-11).

E. PURPOSE AND NEED FOR THE ACTION

The purpose and need answers the question “why” the proposed action is being considered. The purpose and need for the proposed action is to protect surface resources through the approval of acceptable mining Plans of Operations.

Purpose: Develop operating conditions and mitigations measures that protect surface resources, including threatened fish species, from impacts of suction dredging.

Need: Allow the Forest Service to approve, with no further environmental analysis, a limited number of Plans of Operations in specified reaches of Lolo Creek, Moose Creek, Independence Creek and Deadwood Creek.

Forest Service regulations found at 36 Code of Federal Regulations (CFR) 228.5 states that “a Plan of Operation will be analyzed by the authorized officer to determine the reasonableness of the requirements for surface resource protection.” All mining proposals, including those submitted by small-scale suction dredge operators, are made under the authority of the United States mining laws (30 U.S.C. 21-45), which confer the statutory right to enter upon public lands for the purpose of exploration and development of mineral resources. The Clearwater National Forest received some Plans of Operation, and anticipates others of similar scale, from people proposing to use small-scale suction dredges to prospect, explore, and extract gold from instream gravels on and off placer mining claims in Lolo Creek and Moose Creek. The Forest Service is responsible for analyzing and approving these Plans of Operations, if the surface resource protection requirements found in these plans are reasonable.

The Forest Service has a responsibility to manage surface impacts from mining activities on National Forest System lands. Since miners have expressed a desire to continue mining on the Forest, the Forest Service initiated this environmental analysis, pursuant to mining regulations at 36 CFR 228.4 (f), to analyze the effects of suction dredging on resources and to develop mitigation measures to protect those resources. When included in Plans of Operation, these mitigation measures, along with necessary State and Federal permits, will allow the Forest Service to approve the Plans of Operation. Approved Plans of Operation will allow up to 18

small-scale suction dredge operations in Lolo Creek and up to 38 small-scale suction dredge operations in Moose, Independence and Deadwood Creeks.

F. PUBLIC INVOLVEMENT

Public involvement was encouraged through the planning process. A communication plan (Public Involvement Plan, February 12, 2003) was developed to identify likely interests in the project and to develop an approach to inform the public and involve them in project activities. It consisted of mailings, one-on-one discussions, and an informational web page. The following is a chronology of public involvement activities:

May 18, 2001 - Level I consultation initiated with National Oceanic and Atmospheric Administration Fisheries (NMFS) and U.S. Fish and Wildlife Service (USFWS) for Lolo Creek.

June 10, 2002 – formal consultation with USFWS initiated for Moose Creek.

August 6, 2002 - formal consultation with NMFS initiated for Lolo Creek.

January 1, 2003 - The Small-Scale Suction Dredging project first appeared in the Schedule of Proposed Actions.

January 8, 2003 - meeting in Grangeville, Idaho, with representatives of the Lolo and Moose Creek miners, Northwest and Clearwater Chapters of the Northwest Gold Prospector's Association (NWGPA), Moose Creek Mining District, and Independent Miner's Association.

January 15, 2003 – USFWS 2003 Biological Opinion on proposed suction dredging in Moose Creek completed and signed.

March 21, 2003 – Letter sent to all interested parties listed on the NEPA mailing list.

March 31, 2003 - a legal notice for request of comments on the Small-Scale Suction Dredging project appeared in the *Lewiston Tribune* (our paper of record). This started a 30 day comment period that ended May 7, 2003, 43 responses were received.

April 4, 2003 - Clearwater National Forest submitted a Notice of Intent (NOI) in the Federal Register to prepare this EIS (65 FR 16465-16466).

June 27, 2003 – NMFS 2003 Biological Opinion for proposed suction dredging in Lolo Creek completed and signed.

August 7, 2003 – Orientation meeting with EIS contractor, Science Applications International Corporation (SAIC), and representatives of the Clearwater Chapter of the Northwest Gold Prospector's Association of America on Lolo Creek.

August 8, 2003 - Orientation meeting with SAIC and representatives of the Moose Creek Mining District on Moose Creek.

April 4, 2004 - A legal notice appeared in the Lewiston Tribune initiating the 45 day public comment period for the DEIS, 11 responses were received (FEIS, Appendix D).

May 10, 2004 - USFWS 2004 letter of concurrence on determinations for listed species on proposed suction dredging in Lolo Creek for 2004 - 2005 completed and signed.

June 30, 2004 - NMFS 2004 Biological Opinion for proposed suction dredging in Lolo Creek for 2004 - 2005 completed and signed.

July 2, 2004 - USFWS 2004 Biological Opinion on proposed suction dredging in Moose Creek for 2004 - 2005 completed and signed.

March 7, 2006 - USFWS 2006 Biological Opinion on proposed suction dredging in Moose Creek for 2006 completed and signed.

April 28, 2006 - NMFS 2006 Biological Opinion for proposed suction dredging in Lolo Creek for 2006 completed and signed.

The issues raised by individuals and organizations who submitted comments may be found in Chapter 1 and Appendix D of the FEIS. The interdisciplinary team (ID team) reviewed and evaluated issues derived from comments to determine which issues were key issues. The key issues, the ones used to develop or refine alternatives or to guide the evaluation of impacts, are water quality and fish habitat; fisheries and other aquatic organisms; Nez Perce Tribes Treaty rights, salmon reintroduction, and watershed restoration; wildlife; riparian vegetation; visual resources, noise and recreation; hazardous materials; reclamation; monitoring; socio-economics; and heritage and cultural resources. Certain issues were found to be non-relevant to the decision, since they were outside the scope of the proposal, already decided by law or policy, beyond the geographic influence of the proposal, or not affected by the proposal and alternatives (FEIS, Chapter 2, p. 2-1 through 2-11). These included mining claim validity; designating streams as wild and scenic and withdrawing streams from mineral entry; spill prevention containment and countermeasures plan; reclamation bonding; road construction and road improvements; systematic data collection system; and watershed analysis prior to approving suction dredging operations.

G. TRIBAL CONSULTATION

In addition to the opportunities listed above, the following consultation occurred with the Nez Perce Tribe:

March 17, 2003 - Clearwater National Forest Supervisor, sent a letter notifying the Nez Perce Tribal Executive Committee Chairman, Samuel N. Penney, of the imminent scoping and environmental analysis and initiated government-to-government consultations regarding the project.

February 13, 2004 – An overview of the project was given to the Nez Perce Tribal Staff at their office in Lapwai.

May 12, 2004 – Comments on the DEIS were received from the Nez Perce Tribal Executive Committee.

September 16, 2004 – Field review of the Lolo Creek Project Area with the Nez Perce Tribe's fisheries and watershed personnel.

December 6, 2004 – Comments received from Scott Alhouse (Nez Perce Tribe, Water Resource Division) concerning points raised during the September 16 field review. Tribal Fisheries Biologist will be included as part of the monitoring team.

May 25, 2006 – Meeting with Nez Perce Tribe's Department of Natural Resource to review the response to comments and terms and conditions listed in the FEIS.

Issues and concerns discussed included monitoring suction dredging operations, enforcement of terms and conditions, cumulative impacts of suction dredging, reclamation bonding, monitoring water quality, salmon, monitoring fish habitat, riparian vegetation, ESA listed fish, and EPA point source permitting requirements (FEIS, Appendix D).

H. ENVIRONMENTALLY PREFERABLE ALTERNATIVE

Title 40 CFR Section 1505.2(b) states that in preparing an EIS and agency shall: "identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable. An agency may discuss preferences among alternatives based on relevant factors including economic and technical considerations and agency statutory missions."

Some comments would suggest that Alternative 1, the "no action" alternative, should be the environmentally preferable alternative because Alternative 1 would create no new disturbances. Alternative 1, however, is contrary to Forest Service regulations found at 36 CFR 228A that require approval of mining operating plans that develop measures minimizing impacts to surface resources and satisfy State and Federal permitting requirements.

In this case, I have identified Alternative 3, the Selected Alternative, as the environmentally preferable alternative because it best protects, preserves, and enhances the historic, cultural and natural resources with the Lolo and Moose Creeks project areas.

I. MY DECISION

It is my decision to select Alternative 3, the environmentally preferable alternative. Alternative 3 will allow the Forest Service to approve a limited number of small-scale suction dredging operations in specified reaches of Lolo Creek and Moose Creek (including two tributaries, Independence Creek and Deadwood Creek) if the plans of operations include specified terms and conditions discussed below and in Chapter 2 of the FEIS. In addition to an agreement to

the terms and conditions, each operator must provide the Forest Service with a copy of their Joint U.S. Army Corps of Engineers 404/State of Idaho 3804-B Stream Alteration Permit, and U.S. Environmental Protection Agency NPDES permit, and on those occasions where an operator's proposed or existing surface disturbance is determined to be a significant disturbance by the District Ranger, the operator will also be required to submit a reclamation bond. The agreement to the specified terms and conditions, copies of State and Federal Permits and bond (if required) must be received by the District Ranger prior to approval of their Plan of Operations.

Alternative 3 includes Forest Service monitoring requirements (FEIS, Chapter 2, p. 2-6).

Alternative 3 will also allow restoration of the abandoned Lolo #5 mining claim and/or repair of Forest Road 5440 ford (FEIS, Chapter 2, p.2-7) as funding becomes available.

Terms and Conditions

Alternative 3 proposes to allow approval of future suction dredge plans of operation in Lolo Creek and the Moose Creek drainage, which includes Independence and Deadwood Creeks, provided the operator incorporates in their plan the terms and conditions (mitigation measures that minimize impacts to surface resources including threatened and endangered fish (FEIS, Chapter 2, p. 2-2 through 2-6)) listed below. The terms and conditions are:

1. Operations may occur only below the ordinary high water line during a dredge season extending from July 1 through August 15.
2. Before dredge mining begins, operators must submit a Plan of Operations to the Forest Service that specifies the location, approximate amount of surface area they plan to dredge, and likely dates of operation. The operating plan would be used to establish channel-monitoring sites, and is not intended to constrain the timing and location of dredge operations.
3. Prior to dredging, operators must meet with a Forest Service fisheries biologist who will inspect the proposed dredge sites. No dredging will be allowed in areas of known bull trout (or steelhead, in the case of Lolo Creek) spawning or in areas identified as spawning habitat. Miners will also avoid identified lamprey spawning areas.
4. The suction dredge may have a nozzle diameter of 5 inches or less and a horsepower rating of 15 horsepower or less.
5. Intakes must be covered with 3/32-mesh screen.
6. Dredge sites must be located in areas of large substrate not preferred for spawning steelhead trout and bull trout, and operators are required to conduct all dredge mining 50 feet or more from identified spawning areas.
7. Dredging operations must take place during daylight hours.
8. Dredging must be conducted in a manner so as to prevent the undercutting and destabilization of stream banks, and may not otherwise disturb stream banks.
9. If streambanks are disturbed in any way, they must be restored to the original contour and re-vegetated with native species at the end of the dredging season. Camping areas, paths, and other disturbed sites that are located along stream banks and that are

- associated with dredge operations must be re-vegetated or otherwise restored to their original conditions at the end of the dredge season.
10. Camping areas, paths, and other disturbed sites that are located along stream banks and that are associated with dredge operations must be re-vegetated or otherwise restored to their original conditions at the end of the dredge season.
 11. Operators must cease activities during wet periods when project activities are causing excessive ground disturbance or excessive damage to roads.
 12. Dredges must not operate in such a way that the current or the discharge from the sluice is directed into the bank in a way that causes erosion or destruction of the natural form of the channel, that undercuts the bank, or that widens the channel.
 13. Operators may not undermine, excavate, or remove any stable woody debris or rocks that extend from the bank into the channel.
 14. Operators may not remove, relocate, or disturb stable in-stream woody debris or boulders greater than 12 inches in diameter.
 15. The operator will not remove any large down or standing woody debris or trees for firewood within one tree length of the stream.
 16. Operators may not move cobbles in the stream course to the extent that the deepest and fastest portion of the stream channel (the thalweg) is altered or moved.
 17. No mechanized equipment may be operated below the mean high water mark except for the dredge itself and any life support system necessary to operate the dredge. No mechanized equipment other than the suction dredge may be used for conducting operations.
 18. Dredging may not dam the stream channel.
 19. Dredges may not operate in the gravel bar areas at the tails of pools.
 20. Dredges may not operate in such a way that fine sediment from the dredge discharge blankets gravel bars.
 21. Operators must visually monitor the stream for 300 feet downstream of the dredging operation after the first half hour of continuous operation. If noticeable turbidity is observed downstream, the operation must cease immediately or decrease in intensity until no increase in turbidity is observed 300 feet downstream.
 22. Shallow areas must be restored to their original grade each day and natural pools may not be filled. Tailings must be redistributed to avoid creating unstable spawning gravels.
 23. All dredge piles must be dispersed and backfill all dredge holes before moving to a new dredge location and by the end of the operating season, no later than August 15.
 24. Dredging operations must shut down immediately if any sick, injured, or dead specimen of a threatened or endangered species is found. In Lolo Creek, the finder must notify the Vancouver Field Office of NMFS Law Enforcement at (360) 418-4246. The finder must take care in handling sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition. The finder must also ensure that evidence intrinsic to the specimen is not disturbed unnecessarily. If any fish eggs are excavated or if destruction of redds is observed in Moose Creek, operators must contact the Clearwater National Forest and receive authorization to proceed prior to resuming operations. Operators must record the date, time, location, and possible cause of fish injury or death.

25. Operators must maintain a minimum spacing of at least 100 linear feet of stream channel between suction dredging operations.
26. Gasoline and other petroleum products must be stored in spill-proof containers at a location that minimizes the opportunity for accidental spillage.
27. The suction dredge must be checked for leaks, and all leaks repaired, prior to the start of operations each day. The fuel container used for refueling must contain less fuel than the amount needed to fill the tank. The suction dredge must be anchored to the stream bank when refueling in the water, so that fuel does not need to be carried out into the stream. Unless the dredge has a detachable fuel tank, operators may transfer no more than one (1) gallon of fuel at a time during refilling. Operators must use a funnel while pouring, and place an absorbent material such as a towel under the fuel tank to catch any spillage from refueling operations. A spill kit must be available in case of accidental spills. Soil contaminated by spilled petroleum products, must be excavated to the depth of saturation and removed from the National Forest for proper disposal.
28. Operators will not entrain, mobilize, or disperse any mercury discovered during mining operations. Operators will ensure that all mercury discovered is removed from the stream and not disposed of on Forest Service Lands. Operators must cease operating at the site where the mercury was recovered and notify the Forest (USFWS, 2006).
29. All human waste must be kept more than 200 feet away from any live water. All refuse from dredging activities must be packed out and disposed of properly.
30. Operators must obtain and comply with all required permits, including the Idaho State Permit to Alter a Stream Channel, and comply with all required conservation measures and Best Management Practices (IDWR, 2006).

The maximum number of operations approved will be 18 for Lolo Creek and 38 for Moose Creek. These numbers correspond with the maximums listed in the USFWS and NMFS Biological Opinions (USFWS, 2006 and NMFS, 2006) and analyzed in the FEIS. Proposed operations exceeding the maximums will require reinitiating consultation with USFWS and NMFS and a separate environmental analysis.

Monitoring

Implementation of Alternative 3 involves monitoring by the Forest Service and reporting to USFWS (2006) and NMFS (2006). The monitoring described in this section will be conducted to verify that the operators adhere to the specified operating conditions and mitigation measures and will include the following:

1. Review all suction dredging applications for Lolo Creek and Moose Creek prior to issuing any permits. The Forest Service shall determine if the extent and effects of the action are consistent with the BA (USFS 2006a), and if not, the Forest Service must reinitiate consultation immediately.
2. Include all terms and conditions (mitigation measures) in permits, grants, or contracts issued for the implementation of suction dredging operations.

3. Visit each recreational dredge site at least five times between July 1 and August 15, or more often if problems occur, to monitor dredge activity and effects of the mining on fish and fish habitat.
4. Monitor potential changes in channel morphology as a result of mining through specific measures specified in the Biological Opinion.
5. Consult with NMFS and USFWS Law Enforcement Office upon notice by an operator under mitigation measure 24 above of dead or injured threatened or endangered species, or if eggs are excavated, prior to authorizing a resumption of dredging.
6. Provide annual monitoring report, by November 30, to NMFS that describes operator compliance with suction dredging rules, the amount of stream area mined at each site, a photo of the mined area, and details about streambank disturbance and revegetation, if any.
7. Provide NMFS and USFWS with an update of pre-season monitoring no later than June 15, and a report on post-season monitoring progress no later than September 15.

Lolo Creek Stream Restoration

This project involves bank stabilization and reclamation of the abandoned Lolo #5 mining claim on Lolo Creek (FEIS, Figure 2-3). Lolo #5 was placer mined by backhoes and dozers in the late 1970s, and the site was never reclaimed. The overburden and placer tailings berm along the west bank of the creek remains unstable and continues to be a major contributor of fine sediment to the stream system (Clearwater BioStudies, 1999a). As funds become available, this alternative proposes to restore and stabilize 950 feet of the old Lolo #5 mining claim on Lolo Creek by:

- Removing and/or recontouring sediment producing overburden and tailings berm.
- Armoring, and revegetating with native species as needed to provide a stable non-erodible stream bank along the west bank of Lolo Creek.
- Recontouring and revegetating as needed existing overburden and tailings stockpiles away from existing emergent wetlands.

Moose Creek Stream Improvement

As funds become available, this project involves installing a fish-friendly drainage device or ford where Forest Road 5440 crosses Moose Creek tributary Independence Creek. Road 5440 is a native surfaced local Forest road used to access the mining claims along Moose and Independence Creeks. The existing ford is a potential fish barrier during low flows and a source of sediment to downstream Independence Creek and Moose Creek.

The Lolo Creek and Moose Creek stream improvement projects described above are not connected actions or mitigation measures related to suction dredging under the selected alternative. Completion of the two projects is dependent upon available funding. At sometime in the future, if sufficient funds are made available, and design for either or both projects is

completed, consultation with NMFS and/or USFWS will be initiated. Either or both projects can be implemented once consultation is complete.

J. RATIONALE FOR MY DECISION

The criterion that I used for making the decision to select Alternative 3 was based on how the alternative addressed the following areas:

- The purpose and need for the action.
- The environmental issues, concerns, and effects identified in the analysis.
- The Forest Plan direction and other legal mandates.

After reviewing the direct, indirect, and cumulative effects of the proposed activities documented in the FEIS and associated project records for the Small-Scale Suction Dredging in Lolo Creek and Moose Creek project area, I have determined that Alternative 3 is the preferred alternative.

Alternative 1 is the No Action Alternative (FEIS, Chapter 2, p. 2-1). It is used, in part, to compare against the action alternatives to determine the effects of not implementing an action alternative. For purposes of this EIS, the No Action Alternative is defined as not approving proposed plans of Plans of Operations, under this alternative, miners who submit Plans of Operations for suction dredging in Lolo Creek and Moose Creek would not receive approval for their plans of operations. No suction dredging would be allowed under the Mining Law or under any other authorization. This alternative does not meet the purpose and need (listed below) and cannot be implemented under current law, including the Mining Law of 1872, and violates Forest Service regulations at 36 CFR 228A.

Alternative 2, like Alternative 3, proposed to allow approval, with no further environmental analysis, of proposed Plans of Operation in specified reaches of Lolo Creek and Moose Creek (including two tributaries, Independence Creek and Deadwood Creek) if the operator agrees to specified operating conditions and mitigation measures (FEIS, Chapter 2, p. 2-1). Unlike Alternative 3, Alternative 2 does not include restoration of the abandoned Lolo #5 mining claim or the repair of Forest Road 5440 ford crossing Independence Creek.

Comparison of Alternative 3 to the Purpose and Need

Purpose: Develop operating conditions and mitigations measures that protect surface resources, including threatened fish species, from impacts of suction dredging.

Need: Allow the Forest Service to approve, with no further environmental analysis, a limited number of Plans of Operations in specified reaches of Lolo Creek, Moose Creek, Independence Creek and Deadwood Creek.

Alternative 3 meets the purpose and need by allowing the Forest to efficiently fulfill the requirement in 36 CFR 228.4(f) for conducting environmental analyses on mining plans of operations and developing reasonable measures to protect surface resources on National Forest System lands. This in turn will allow the Forest Service to approve a limited number of proposed Plans of Operation, with no further environmental analysis, in specified reaches of

Lolo Creek and Moose Creek (including two tributaries, Independence Creek and Deadwood Creek) if the operator agrees to specified terms and conditions described in Section 6.1. The suction dredge operating season will be limited to July 1 to August 15. The maximum number of operations approved in any year under this analysis will be 18 for Lolo Creek and 38 for Moose Creek. Prior to approval, suction dredge operators also have to fulfill all State and Federal permitting requirements.

Comparison of Alternative 3 to the Issues

Effects on Water Quality:

Suction dredging occurs in the confines of the stream channel and does not result in the discharge of any new sediment to the creeks, but rather dredging redistributes sediment from the streambed through the dredge and then back to the creeks. The low stream velocities that occur in July and August in both Lolo Creek and Moose Creek would decrease the opportunity for long-distance downstream transport of sediment. Any increases in turbidity would be for a very short duration while the dredge is operating. Fine sediment that might be removed from the substrate and discharged back into the water column would drop out within a short distance downstream, particularly in areas where stream velocities are greatly slowed, such as the head of a pool. The Forest Service is required to visit each recreational dredge site at least five times between July 1 and August 15, or more often if problems occur, to monitor dredge activity, and effects of the mining on fish and fish habitat (FEIS, Chapter 2, p. 2-6 through 2-7; and NMFS 2004 and 2006). Operators will also be required to monitor the stream for 300 feet downstream immediately after beginning operation; if they observe noticeable turbidity, they must stop or reduce operations until there is no visible increase 300 feet downstream (FEIS, Chapter 2, p. 2-5). Under Alternatives 2 and 3 there could be accidental spills of fuel or oil by suction dredge operators. Spill prevention measures listed in terms and conditions 26 and 27 should minimize the potential for such incidents (FEIS, Chapter 2, p.2-6). Under Alternative 3, there may be some added short-term potential for spills from construction projects. Implementation of Best Management Practices (IDL, 1992) during construction would minimize the potential for such spills (FEIS, Chapter 4, p. 4-3 through 4-6).

In addition, under Alternative 3, recontouring, armoring and/or revegetating of the overburden and tailing materials and disturbed areas at the Lolo #5 mining claim would stabilize exposed stream banks and reduce or eliminate further sedimentation and increases in turbidity from this area. The project would reduce sediment loadings into Lolo Creek and improve water quality over the longer term. Similarly, installation of a drainage device or ford at the Forest Road 5440 crossing of Independence Creek would stabilize the channel and reduce the sediment and turbidity that result from and around the present ford (FEIS, Chapter 4, p. 4-5 through 4-6).

Effects on Stream Geomorphology:

Suction dredge operators cannot disturb instream structures such as large boulders and large, stable woody debris. If instream structures are disturbed, the disturbance could affect the energy and direction of stream flow and cause erosion and long-term changes in the channel. Operators must agree not to disturb such structures in order to be approved, so the potential for such impacts will be minimized (FEIS, Chapter 4, p. 4-2 through 4-3). Under Alternative 3, potential sediment introduction will be reduced and both Lolo and Independence Creeks would

be restored to a more stable condition. The fish barrier would be removed, and fish passage would be restored to the upper reaches of Independence Creek (FEIS, Chapter 4, p. 4-2 through 4-3).

Effects on Instream Habitat:

Suction dredging under Alternative 3 could lead to short-term changes in habitat but terms and conditions of approval would prevent any long-term adverse changes. Although operators would disturb small distances of the creeks during the mining season, they have to restore the substrate before the end of the operating season, August 15 (FEIS, Chapter 2, p. 2-5 and Chapter 4, p. 4-11).

Operators must agree not to remove or otherwise disturb large woody debris, so there should be no effects on woody debris that enhances fish habitat. Dredgers will not be allowed to destabilize instream wood, potentially causing it to move from its natural location. Destabilizing instream wood could reduce pool frequency and quality and stream bank stability (FEIS, Chapter 2, p. 2-5 and Chapter 4, p. 4-10 through 4-11).

Small suction dredging operations could increase pool frequency where dredging excavates pools and could partially fill existing pools with deposited tailings. An increase in pool frequency could temporarily improve stream channel diversity, a condition beneficial to many fishes and aquatic organisms. However, all operators would have to backfill all excavated pools by the end of the mining season (FEIS, Chapter 2, p. 2-5 and Chapter 4, p. 4-11).

Suction dredging could alter pool dimensions and quality through excavation, dredge pile deposition, or changes in channel morphology. Operators must fill all excavated pools and disperse remaining dredge piles by the end of each mining season, so any changes would be minimized and temporary (FEIS, Chapter 2, p. 2-5 and Chapter 4, p. 4-11).

Dredge operators may not dam streams, but some operators may build temporary rock barriers partially across the channel to facilitate flotation of dredges. Operators would have to break down all partial dams and dredge piles before the end of the operating season. Overall, any impacts from suction dredging would be very localized and minor (FEIS, Chapter 2, p. 2-5 and Chapter 4, p. 4-11).

Effects on Fisheries and Other Aquatic Organisms:

In any given year, suction dredges under Alternative 3, could affect up to about 1.5 percent of aquatic habitat in the Lolo Creek study area and about 3.4 percent of the Moose Creek study area (FEIS, Chapter 4, p. 4-6).

The window for dredging operations would occur from July 1 to August 15. This would minimize impacts to most larval and juvenile fish, and would be after steelhead trout and bull trout emerge from the substrate (FEIS, Chapter 2, p. 2-2 and Chapter 4, p. 4-13 through 4-14).

Salmonid alevins (larval stage between the egg and free-swimming fry or juveniles) could be crushed underfoot by operators, they could be trapped or smothered by tailings or fine sediment, and they could be sucked into the suction dredge intake. In Lolo Creek, where steelhead trout and Chinook salmon occur, the likelihood of this occurring is considered to be low. Spawning areas will be identified during the pre-mining review and avoided, and the July

1 to August 15 operating window minimizes times when larval stage between the egg and free-swimming steelhead and Chinook fry would be present. In both Lolo Creek and Moose Creek, operators are allowed only in areas of large substrate not preferred by steelhead and bull trout spawning, and operators have to use a 3/32-inch screen over their intake hoses. All of these conditions, combined with the fact that the Forest Service must inspect the operations at least five times during the suction dredge season, should minimize the potential for impact to fisheries (FEIS, Chapter 2, p.2-2 through 2-7 and Chapter 4, p. 4-13).

There would be minimal impacts from disturbance and dislocation due to the small-scale nature of individual operations and terms and conditions that require restoration of the substrate. As noted above, there could be spills or increased sediment and turbidity, but the terms and conditions with which operators must comply should minimize the potential for any impacts on water quality (FEIS, Chapter 2, p. 2-2 through 2-7, and Chapter 4, p. 4-3 through 4-6).

Alternative 3 would lead to long-term improvements in fish habitat in the Lolo #5 area of Lolo Creek, and would remove a sediment source and partial fish barrier on Independence Creek (FEIS, Chapter 2, p. 2-7 through 2-8, and Chapter 4, p. 4-5 through 4-6).

Effects on Threatened or Endangered Fish

Steelhead trout and bull trout occur in Lolo Creek. Only bull trout occur in Moose Creek; the downstream Dworshak dam blocks migration of anadromous fish, including fall Chinook salmon and steelhead trout (FEIS, Chapter 4, p. 4-13).

Chinook Salmon. A reach of the mainstem Clearwater River has been designated as critical habitat for fall-run Chinook salmon. Suction dredging in the Lolo Creek Project area under Alternative 3 should not cause impacts to fall-run Chinook (FEIS, Chapter 4, p. 4-13).

Steelhead Trout. The Lolo Creek steelhead population is a combination of natural and hatchery fish, and the creek produces very few natural steelhead due to poor adult returns and habitat conditions. Steelhead trout spawn throughout the Lolo Creek drainage above Musselshell Creek. In the Lolo Creek Study Area, spawning mostly occurs above Musselshell Creek and below Yoosa Creek. Juveniles have been documented at most sampling stations. The dredging season occurs after most steelhead emerge from the substrate and before juveniles migrate downstream, so there should be minimal direct impacts. The major effect to steelhead trout from suction dredging would be displacement of fish during dredging operations and possible delays in fish movement through the dredge area (FEIS, Chapter 4, p. 4-14). The terms and conditions of approval would minimize or avoid adverse effects on steelhead trout populations and habitat (FEIS, Chapter 2.2 through 2-6 and Chapter 4, p 4-14). The stream improvement projects under Alternative 3 would disturb 950 feet of Lolo Creek and 30 feet of Independence Creek during construction. The construction would use Best Management Practices (IDL, 1992) to minimize impacts and would not occur during critical periods of the steelhead life cycle (FEIS Chapter 4, p. 4-15).

Bull Trout. In the Lolo Creek project area, no bull trout were identified during 1996-1999 and 2001 monitoring, despite extensive fish surveys, and only six bull trout were identified from 570 survey stations in Lolo Creek from 1987 to 1994. Habitat conditions and warmer temperature regimes limit bull trout production in the Lolo Creek drainage, and fish population

data do not indicate any bull trout spawning and early rearing in the Lolo Creek drainage (FEIS, Chapter 4, p. 4-14).

In Lolo Creek, suction dredging would have minimal impact because there are very few bull trout present, there is limited to no spawning and rearing, and because the suction dredge operating season is during a period that minimizes the likelihood of bull trout being present or spawning in the project area (FEIS, Chapter 4, p.4-14).

In Moose Creek drainage, fish population data prior to 2000 indicated that limited bull trout spawning and rearing was occurring. However, additional snorkeling surveys conducted during 2000-2001 found higher numbers of adult bull trout. Due to past mining, road construction and timber harvest, habitat conditions have been degraded in the Moose Creek drainage, and the drainage has been designated an adjunct watershed for bull trout recovery efforts.

In Moose Creek, there is some potential for impacts to bull trout from displacement and from habitat alteration. No dredging would be allowed in areas where bull trout are known to spawn, or in areas the Forest Service identifies as spawning habitat. In addition, the impacts of small-scale suction dredging on bull trout eggs, alevins, or fry would be minimal because bull trout hatch in January and February, remain in the gravel until only April or May, and then leave the gravel before the dredging season opens on July 1. Terms and conditions of approval would minimize the potential for impacts from habitat alteration. The stream improvement projects under Alternative 3 would disturb 950 feet of Lolo Creek and 30 feet of Independence Creek during construction (FEIS, Chapter 2, p. 2-8 through 2-9). The construction would use Best Management Practices (IDL, 1992) to minimize impacts and would not occur during critical periods of the bull trout life cycle (FEIS, Chapter 4, p. 4-15).

Effects on Sensitive Species:

Three sensitive species, Spring Chinook, Westslope Cutthroat Trout, and Pacific Lamprey are listed by USFWS and can be found in the Lolo Creek drainage. Only Westslope Cutthroat Trout is found in the Moose Creek drainage (FEIS, Chapter 3, p. 3-11, 3-13, 3-14).

Spring Chinook. Spring-run Chinook are present in Lolo Creek, and natural populations are supplemented by fish from the Nez Perce Tribal Hatchery. The July 1 to August 15 mining season occurs after the previous year's brood offspring are out of the gravel and prior to current-year spawning, so potential impacts to spring-run chinook should be limited to displacement or avoidance during the hours of dredging activity and localized reductions in macroinvertebrate food availability (FEIS, Chapter 4, p. 4-13 through 4-14). The stream improvement projects under Alternative 3 would disturb 950 feet of Lolo Creek and 30 feet of Independence Creek during construction. The construction would use Best Management Practices (IDL, 1992) to minimize impacts and would not occur during critical periods (FEIS, Chapter 4, p. 4-15).

Westslope Cutthroat Trout. Impacts to cutthroat trout, which has been proposed for listing as a threatened species, would be similar to those for steelhead trout and bull trout described above (FEIS, Chapter 4, p.14 through 4-15).

Pacific Lamprey. Pacific lampreys are a federal species of concern and are listed by the Idaho Department of Fish and Game as a State endangered species. Pacific lampreys do not occur in the Moose Creek drainage due to the Dworshak dam. Pacific lampreys have not been known to specifically occur in the Lolo Creek project area and suction dredging will avoid the spring/early summer spawning period for lamprey. Effects to juveniles within the sandy substrates will be minimized through the avoidance of potential rearing areas. Other potential impacts would be similar to those for steelhead trout and bull trout described above (FEIS, Chapter 4, p.14 through 4-15).

Effects on Aquatic Invertebrates:

The operation of small-scale suction dredges would displace some insects downstream but should result in minimal amounts of injury or mortality to aquatic insects. For a short period, while insects were in the water column before settling back into the substrate, they would be more susceptible to being eaten by fish or other aquatic organisms. This would be temporary (FEIS, Chapter 4, p.4-12 through 4-13).

Exposure of previously buried substrate and covering of existing substrate can locally reduce abundance of benthic invertebrates. However, most aquatic invertebrate species can re-colonize disturbed sites within several weeks (FEIS, Chapter 4, p.4-12 through 4-13).

Dislodged fine sediment would be distributed downstream of the dredged area and could temporarily fill interstices in gravel and cobble, reducing available macroinvertebrate habitat in the immediate area. However, scouring action during the next period of high flow would likely clear out any such sediment accumulations and allow aquatic insects to re-colonize the habitat. Also, the low percentage of fine sediment, particularly in Lolo Creek, would significantly reduce the likelihood, and the extent, of potential temporary impacts (FEIS, Chapter 4, p.4-12 through 4-13).

The Lolo #5 restoration project would disturb about 950 feet of the west bank of Lolo Creek, and would kill or displace aquatic invertebrates in this area. Fine sediment in the disturbed area would be washed downstream and could temporarily reduce macroinvertebrate habitat. The west bank is presently a sediment source, but over the longer term, stabilizing the bank would reduce sediment transport and improve habitat for aquatic invertebrates ((FEIS, Chapter 4, p. 4-13).

The Independence Creek improvement project, similarly, would disturb the full width of the creek for approximately 30 feet and result in increased sedimentation immediately downstream until seasonal high flows scoured out accumulated sediments. Following completion of the project, fish passage to the upstream reaches of Independence Creek will be restored for migrating fish (FEIS, Chapter 4, p. 4-13).

Effects on Nez Perce Treaty Rights and Traditional Uses:

The Nez Perce Tribe has "... the right of taking fish at all usual and accustomed places...together with the privilege of hunting, gathering roots and berries...." in both the Lolo Creek and Moose Creek project areas. The Nez Perce Tribe has identified salmon as an integral part of tribal religion, culture, and physical sustenance, and has indicated that the annual return of the salmon allows the transfer of traditional values from generation to generation. They

have indicated that Lolo Creek in particular is an important stream in restoration efforts for Chinook salmon in the Clearwater River Subbasin (FEIS, Chapter 4, p. 4-24).

Under Alternative 3, suction dredging could cause impacts on tribal fishing access and traditional tribal resources. During the mining season, the areas being mined may not be the most desirable for tribal fishermen. Dredging noise, activities in and near the streams that scare away fish, and the presence of non-tribal members may make for a climate that is less than optimal for this traditional practice (FEIS, Chapter 4, p. 4-25 through 4-26).

In addition, suction dredging could affect tribal hunting by making the areas less desirable for tribal hunters and by causing game animals to avoid stream corridors during daylight hours. Suction dredging would not cause direct impacts to tribal gathering activities, since camas, whitebark pine seeds, berries, and other commonly gathered foods are not found in the stream channel (FEIS, Chapter 4, p. 4-25 through 4-26).

Effects on Wildlife:

Potential impacts of suction dredging on terrestrial wildlife would be predominantly within the riparian zone along the streams. Management indicator or sensitive wildlife species possibly affected would include belted kingfisher and boreal toad nesting. Minor disturbance by traffic and dispersed camping would continue under the No Action Alternative. The presence of suction dredge operations under Alternatives 3 would not disturb kingfisher nesting. Once eggs hatch, brood rearing by kingfishers would essentially complete prior to the mining season so there would be no effects on rearing young. Foraging individuals could be locally disturbed and move away from dredging operations to hunt. Aquatic amphibians (e.g., boreal toad) could be affected through entrainment of eggs and young in the early stages of development (FEIS, Chapter 4, p. 4-16). Approval conditions prohibit suction dredging into the banks of streams (FEIS, Chapter 2, p. 2-2) which are the areas that could potentially cover amphibian eggs and preferred habitat, and this would reduce the potential for impacts on local and forest wide population levels of boreal toad (FEIS, Chapter 4, p.4-15 through 4-16).

Impacts to threatened, endangered, or sensitive wildlife species would be negligible. Additionally, lynx, and gray wolves are not known to inhabit the project areas. For at least 10 months of the year, the temporary noise and other human impacts associated with small-scale dredging would not likely jeopardize the continued existence of the gray wolf, and would result in no adverse effect on bald eagles, lynx, or their habitats (FEIS, Chapter 4, p.4-15 through 4-16).

Noise and human activity associated with construction of the Lolo #5 restoration project and installation of a drainage device or ford at the Forest Road 5440 crossing on Independence Creek would cause wildlife to avoid the areas, at least during the hours of operation. Individual kingfishers and boreal toads could be disturbed and dislocated, and toads could be killed. Otherwise, there would be no significant effects on individual organisms or populations (FEIS, Chapter 4, p.4-16).

Effects on Riparian Vegetation:

Suction dredging would not substantially alter riparian vegetation and wetland plant communities in either Lolo Creek or Moose Creek under Alternative 3. Stream banks are

generally well vegetated and cobbles and boulders provide armor to the banks. Dredging equipment would be manually moved across the riparian zone to the dredge site (FEIS, Chapter 4, p.4-16 through 4-17).

Suitable habitat for Macfarlane's four-o'clock (*Mirabilis macfarlanei*), water howellia (*Howellia aquatilis*) and Ute ladies'-tresses, (*Spiranthes diluvialis*) was modeled as part of the Endangered Species Act consultation process. The Lolo Creek and Moose Creek watersheds did not contain suitable habitat for the three federally listed plants (FEIS, Chapter 4, p.4-17).

The restoration of Lolo Creek in the Lolo #5 area would have a short-term adverse effect on existing riparian vegetation and wetlands, but would ultimately increase channel stability and increase the stability and quality of riparian habitat by reducing future damage from high stream flows. Prior to project implementation, the Forest Service would identify and delineate any jurisdictional wetlands in the Lolo #5 project area and comply with any applicable requirements under Section 404 of the Clean Water Act (FEIS, Chapter 4, p.4-17).

Effects on Visual Resources:

Overall, neither Lolo nor Moose Creek study areas is very diverse, with a low to moderate degree of inherent scenic attractiveness. The creeks themselves are the only distinctive features. Neither area has been assigned a Visual Quality Objective (VQO). Travel routes and trails near Lolo Creek are managed with VQOs ranging from Retention (human activities not evident to casual visitors) to Partial Retention (human activities may be evident but remain subordinate to the characteristic landscape). Travel routes near Moose Creek are managed as Retention (FEIS, Chapter 4, p. 4-18).

Suction dredging would not cause changes to the VQOs. It is possible that suction dredge operations in Lolo Creek could be seen from either of the historic trails but this is unlikely due to topographic and vegetative screening. Views from the Lolo Creek Campground area would also be limited. Similarly, in both creeks some suction dredge operations could be visible to visitors on nearby roads, but this is unlikely due to topographic and vegetative screening. Under Alternative 3, construction equipment would be visible from the roads during the relatively short periods while the stream restoration projects were being implemented (FEIS, Chapter 4, p. 4-18 through p. 4-19).

Effects on Noise:

Both the Lolo Creek and Moose Creek drainages are in heavily forested natural settings. The creeks, wind, local topography, and vegetation all influence the acoustic environment. Similarly, noise from generators and other equipment at campsites, and from passing vehicles on Forest Service roads, is audible to visitors. In the Lolo Creek project area, the primary sensitive noise receptors would be visitors in the Lolo Creek Campground and on the Nez Perce National Historic Trail or Lewis and Clark National Historic Trail. There are no sensitive noise receptors in the Moose Creek area other than non-mining recreational visitors. There would be no change from current conditions under the No Action Alternative (FEIS, Chapter 4, p. 4-19).

Suction dredges generate noise from pumps used to dredge material from the stream bottom and in some cases an air compressor used to supply air to the dredge operator (there is no

blasting associated with suction dredging). The maximum noise level at very close range for gasoline engines of the size used by suction dredge operators is approximately 60-70 decibels. The actual noise levels would depend on many variables, including distance between the receptor and the source, wind, atmospheric pressure, other weather conditions, topography, time of day, etc (FEIS, Chapter 4, p. 4-19).

Unlike a resident, who is exposed to repeated noise events over time, a visitor may not or may not experience a noise event during a visit. The people affected during mining periods would mostly be the miners themselves, fishermen, hikers and other dispersed users in the area (FEIS, Chapter 4, p. 4-19).

Effects on Recreation:

Both the Lolo Creek and Moose Creek project areas are managed as "Roaded Natural" under the Recreation Opportunity Spectrum (ROS) which is characterized by mostly natural-appearing landscapes with some chance for privacy. Moose Creek is more remote and has fewer visitors. The Lewis and Clark National Historic Trail is near the southern boundary of the Lolo Creek project area and the Nez Perce (Nee-Me-Poo) National Historic Trail crosses the northern part of the Lolo Creek project area (FEIS, Chapter 4, p. 18).

Suction dredging should have minimal or no impact on recreation visitors and no change in the ROS in either Lolo Creek or Moose Creek. Most people camping in the immediate vicinity of the mining claims are miners or prospectors, so the impacts of noise from suction dredge pumps and/or compressors would not be expected to be annoying, or not as annoying as they would be to non-miners. Because non-mining campers generally prefer other areas for camping, it is likely there would be no increase or decrease in campsite concentration, and thus no overall change in the number of recreational visitors (FEIS, Chapter 4, p. 17 through p. 4-18).

The physical presence of suction dredges and associated noise during operation may detract from the recreational fishing experience during the mining season for some fisherman. In the short term, suction dredge operations dislodge insects and other food organisms from the substrate. Suction dredge operators note that there is a temporary increase in fish feeding on the dislodged insects and organisms in the dredge pit and directly downstream of their suction dredge operations. The total area proposed for suction dredging will be less than one (1) percent of the total area of mainstem Lolo Creek (USFS, 2006a). Fishing opportunity does exist on more than ninety-nine (99) percent of the total area of mainstem Lolo Creek and on dredge sites in the late afternoon or evenings when the suction dredge operations stop for the day (FEIS, Chapter 4, p. 4-18).

Under Alternative 3, heavy equipment would be needed for both the stream restoration in Lolo Creek and the crossing improvement project on Independence Creek. This should not affect suction dredge operators. There would be noise and visual disturbance for the duration of the construction projects, however, which could have a minor effect on other recreational visitors. Because there are abundant other areas with the same or better recreational opportunities, there would be no significant effect on recreation from this alternative, and no change to the ROS in either watershed (FEIS, Chapter 4, p. 4-18).

Effects on Socioeconomics:

The Forest Service assumes that the number of visitors and campers in the Lolo Creek study areas would be approximately the same whether suction dredging plans of operations are approved or not. Thus, the economic impacts of suction dredging under Alternative 3 would be generally equivalent to those from camping and other recreational use under the No Action Alternative. In Lolo Creek, using very conservative assumptions, estimated expenditures would be \$97,200 per year, which would amount to less than 0.07 percent of Clearwater County's total annual income. In Moose Creek, total expenditures would be \$162,000 per year, which would amount to less than 0.01 percent of Missoula County's total annual income. This level of expenditure would have a negligible effect on county or larger-scale economies (FEIS, Chapter 4, p. 4-21 through 22).

The amount of gold that is recovered by small-scale suction dredge operators is not known, so the loss of income that would result from not approving suction dredge plans of operations cannot be estimated. However, the Forest Service does not believe the amount is significant, and so the loss of income under the No Action Alternative would not have a significant effect on local or larger-scale economies. In addition, total expenditures for equipment and fuel for each operator would be about \$800 per year, which would have no effect on local economies (FEIS, Chapter 4, p. 4-21 through 22).

Effects on Heritage Resources:

Suction dredging could affect heritage resources in both the Lolo Creek and Moose Creek study areas. However, it was determined that suction dredging will not adversely affect known NRHP-eligible heritage resources in the study areas (Vallier, 2004). The heritage resources inventory has been completed for both study areas; there are 14 recorded resources in the Lolo Creek area and 22 heritage resources sites in the Moose Creek area. Until a formal determination is made, these resource sites are treated as eligible for nomination to the National Register of Historic Places (FEIS, Chapter 3, p. 3-46 and p. 3-47).

Under all alternatives, camping activities have the potential to adversely affect historic mining sites and Native American resources in both the Lolo Creek and Moose Creek study areas. However, suction dredge miners' camps will be monitored for compliance with Forest Service regulations (36 CFR 261) which prohibit digging in, excavating, disturbing, injuring, destroying, or in any way damaging any rehistoric, historic, or archaeological resource, structure, site, artifact, or property.

Under Alternative 3, suction dredging could affect resources within the creeks themselves. Should a suction dredge operator uncover a resource while working, the operator will be required to stop work immediately pending inspection by the Forest Archaeologist. This would minimize potential impacts on heritage resources. Under Alternative 3, restoration of the Lolo #5 area could affect any resources in that area; again, if any resources are discovered during construction, operations would stop pending inspection by a Forest Service Archaeologist (FEIS, Chapter 4, p. 4-23 and p. 4-24).

K. OTHER ALTERNATIVES CONSIDERED IN DETAIL

The ID Team considered a total of seven alternatives, with three of them considered in detail, which provided a reasonable range of alternatives [40 CFR 1502.14(a)]. Four alternatives not considered in detail (FEIS, Chapter 2, p. 2-9 and p. 2-11) are:

- *Withdrawing* Lolo Creek and Moose Creek from mineral entry, which does not meet the purpose and need,
- *Complete a separate NEPA analyses* for each small-scale suction dredging operation. Small-scale suction dredging in Lolo Creek and Moose Creek are similar actions with similar impacts and similar cumulative effects (FEIS, Chapter 1-9).
- *Longer mining seasons.* A longer season would be inconsistent with the reasonable and prudent measures specified by NMFS and USFWS and could result in a taking and other unacceptable impacts to these species. Suction dredge operators typically do not work every day and dredge 4-6 hours per day during the July 1 to August 15 dredge season. If the season were shortened, the dredge operators would increase the number of days and number of hours of operation. A shorter mining season, therefore, would not result in significantly reduced impacts and would provide no additional protection to threatened or endangered salmonid species.
- *Approve operation only when validity is proven under the mining laws.* This suggested alternative was rejected because it is inconsistent with Forest Service regulations and policy.

The three Alternatives considered in detail (FEIS, Chapter 2, p. 2-1 through p. 2-8) include:

- Alternative 1 (No Action),
- Alternative 2 (Suction Dredging), and
- Alternative 3 (Selected Alternative - Suction Dredging and Stream Improvement Projects).

Following public scoping, Alternative 3 was formulated to address stream improvement needs in Lolo Creek and Moose Creek near the proposed suction dredging sites.

The following narratives describe each alternative. Alternative 2 and 3 are the same except that Alternative 3 (the Selected Alternative) will accomplish stream improvements in Lolo Creek and Moose Creek.

Alternative 1 (No Action)

The "No Action" Alternative is required by regulation in 40 CFR 1502.14(d). It is used, in part, to compare against the alternatives analyzed for further consideration to determine the effects of not implementing the proposed action or other alternative. For purposes of this ROD, the No Action Alternative is defined as not approving Plans of Operations. Under this alternative, miners who submit plans of operation for suction dredging in Lolo Creek and Moose Creek would not receive approval for their plans of operations. No suction dredging would be allowed under the Mining Laws or under any other authorization (FEIS, Chapter 2, p. 2-1).

This alternative is consistent with NEPA and provides a comparable environmental baseline against which to evaluate the range of effects from the action alternatives (FEIS, Chapter 2, p. 2-1).

Under this alternative, there would continue to be approximately the same level of traffic on Forest roads and approximately the same level of dispersed camping and other recreational activities (FEIS, Chapter 2, p. 2-1).

Alternative 2 (Suction Dredging)

Under this alternative, the Clearwater National Forest would approve, with no further environmental analysis, proposed Plans of Operation in specified reaches of Lolo Creek and Moose Creek (including two tributaries, Independence Creek and Deadwood Creek) if the operator agrees to specified terms and conditions that are designed to protect threatened and endangered fish species and their habitat. The maximum number of operations approved in any year under this analysis will be 18 for Lolo Creek and 38 for Moose Creek (FEIS, Chapter 2, p. 2-1).

The terms and conditions with which proposed plans of operations have to comply in order to qualify for approval under this alternative are based on the reasonable and prudent measures listed in the Biological Opinions prepared by NMFS (2004 and 2006) and USFWS (2004 and 2006). The Forest Service has added additional elements to some terms and conditions and also included additional conditions in response to concerns raised during scoping (FEIS, Chapter 2, p. 2-1 through 2-7).

Under this alternative, a claimant or operator would submit to the District Ranger a proposed Plan of Operations that included all of the specified terms and conditions. The proposed plan would provide site-specific information sufficient for the District Ranger to determine that the terms and conditions would be adequate for protection of surface resources on that specific site (FEIS, Chapter 2, p. 2-7).

If the District Ranger determines that the proposed Plan of Operations meets the conditions and they are sufficient to protect surface resources on that site, the plan of operations could be approved with no further environmental analysis. If the District Ranger determines that the plan of operations does not meet these terms and conditions then a separate environmental analysis would be initiated for that plan. Any additional environmental analysis would require an ESA Section 7 consultation with USFWS and/or NMFS (FEIS, Chapter 2, p. 2-7).

Approval would be in effect for the duration of the operating season from July 1 through August 15, as long as the operation is conducted within the identified terms and conditions. A new plan of operations would have to be submitted and approved for each operation before each mining season (FEIS, Chapter 2, p. 2-7).

Alternative 3 (Suction Dredging and Stream Improvements)

This alternative is the same as alternative 2, except that it includes two specific stream improvement projects.

The first project involves bank stabilization and reclamation of the abandoned Lolo #5 mining claim on Lolo Creek (FEIS, Chapter 2, Figure 2-3). Lolo #5 was placer mined by backhoes and dozers in the late 1970s, and the site was never reclaimed. The overburden and placer tailings bermed along the west bank of the creek have remained unstable and continue to be a major contributor of fine sediment to the stream system (Clearwater BioStudies, 1999). The mitigation project would stabilize and reclaim approximately 950 feet of Lolo Creek, and would include the following components (also listed in the FEIS, Chapter 2, p. 2-7):

- Remove and/or recontour sediment producing overburden and tailings berm.
- Armor, and revegetate with native species as needed to provide a stable non-erodible stream bank along the west bank of Lolo Creek.
- Recontour and revegetate as needed existing overburden and tailings stockpiles away from existing emergent wetlands.

The restoration project would not take place during critical salmonid spawning or migration periods and would follow all appropriate construction Best Management Practices (IDL, 1992) to control erosion and minimize short-term impacts due to construction (FEIS, Chapter 2, p. 2-7).

The second project would involve installation of a fish-friendly drainage device or ford where there is now an unimproved ford where Forest Road 5440 crosses Independence Creek (FEIS, Chapter 2, Figure 2-4). Road 5440 is a native surfaced local Forest road used to access the mining claims along Moose and Independence Creeks. The present Independence Creek crossing is a ford that is a potential fish barrier during low flows and also a source of sediment to downstream Independence Creek and Moose Creek (FEIS, Chapter 2, p. 2-7). As with the Lolo Creek stream restoration project, the Independence Creek project would not take place during critical salmonid spawning or migration periods and would follow all appropriate Best Management Practices (IDL, 1992) to minimize short-term impacts due to construction (FEIS, Chapter 2, p. 2-7).

The Lolo Creek and Moose Creek projects are not connected actions related to suction dredging. Completion of the two projects is dependent upon available funding. At sometime in the future, if sufficient funds are made available, and site designs completed, consultation with NMFS or USFWS will be initiated and completed prior to implementation (FEIS, Chapter 2, p. 2-7).

L. CONSISTENCY WITH THE CLEARWATER FOREST PLAN

The Clearwater Forest Plan (September 1987) provides guidance through its goals, objectives, standards, guidelines and management area direction. The Forest Plan management area for this analysis is M-2 Riparian Areas. The goals for M-2 Riparian Areas is to "manage under the

principles of multiple use as areas of special consideration, distinctive values, and integrated with adjacent management areas to the extent that water and other riparian dependent resources are protected,” and “evaluate onsite and cumulative effects of proposed action, resolving significant conflicts in favor of riparian dependent resources (Clearwater Forest Plan, 1987, p. III-69). Consistency findings have been discussed throughout the FEIS (pages 3-2, 3-6, 3-10, 3-27, 3-32, 3-33, 3-35, 3-38, 4-1, 4-27, and 5-1). I have evaluated the selected alternative with Forest Plan goals, objectives, and standards (Clearwater Forest Plan, 1987, p. II-26), and have determined that it meets management direction for all resources including:

Aquatics Forest Plan Standards

Standard 8A: *Maintain the integrity and equilibrium of all stream systems in the forest.* (Clearwater Forest Plan, 1987, p. II-27)

Channel stability is expected to be maintained in all project area streams (FEIS, Chapters 3, p. 3-10, 3-38, 4-1). Mitigation measures developed through consultation with National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) will protect channel stability by minimizing impacts during suction dredging operations (FEIS, Chapter 2, p. 2-2 through p. 2-6).

Standard 8B: *Manage water quality and stream conditions to assure that the National Forest management activities do not cause permanent or long term damage to existing or specified beneficial uses.* (Clearwater Forest Plan, 1987, p. II-27)

Because the selected alternative, in concert with the included mitigation measures, is not expected to significantly affect channel morphology, sediment levels, stream flow regime, riparian conditions, or temperature, small-scale suction dredging operations will not cause permanent or long term damage to any existing beneficial uses (FEIS, Chapter 4, p. 4-1; USFS, 2006a and 2006b).

Standard 8C: *Apply Best Management Practices (BMPs) to project activities to ensure water quality standards are met or exceeded* (this also addresses Standard 8K). (Clearwater Forest Plan, 1987, p. II-27 and p. II-29)

The 30 mitigation measures listed in Chapter 2.12 (pages 2-2 through 2-6) of the FEIS and in Section H above include all State of Idaho suction dredging BMPs; and NMFS and USFWS conservation, reasonable and prudent measures. The mitigation measures are designed to minimize dredging impacts to threatened fish and their habitat.

Standard 8D: *Manage all waters in the Forest under a basic standard* (appendix K, section B). (Clearwater Forest Plan, 1987, p. II-27 and p. II-29)

The selected alternative will maintain the stability, equilibrium, and function (physical and biological) of all tributary streams as they relate to the beneficial uses of local, downstream, and parent streams. This standard also requires that individual projects identify the beneficial

uses and the criteria necessary to protect them. Beneficial uses are indicated in the Water Quality and Hydrology Report, FEIS, Appendix A, p. 4 and 8.

Standard 8E: *Manage all watershed systems in the Forest that are considered important for the fishery resource.* (Clearwater Forest Plan, 1987, p. II-27 and p. II-28)

Water quality objectives for area streams are listed in the Forest Plan Appendix K. The selected alternative will maintain 80% or more of full biological potential and achieve the Forest Plan objective of high fishable for Lolo, Moose, Independence and Deadwood Creeks (FEIS, Chapter 3, p.p.3-2, 3-6, 3-10, 3-27, 3-32, 3-33, 3-34, and 3-35).

Standard 8F: Monitor, analyze, and evaluate water quality within the critical reaches of specified streams, which are generally third or fourth order streams with watersheds ranging from 4 to 40 square miles. (Clearwater Forest Plan, 1987, p. II-28)

A list of specific streams systems and their standards is in Forest Plan Appendix K, Section C. The water monitoring plan is discussed in the FEIS in Chapter 2.1, p. 2-6 through 2-7.

Standard 8G: *Design, schedule, and implement management practices at the project level that:*

1. *will maintain water quality and stream conditions that are not likely to cause sustained damage to the biological potential of fish habitat.*
2. *will not reduce fish habitat productivity in the short term below the assigned standards.*
3. *will maintain water quality in a condition that is not likely to inhibit recovery of the fish habitat for more than the stated duration; and*
4. *will require cumulative effects feasibility analysis of projects involving significant vegetation removal, prior to including them on implementation schedules, to ensure that the project, considered with other activities, will not increase water yields or sediment beyond acceptable limits. Also require that this analysis identify any opportunities for mitigating adverse effects on water-related beneficial uses, including capital investments for fish habitat or watershed improvement.*

(Clearwater Forest Plan, 1987, p. II-28)

Since there are negligible adverse effects on channel morphology, sediment levels, stream flow, stream temperature, or riparian areas; there are negligible adverse effects expected on fish habitat (FEIS, Chapter 4, p. 4-1 through 4-29).

In addition, activities within management area M2 must meet the following:

Standard C6 Minerals: *Prohibit extraction or disposal of common variety minerals within the normal high water line of any perennial water body.*

(Clearwater Forest Plan, 1987, p. III-71)

The selected alternative will not extract or dispose of common variety minerals within the normal high water line of Lolo Creek, Moose Creek, Independence Creek, or Deadwood Creek.

Wild and Scenic River Eligibility

Lolo Creek, Moose Creek, Independence Creek, and Deadwood Creek have not been identified as eligible for recreation, scenic, or wild river status. Kelly Creek, from the confluence of Moose Creek to the confluence with the North Fork Clearwater River, is qualified for classification as recreational, with recreation being its highest value. The selected alternative will not diminish any of the outstanding remarkable values (recreation, fish, water, distinctive and diverse scenery, wildlife, and historic and prehistoric heritage resources) for Kelly Creek.

Consistency with the Forest Plan Lawsuit Settlement

I have reviewed the September 13, 1993, settlement agreement between The Wilderness Society et al., and the Forest Service. I find that the Small-Scale Suction Dredging in Lolo Creek and Moose Creek project complies with the 1993 Settlement Agreement, as follows:

- Suction dredging will result in no measurable increase in sediment production for any of the included streams (FEIS, Chapter 4, p. 4-1).
- Two known sediment sources maybe corrected under this project (FEIS, Chapter 4, p. 4-2).

M. FINDINGS REQUIRED BY OTHER LAWS

National Forest Management Act of 1976

The *National Forest Management Act* (NFMA) (16 U.S.C. 1600-1614) amended (and largely replaced) the Forest and Rangeland Renewable Resources Planning Act of 1974. NFMA required the Forest Service to assess National Forest System lands and develop a management program based on the principles of multiple use and sustained yield. The Forest Service also was required to develop and implement comprehensive Land Use and Resource Management Plans (which are known as LRMPs or "Forest Plans") for each unit in the National Forest System. These Forest Plans guide and coordinate multiple uses and the availability of lands for resource management. Plan development and implementation have to include:

- Interdisciplinary approach
- State and local coordination
- Public participation in planning process
- Multiple-use and sustained yield of products and services.

The *Forest Plan* for the Clearwater National Forest (USFS 1987) was developed in compliance with NFMA. The Forest Plan establishes goals, objectives, and standards for the management of all resources of the Forest, including minerals (pages II-3, II-7, and II-30). Minerals goals, objectives, and standards discuss the need to facilitate the orderly development of mineral commodities and provide for timely, reasonable, effective and economically feasible environmental protections. The Forest Plan was amended in 1995 by the Decision

Notice/Decision Record, Environmental Assessment, and Finding of No Significant Impact for management of anadromous fish-producing watersheds on Federal Lands in eastern Oregon and Washington, Idaho, and portions of California (PACFISH). The Forest Plan was also amended in 1995 by the Decision Notice and Finding of No Significant Impact for the Inland Native Fish Strategy for managing fish-producing watersheds in eastern Oregon and Washington, Idaho, Western Montana and portions of Nevada (INFISH). PACFISH and INFISH provide guidance and monitoring requirements for minimizing impacts to surface resources, especially in relationship to Riparian Habitat Conservation Areas. This EIS incorporates PACFISH and INFISH plan and analysis document contents not in conflict with Forest Service locatable mineral regulations found at 36 CFR 228A (FEIS, Chapter 5, p. 5-1).

Forest Service Surface Use Regulations and Guidelines

Forest Service regulations at 36 CFR Part 228 Subpart A (also known as the *228 Regulations*) set forth rules and procedures for use of the surface of National Forest System lands in connection with mineral operations. The regulations direct the Forest Service to prepare the appropriate level of environmental analysis and documentation when proposed operations may affect surface resources. These regulations also do not allow the Forest Service to deny entry or preempt the miners' statutory right granted under the 1872 Mining Law. The regulations require the Forest Service to develop mitigation measures to minimize adverse impacts on National Forest resources. The 228 regulations include requirements for reclamation.

The *Forest Service Manual* (FSM) codifies the Forest Service's policies, practices, and procedures and serves as the primary basis for internal management and control of all Forest Service programs. FSM §2800 reiterates that the authority to manage the exploration and development of mineral resources within the National Forest System is jointly shared by the Secretaries of Interior (BLM) and Agriculture (Forest Service). The Department of the Interior administers the mining laws, and the Forest Service manages occupancy and use of the land's surface by persons both on and off mining claims. Section 2800 also discusses specific responsibilities and considerations for dealing with proposed Plans of Operation. It states that the Forest Service should minimize or prevent adverse impacts related or incidental to mining by imposing reasonable conditions that do not materially interfere with operations. Once implemented, the selected alternative will be in compliance with the Forest Service Surface Use Regulations and Guidelines (FEIS, Chapter 1, p. 1-6).

Mining Law of 1872

The major Federal law governing the disposition of locatable minerals¹ on Federal lands is the *Mining Law of 1872*, as amended. This law provides citizens of the United States the opportunity to prospect, explore, develop and extract certain valuable mineral deposits on Federal lands that remain open for that purpose. The lands within the Lolo Creek and Moose Creek study areas are examples of lands open to prospecting, exploration and location under

¹ "Locatable" minerals are one of three categories into which minerals on federal lands are classified: locatable, leasable, salable. In general, locatable minerals include both metallic minerals (gold, silver, lead, etc.) and nonmetallic minerals (fluorspar, asbestos, mica, etc.), although several factors influence the category into which a mineral falls under various circumstances. The locatable mineral being sought in the Lolo Creek and Moose Creek study areas is gold.

the 1872 law. The 1872 Mining Law sets general standards and guidelines for mining claim location and provides for possessory right to valuable minerals within the lines of location. The selected alternative, Alternative 3, once implemented, will be in compliance with the Mining Law of 1872.

Forest Service compliance with the 1872 Mining Law is nondiscretionary, however, while miners have rights under the 1872 Mining Law, they are legally required to comply with the rules and regulations covering National Forests. They are also required to comply with applicable laws passed since 1872 that have placed additional requirements upon miners (FEIS, Chapter 5, p. 5-2 through 5-3).

Organic Administration Act of 1897

This act affirms the public's right to enter, search for, and develop mineral resources on lands open for mineral entry, and authorizes the Forest Service to approve and regulate all activities related to prospecting, exploring, and developing mineral resources. Once implemented, the selected alternative, Alternative 3, will be in compliance with the Organic Administration Act of 1897 (FEIS, Chapter 5, p.5-1).

Multiple Use Mining Act of 1955

This law (16 U.S.C. 612) is known variously as the *Multiple Use Mining Act*, the *Surface Resources and Multiple Use Act*, the *Multiple Use Surface Act*, and the *Multiple Surface Use Mining Act*. The law specifies that unpatented mining claims located after July 23, 1955, may not be used for any purposes other than prospecting, mining or processing operations and uses reasonable incident thereto. That such claims shall be subject to the right of the United States to manage and dispose of vegetative surface resources and to manage other surface resources, and the right of the United States, its permittees, and licensees, to use so much of the surface as may be necessary for such purposes or for access to adjacent land. Once implemented, the selected alternative, Alternative 3, will comply with the Multiple Use Mining Act of 1955 (FEIS, Chapter 5, p.5-3).

Mining and Mineral Policy Act of 1970

The *Mining and Mineral Policy Act* (30 U.S.C. 21a) states that it is the continuing policy of the Federal government to foster and encourage private enterprise in the development of economically sound mining and minerals industries and the orderly and economic development of domestic mineral resources to help satisfy industrial, security, and environmental needs. Once implemented, the selected alternative, Alternative 3, will comply with the Mining and Mineral Policy Act of 1970 (FEIS, Chapter 5, p.5-3).

National Environmental Policy Act

This law insures that high quality environmental information is available and disclosed to public officials and citizens before decisions are mad and more actions are taken. Scientific analysis and public scrutiny are essential in complying with NEPA requirements. I have met these requirements by using a knowledgeable and skilled interdisciplinary team to develop and

analyze the proposed action and alternatives. Public involvement was key in identifying issues and continued throughout preparation of the EIS. Local, State, other Federal agencies, and the Nez Perce Tribe provided comments to both the DEIS and the FEIS. I incorporated these comments into the FEIS and have considered them in reaching my decision. A summary of the comments, and our responses to the DEIS are included as Attachment 7 to this decision document. (Comments and responses can also be found in Chapter 1 of the FEIS, Table 1-1, pages 1-11 through 1-16, and in FEIS, Appendix D).

Clean Water Act and Idaho State Water Quality Laws

The selected alternative complies with the Clean Water Act by following all federal, state, interstate and local requirements, administrative authority and process and sanctions, with respect to control and abatement of water pollution. These include 36 CFR 219.27, the Clearwater National Forest Plan, Idaho Suction Dredge Mining Best Management Practices and Stream Alteration standards and criteria, and EPA Oil Pollution Control Regulations. Executive Order 12088 also requires the Forest Service to meet the requirements of the Clean Water Act. These authorities are addressed by the design of the project and by the mitigation measures specifically chosen for implementation with the selected alternative, as described in this document and in the FEIS, Chapter 2, p. 2-2 through 2-7.

Clean Water Act Section 402

Section 402 requires that discharges of pollutants from "point sources" be permitted under the National Pollutant Discharge Elimination System (NPDES). Authority to implement the NPDES program may be delegated by EPA to authorized states; in Idaho, however, EPA administers the program and issues all permits. EPA has determined that discharges from suction dredge operations, even small-scale operations, qualify as point sources and require NPDES permit authorization. In some states, EPA or authorized states have issued a "general" permit to cover multiple small-scale suction dredge operations; no such permit has been issued to date in Idaho, so each suction dredge operation requires an individual NPDES permit. The Forest Service cannot approve proposed plans for operations unless the operator has sought coverage for its discharges under the NPDES program. Under the development of a TMDL for Lolo Creek, NPDES permits for suction dredging operations will be required to comply with all load allocations specified in the TMDL. By requiring the NPDES permit prior to approval of the operating plan, the selected alternative, Alternative 3, will comply with the Clean Water Act Section 402.

Clean Water Act Section 404

Section 404 establishes a program to regulate the discharge of dredged and fill material into the waters of the U.S. This act requires authorization from the Secretary of the Army, acting through the Corps of Engineers, for the discharge of dredged or fill material into all waters of the U.S., including wetlands. The Section 404 program is administered by both the Corps of Engineers and EPA. Corps of Engineers regulations are promulgated as 33 CFR Parts 321-330. In the case of suction dredge operations, tailings (that is, gravel and other overburden from which gold has been recovered) are discharged back into the creeks. The Corps of Engineers

has determined that a Section 404 permit will be required for small-scale suction dredging operations in waters closed under the State of Idaho's One-Stop Recreational Dredging Permit (COE, 2003).

Wetlands are considered "waters of the United States," and the Section 404 program is the principal means by which wetlands are protected. Under Alternative 3, the preferred alternative, the restoration of Lolo Creek in the Lolo #5 area would have a short-term adverse effect on the existing vegetation and wetlands, but would ultimately increase channel stability and increase the stability and quality of riparian habitat by reducing future damage from high stream flows (FEIS, Chapter 2, p. 2-7 and 2-8). Prior to implementation of the restoration project, the Forest Service will identify and delineate any jurisdictional wetlands in the Lolo #5 project area and comply with any applicable Section 404 requirements.

Executive Order 11990

Executive Order (EO) 11990, *Protection of Wetlands*, encourages federal agencies to take actions to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands when undertaking Federal activities and programs. As noted, there could be a short-term adverse effect on wetlands under the selected alternative, Alternative 3, but the long-term effect would be positive (FEIS, Chapter 4, p 4-5 and p. 4-6).

Endangered Species Act

As required by the Endangered Species Act, specific habitat needs for Threatened and Endangered species of wildlife and fish have been analyzed. Consultation with NMFS and USFWS has resulted in a Biological Opinion in 2006 (see Attachments 5 & 6). In the Biological Opinion, NMFS and USFWS concurred with the Forest Service's determinations that suction dredging will not jeopardize steelhead trout in Lolo Creek and bull trout in Lolo Creek and Moose Creek, if specific mitigation measures are adopted during suction dredging operations. In accordance with Section 7 (d), there will be no irreversible or irretrievable commitment of resources with respect to the selected alternative (NMFS, 2006 and USFWS, 2006). My decision complies with the Endangered Species Act.

National Historic Preservation Act (NHPA)

The National Historic Preservation Act of 1966 (as amended) requires that Federal Agencies with direct or indirect jurisdiction over Federal, federally assisted, or federally licensed undertakings to consider the effects of their proposed actions on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The detailed formal process for meeting this requirement is found in Title 36 Chapter 800 of the Code of Federal Regulations (36 CFR 800). This process includes requirements for identification and evaluation of historic properties, assessment and resolution of effects, consultation with the Advisory Council, State Historic Preservation Offices (SHPO), Tribal governments and others, and coordination with NEPA.

Heritage resource surveys have been completed in the areas affected by the selected alternative. Consultation with SHPO has been completed and they agree with the Forest Archaeologists findings that adequate measures have been taken to protect historic properties (see Attachment 1). Regular monitoring will further ensure protection of historic properties that may be uncovered during operations under the selected alternative. The selected alternative complies with the National Historic Preservation Act.

Clean Air Act

Under the selected alternative, only extremely minor emissions of pollutants from suction dredge pumps and compressors during suction dredging, and from heavy equipment during the two stream improvement projects would occur under the selected alternative. These air emissions are so minor that they require no permits or approvals (FEIS, Chapter 5, p. 5-8). Because of the remote locations of the Lolo and Moose Creeks study areas, and the minimum 100 feet spacing between individual suction dredge operations (FEIS, Chapter 2, p. 2-6), the ID Team determined that air emissions from the small engines used by suction dredge operators would be negligible and so did not need to be evaluated in the FEIS (FEIS, Chapter 5, p. 5-8).

Environmental Justice

In regards to Environmental Justice Executive Order 12898, the human health and environmental effects of the selected alternative will not disproportionately impact minority and low-income populations. This project will provide for a relatively small amount of jobs and income to local communities, which could have a small beneficial effect on the area's minority and low-income populations. The selected alternative complies with Executive Order 12898.

Idaho Stream Channel Protection Act

Idaho regulates recreational dredge mining under this Act (Idaho Code Section 42-3803(a)). "Recreational" dredging is defined as those mining activities in which miners use power sluices, small recreational suction dredges with a nozzle 5 inches in diameter or less, and equipment rated at a maximum of 15 horsepower. This is also the size cutoff for the FEIS, and suction dredges not qualifying as "recreational" under this statute would also not qualify for approval under the selected Alternative.

The statute requires dredge operators to obtain a Section 404 permit from the Idaho Department of Water Resources before any suction dredge mining can be done. To be authorized to operate under the permit, operators must adhere to a number of conditions intended to protect water quality, habitat, and fish. The Forest Service has included these conditions in the conditions of approval under the selected alternative (FEIS, Chapter 2, p. 2-2 through p. 2-6). One of the approval conditions is that operators be authorized under a stream alteration permit from the State.

N. CONSIDERATION OF OTHER INFORMATION

I have also considered this decision in the context of other broad scale information, such as:

Interior Columbia Basin Ecosystem Management Project (ICBEMP)

In July 1993, President Clinton directed the Bureau of Land Management (BLM) and the Forest Service (FS) to develop a scientifically sound, ecosystem-based management strategy for 72 million acres in seven northwestern states within the Columbia River Basin, as well as portions of the upper Klamath Basin and the northern Great Basin. The ICBEMP is designed to respond to several critical broad-scale issues, such as forest and rangeland health; listing of fish, plants, and animal species pursuant to the Endangered Species Act; and economies of rural communities. The following products of this planning effort were considered in the Small-Scale Suction Dredging in Lolo Creek and Moose Creek analysis:

- Framework for Ecosystem Management (PNW-GTR-374)
- Integrated Scientific Assessment (PNW-GTR-382)
- Summary of Scientific Findings (PNW-GTR-385)

Roadless Initiative

Since this project is not located in inventoried roadless areas, and no new roads are being constructed, this initiative does not apply to this project.

O. REVIEW AND APPEAL OPPORTUNITIES

This decision is subject to appeal pursuant to 36 CFR 215.11 by individuals or organizations meeting the requirements of 36 CFR 215.13. A written appeal must be submitted within 45 days following the publication date of the legal notice of this decision in the Lewiston Tribune newspaper of Lewiston, Idaho. It is the responsibility of the appellant to ensure their appeal is received in a timely manner. The publication date of the legal notice of the decision in the newspaper of record is the *exclusive* means for calculating the time to file an appeal. Appellants should not rely on date or timeframe information provided by any other source (36 CFR 215.15).

The appeal must be filed with the Appeal Deciding Officer in writing. It is the appellant's responsibility to provide sufficient project or activity-specific evidence and rationale, focusing on the decision, to show why my decision should be reversed. At a minimum, the appeal must meet the content requirements of 36 CFR 215.14.

Paper appeals must be submitted to:

For Postal Delivery:

USDA Forest Service, Northern Region
ATTN: Appeal Deciding Officer
P.O. Box 7669
Missoula, MT 59807

For Hand Delivery:

Northern Region Headquarters
Federal Building, 200 East Broadway
Missoula, Montana

Normal Business Hours are from
8:30 AM to 4:00 PM

Appeals may be Faxed to (406)-329-3411

Electronic appeals must be submitted to:

appeals-northern-regional-office@fs.fed.us

In electronic appeals, the subject line should contain the name of the project being appealed. An automated response should confirm your electronic appeal has been received. Electronic appeals must be submitted in MS Word, Word Perfect, or Rich Text Format (RTF).

It is the appellant's responsibility to provide sufficient project- or activity-specific evidence and rationale, focusing on the decision, to show why the Responsible Official's decision should be reversed.

The appeal must be filed with the Appeal Deciding Officer in writing. At a minimum, the appeal must include the following:

- Appellant's name and address, with a telephone number, if available;
- Signature or other verification of authorship upon request (a scanned signature for electronic mail may be filed with the appeal);
- When multiple names are listed on an appeal, identification of the lead appellant and verification of the identity of the lead appellant upon request;
- The name of the project or activity for which the decision was made, the name and title of the Responsible Official, and the date of the decision;
- The regulation under which the appeal is being filed, when there is an option to appeal under either this part or part 251, subpart C;
- Any specific change(s) in the decision that the appellant seeks and rationale for those changes;
- Any portion(s) of the decision with which the appellant disagrees, and explanation for the disagreement;
- Why the appellant believes the Responsible Official's decision failed to consider the substantive comments; and
- How the appellant believes the decision specifically violates law, regulation, or policy.

If an appeal is received on this project, there may be informal resolution meetings and/or conference calls between the Responsible Official and the appellant. These discussions would

take place within 15 days after the closing date for filing an appeal. All such meetings are open to the public. If you are interested in attending any informal resolution discussions, please contact the Responsible Official or monitor the following website for postings about current appeals in the Northern Region of the Forest Service:

http://www.fs.fed.us/r1/projects/appeal_index.shtml.

P. IMPLEMENTATION

If no appeal is received, implementation of this decision may occur on, but not before, five business days from the close of the appeal filing period. If an appeal is received, implementation may occur on, but not before, 15 business days following the date of appeal disposition.

Detailed records of the environmental analysis are available for public review at the Clearwater National Forest Supervisor's Office, 12730 Hwy 12, Orofino, ID 83544. For further information about this decision, please contact:

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THOMAS K. REILLY
Forest Supervisor

12/5/06

DATE

Q. REFERENCES

- Clearwater BioStudies, Inc. 1999. Habitat conditions and salmonid abundance in Lolo Creek, Pierce Ranger District, summer 1998. Contract report no. 53-0276-8-100, prepared for USDA Forest Service, Clearwater National Forest, Orofino, Idaho.
- Idaho Department of Water Resources (IDWR). 2003 (February 3). "Changes to the 2003 Recreational Dredging Permit." Letter to prospective applicants from Ervin E. Ballou, State Coordinator, Stream Protection Program. Attachment C to 2003 Recreational Dredging Application.
http://www.idwr.state.id.us/water/stream_dam/sca/RecDredge%202003%20App.pdf
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- _____. 2004. Recreational Dredging Application and Attachment for Suction Dredges with Nozzle Size of 5 Inches in Diameter or Less, and Equipment Rated at 15 Horsepower or Less.
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ATTACHMENT 1

BIOLOGICAL ASSESSMENT: THREATENED, ENDANGERED AND PROPOSED SPECIES
Suction Dredging on USFS Lands in the Lolo Creek Drainage
Final Version – January 19, 2006

This biological assessment addresses potential effects to designated Threatened and Endangered Species from proposed suction dredging activities during 2006 and 2007 within the Lolo Creek drainage. All sites occur within the Lochsa Ranger District, Clearwater National Forest. The project legal descriptions are in the Boise Meridian from T35N, R6E, S32 to T36N, R6E, S24. The projects are located in the mainstem Lolo Creek, within Idaho and Clearwater counties, Idaho.

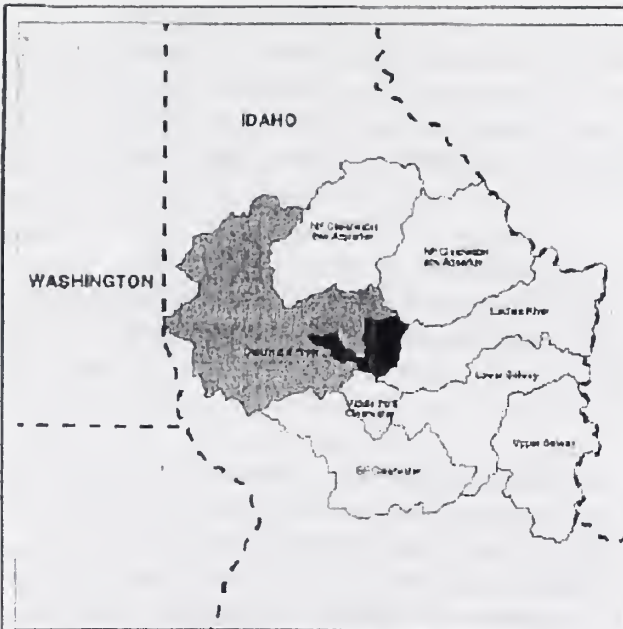
The Endangered Species Act of 1973 directs federal agencies to conserve Endangered and Threatened Species and to ensure that federal actions authorized, funded, and carried out are not likely to jeopardize their continued existence or result in the destruction or adverse modification of critical habitat. In response to Section 7(c) of the Endangered Species Act and Forest Service Manual (FSM) 2670, this biological assessment displays the potential effects of eighteen suction dredging operations upon Threatened and Endangered Species that are known or may occur in the area. The analysis area used to evaluate effects of the proposed project includes the watersheds listed above.

The U.S. Fish and Wildlife Service (USFWS) species list of September 1, 2005, (from Bi-annual Forest-wide Species List, 1-4-05-SP-736), identified two endangered, seven threatened species under ESA within North Central Idaho. The following species were included in the list: gray wolf (E:XXN), sockeye salmon (E), bald eagle (T), fall chinook salmon (T), spring chinook salmon (T), steelhead trout (T), bull trout (T), Canada lynx (T). Two of the fish species, sockeye salmon and spring chinook salmon were not listed within the Clearwater National Forest (specifically the Clearwater River and Palouse River subbasins); therefore these species will not be discussed as ESA species in this Biological Assessment.

Background Information

Lolo Creek is a major tributary of mainstem Clearwater River located between the North Fork Clearwater River and Middle Fork Clearwater River in North Central Idaho (Figure 1). Since its discovery in the 1860's, gold has been placer mined in Lolo Creek. Early mining operations primarily involved shovels and sluice boxes. In the early 1940's the Utah Creek confluence was mined with a small bucket line dredge. By 1970 gold prices started to rise and the drainage experienced a renewed interest in prospecting for gold. A backhoe and trommel operation started to develop, but later abandoned their claim located upstream of Mike White Creek. It was also around this time that miners started using suction dredges to prospect and explore instream gravels. Suction dredges allowed miners to excavate and process instream gravels that previously could not be reached. While the numbers who actually prospect varies from year to year, miners located or maintained 9 placer claims on Lolo Creek in 2003.

1998 Mining Season: Proposed mining operations for the 1998 field season were covered in the 1998 biological assessment. The Forest submitted a Biological Assessment (BA) for the Lolo Creek drainage and a letter dated May 29, 1998 requesting concurrence on number of ongoing and proposed projects (U.S.D.A. Forest Service – Clearwater National Forest 1998). The National Marine Fisheries Service (NMFS) concurred with the Forest's determination of "may affect, not likely to adversely affect" steelhead trout in a concurrence letter dated August 28, 1998 (NOAA – NMFS 1998). NMFS concurred with the suction dredging only for the 1998 field season; NMFS stated that this activity should be considered a programmatic activity and the Level One team would complete consultation on this activity



Clearwater River Basin

4th Field HUC/Subbasin:
17060306 Clearwater River

5th Field HUC/Assessment Area:

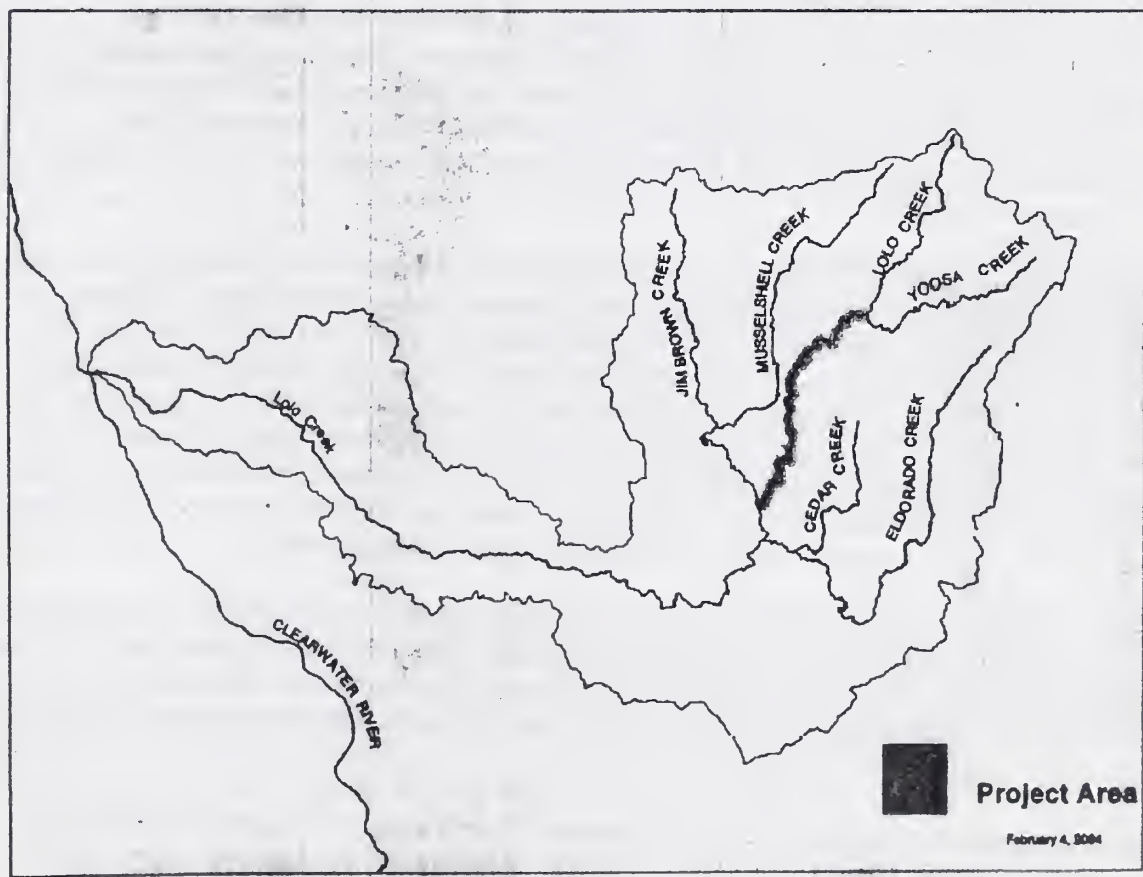
1706030325 Lolo Creek
9.6 miles



Subbasin



Assesment Area



for future years. Since all actions were determined to have no effect on bull trout, the first BA was submitted to USFWS for their review, but concurrence was not requested by the Forest. Information from other agencies regarding recent bull trout observations was acquired by the Forest in the fall of 1998. During 1998, 19 recreation suction dredgers operated in the mainstem of Lolo Creek. Field reviews by the Forest and Nez Perce Tribal employees found some violations (i.e. bank disturbance) in several areas.

1999 and 2000 Mining Seasons: On June 30, 1999, the Forest submitted an updated Biological Assessment for the Lolo Creek drainage requesting concurrence from the USFWS on ongoing and proposed projects (U.S.D.A. Forest Service – Clearwater National Forest 1999). Due to concerns regarding suction dredging on the steelhead trout and bull trout populations in Lolo Creek, no instream mining activities were permitted during 1999 and 2000.

2001 Mining Season: In 2001, the Forest permitted suction dredging within the mainstem Lolo Creek after the completion of a separate biological assessment (USDA Forest Service – Clearwater National Forest 2001) and acquiring a letter of concurrence dated June 22, 2001 from USFWS (U.S. Fish and Wildlife Service 2001). The Clearwater National Forest discussed with NOAA Fisheries the proposed suction dredging at a Level 1 meeting on April 24, 2001. The Clearwater National Forest submitted a draft biological assessment to NOAA Fisheries in May, 2001. A field review of Lolo Creek mining sites was conducted on June 12, 2001, with NOAA Fisheries, Clearwater National Forest and mining permittees in attendance. During the field review, dredging sites were examined to ensure that they were located outside potential spawning areas, and guidelines for mitigating or avoiding adverse effects of the mining on listed fish were discussed and developed. The field review was successful as no problems with mining locations, magnitude or duration were identified. Miners were strongly urged to follow these mitigation measures.

The mitigation measures discussed during the field review were incorporated into the final BA submitted to NOAA Fisheries by the Clearwater National Forest on June 15, 2001. NOAA Fisheries initiated formal consultation upon receipt of the BA on June 18, 2001. There was insufficient time for NOAA Fisheries to complete the biological opinion prior to the July 1 to August 15, 2001, operating period. At the start of the July 1, 2001, operation period, NOAA Fisheries's draft biological opinion concluded that the action would not jeopardize steelhead. The reasonable and prudent measures required in the draft biological opinion were identical to the guidelines that were developed on June 12, 2001. Consequently, NOAA Fisheries verbally informed the Clearwater National Forest that the miners could conduct their mining operations in 2001 under the draft terms and conditions.

Starting in 2001, NMFS has required the Forest to address the potential effects of proposed activities on salmon habitat. Therefore, the 2001 BA also evaluated potential effects of the suction dredging activities within the Lolo Creek drainage on Essential Fish Habitat, in accordance with applicable requirements of section 305(b) of the Magnuson-Stevens Act and its implementing regulations, 50 CFR Part 600.920.

Field reviews were conducted during the 2001 mining season by the Forest to assess the effectiveness of the permit provisions. Implementation reviews conducted by the Forest during the field season did not identify any problems or violation. Tribal fisheries personnel working within the Lolo Creek drainage also did not observe any problems with suction dredging activities in 2001. A follow-up field review was held on August 30, 2001 with regulatory and miners. With the exception of some obvious movement of substrate materials at various mining sites, no riparian and stream bank alterations were observed and the mining sites were restored (no migration barriers via gravel depositions, no mining holes etc.).

Implementation monitoring also determined that the amount of disturbance and potential impacts of the mining activities were smaller than predicted during the 2001 analysis. Eight claimants worked their claims for approximately 75 days during the July 1 to August 15 mining season; this is 47 days less than the proposed 122 days. Of the 7,888 ft² of stream that was estimated to be affected by suction dredging in 2001, the actual suction dredging affected only 6,820 ft²; this is approximately 86 percent of the area predicted in the 2001 analysis (see Appendix A).

2002 Mining Season: The Forest submitted a Biological Assessment (BA) for the Lolo Creek drainage and a letter dated July 11, 2002 requesting concurrence on number of ongoing and proposed projects for the 2002 season (U.S.D.A. Forest Service – Clearwater National Forest 2001). However, no mining was authorized by the Forest in 2002 due to the pending completion of an Environmental Impact Statement (EIS). Since no mining took place in the Lolo Creek drainage during 2002, the completion of the biological opinion was not imperative for 2002. As agreed upon during a Level One conference call on July 30, 2002, the Forest requested the time frame of the BA be extended to include the 2003 mining season. The U.S. Fish and Wildlife Service (USFWS) concurred with the Forest's determination of "may affect, not likely to adversely affect" bull trout in a concurrence letter dated August 21, 2002 (U.S. Fish and Wildlife Service 2002). This concurrence letter covered the 2003 mining season.

2003 Mining Season: The National Marine Fisheries Service (NMFS) concurred with the Forest's determination of "may affect, likely to adversely affect" steelhead trout in a Biological Opinion dated July 27, 2003 (NOAA – Fisheries 2003). However, the Forest did not authorize any mining in 2003 due to the pending completion of an EIS. Therefore the monitoring provisions, conservation measures etc that were noted in the BA, BO and letter of concurrence did not apply to the 2002-2003 field season as no instream mining (suction dredging) occurred in the Lolo Creek drainage.

2004 and 2005 Mining Seasons: Anticipating mining would commence in 2004, the Forest submitted a BA for the Lolo Creek drainage and a letter dated April 7, 2004 requesting formal consultation regarding steelhead trout and informal consultation regarding bull trout on the proposed suction dredging activities for the 2004 and 2005 mining seasons (U.S.D.A. Forest Service - Clearwater National Forest 2004). NOAA Fisheries concurred with the Forest's determination of "may affect, likely to adversely affect" steelhead trout in a biological opinion dated June 30, 2004 (NOAA Fisheries 2004). Likewise, the U.S. Fish and Wildlife Service (USFWS) concurred with the Forest's determination of "may affect, not likely to adversely affect" bull trout in a letter of concurrence dated May 10, 2004 (U.S. Fish and Wildlife Service 2004a).

No mining was authorized by the Forest in 2004 and 2005 due to the pending completion of an Environmental Impact Statement (EIS). However, during the summer of 2005, some suction dredging occurred adjacent to the Section 6 bridge for a 2-3 day period. The instream activity occurred without the knowledge of the Forest in an area closed due to a water quality monitoring site. Although the effects the activity were minimal, some corrective action of repositioning boulders by the Forest was necessary to avoid changing the stream flow at the monitoring site.

Project Proposal

The mining operations planned in the Lolo Creek drainage involve processing instream sand, gravel, and cobble primarily with suction dredges. Potential and current mining areas are located primarily in the mainstem Lolo Creek, Eldorado Creek, and Musselshell Creek drainages. In 2001, an additional one mining claim was filed within the mainstem Lolo Creek; currently 13 mining claims are listed in the

Bureau of Land Management mining claim database in the Lolo Creek drainage. Notices of intent to mine any of these 13 claims can be submitted to the Forest in any year. In 2006 and 2007, 18 operators involving 13 mining claims (one suction dredge per operation), are planning to work their claims within the mainstem Lolo Creek. Mining claim names and locations in the Lolo Creek drainage are displayed in Appendix B. The specifics regarding the proposed suction dredge mining for the 2006-07 field seasons are summarized in Appendix C.

Due to recommendations regulatory agencies regarding ESA protection, the Idaho Department of Water Resources made a number of changes to the Recreational Dredging "One Stop" Permit for 2000. The new regulations excluded the Lolo Creek drainage from the "one stop" permit process.

Beginning in 1998, all suction dredging was monitored by the Forest Geologist. During the 1998 dredge season, on an average the suction dredgers worked three to five hours per day, four days per week. The nozzle diameters ranged from 1-1/2 inches to 5 inches. The most popular suction dredge had a four inch nozzle diameter and was powered with five horsepower (hp) or eight hp motors.

Operators are required to obtain a permit to alter a stream channel from the Idaho Department of Water Resources. The permit is issued under an individual dredging application. Operators must adhere to IDAPA Rule 37.03.07.064, which defines the equipment class, timing and mitigation measures. The recreational classed suction dredges have a nozzle diameter of five inches or less, and are powered by motors with horsepower rating of 15 hp or less. In the Lolo Creek drainage, current dredging involves relatively smaller dredges (between 1-4 inches). Dredging or processing of stream bank materials is not permitted under a recreational dredging permit. Besides the dredges, a few miners use gold pans and small sluice boxes to process gravel.

Operators must also comply with the protection measures detailed in Final Environmental Impact Statement (FEIS). To maintain consistency across the Forest with proposed plans of operations, protection measures from both Lolo Creek and Moose Creek drainages were used in the FEIS. Protection measures listed in Appendix A of the 2004 Biological Opinion for suction dredging in the Moose Creek drainage issued by the USFWS provided the majority of the provisions (U.S. Fish and Wildlife Service 2004b). These provisions were added to the terms and conditions defined by NOAA Fisheries (NOAA Fisheries 2004) to provide the framework to minimize impacts on listed species. In addition, the Forest also added additional elements to some terms and conditions and also included additional conditions in response to concerns raised during the scoping process.

Prior to the mining season, a field review will be conducted by the Level One Team members to ensure that the sites proposed for suction dredging during the 2006 and 2007 field seasons are located in areas that will have minimum effects to listed species (steelhead trout and bull trout) and spring chinook salmon. In past years, the proposed dredging sites were primarily located outside potential spawning areas and in areas of larger substrate materials (large cobbles to boulder substrates). Proposed dredge sites adjacent to spawning areas are not expected to affect gravel sites that fish could potentially use for spawning. Impacts to rearing habitat will be minimal as instream woody debris would not be moved during the mining operations. Areas surrounding boulders may be dredged and the boulders moved slightly, but the function of the boulders of providing rearing habitat will be maintained.

In addition to the proposed suction dredging activities, several publics have shown interest in gold panning. A maximum of eight people may want to pan or use small sluice boxes within the project area. The operations will be located below the high water mark on exposed gravel bars. Panning or using small sluice boxes involve digging gravels with a shovel and washing the gravels in the stream. Based on past observations, panners typically excavate and process less than one cubic foot per season. While

the small sluice box operators typically excavate and process less than two cubic feet per season.

Mitigation and Conservation Measures: As directed by Section 7 (a) (1) of the ESA, the Forest proposes to implement the following mitigation and conservation measures in 2006 and 2007 to minimize or avoid adverse effects of the proposed suction dredging activities on steelhead trout and bull trout populations and habitat. These measures also include a means to gather additional information on the locations of bull trout spawning and early rearing habitat for future consultation efforts.

- (1) *Implementation Monitoring* - The Forest Geologist will conduct field monitoring of individual suction dredging operations throughout the July 1 to August 15, 2006 and 2007 mining seasons. Each mining operation will be monitored between 5 and 23 days dependent upon the proposed length of the mining operation (Appendix B). District personnel, Forest Hydrologist and Forest Fisheries Biologist will also assist the Forest Geologist in the implementation monitoring. In addition, the Idaho Department of Environmental Quality will be assisting the Forest in the implementation monitoring. The Forest Geologist will provide the Level One Team reports summarizing the mining activities that occurred in 2006 and 2007.
- (2) *Effectiveness Monitoring* - The Forest Hydrologist and Forest Fisheries Biologist will conduct field reviews of each mining activity during 2004 and assess the effectiveness of the permit provisions (as outlined in the "one step" permit). Any additional recommendations for the 2006 and future years will be documented for the Level One consultation process. As recommended during the 2001 Level One field review, the Forest will implement the following specific effectiveness monitoring measures in 2006 and 2007:
 - a). Photo points depicting the stream and riparian conditions prior to and following mining operations will be established at selected mining operations. Digital photos will be taken at the actual mining sites and directly downstream of the mining operations.
 - b). Substrate monitoring sites will be established at selected mining operations. Wolman pebble counts will be completed on in selected areas that were mined and immediately downstream.
- (3) *Bull Trout Monitoring* - Under the direction of the Forest Fisheries Biologist, forest personnel (biologists and bio-technicians) will complete annual fish population surveys (via snorkeling) on mainstem Lolo Creek during July and August to assess bull trout presence/absence and identify juvenile rearing areas. The Nez Perce Tribe will also continue their fish population surveys via snorkeling) within the mainstem Lolo Creek. Any potential bull trout spawning would be observed during the spring chinook surveys conducted by the Nez Perce Tribe; spring chinook spawning surveys are conducted during August and September. The presence of bull trout at the fish weirs on the mainstem Lolo Creek will also be monitored by the Nez Perce Tribe. Forest Fisheries Biologist will document the results of the surveys for the Level One consultation process.
- (4) *General Mitigation Measures* - The following activities are prohibited under the "one step" recreational dredging permit for the State of Idaho (see form 3804-A 2/00). Implementation monitoring will assess compliance of each operation and notify the Idaho Department of Water Resources where violations are observed.
 - Disturbance of any vegetated stream bank or undercutting of any stream bank areas.
 - Hydraulic mining operations of any type, or introduction of material from outside the

stream channel.

Damming of a stream channel for any reason.

Removal of boulders from the streambed to the bank.

Deposition of discharged material to redirect stream current.

- (5) *Specific Mitigation Measures* – As discussed and agreed to by the Level One Team, the proposed mining sites will be reviewed and approved by the Level One team. Any site-specific mitigation measures identified by the Team will be a condition of the permit. Prior to July 1, an interagency field trip will be held to review the mining sites with local miners to determine if any additional mitigation or conservation measures would be needed to avoid impacts to listed species. In addition to the Level One team members, representatives from the Idaho Department of Fish and Game, Idaho Department of Water Resources, and Nez Perce Tribe will be invited to attend. As recommended during the 2001 Level One field review, the mining operators will implement the following specific mitigation measure in 2006 and 2007:

Avoid mining in potential spawning areas for steelhead trout and spring chinook salmon. Substrate materials moved and/or relocated from the streambed during the mining operation will be placed back into the original location. For example, substrate material will not be left along banks or in piles within the stream channel. All mining depressions (artificial pools) will be filled in with the dredge materials.

Mining operations during the 2006 and 2007 mining seasons will have concurrent reclamation; areas previously worked will be restored while new areas are being mined. The operations will provide adequate water depth in the primary stream channel to allow for fish mitigation.

Gravels will not be sorted and deposited in one area; gravels need to be re-distributed with existing larger substrate materials to avoid creating artificial spawning areas.

- (6) *Protection Measures* – As noted in the project proposal, operators must also comply with the protection measures detailed in Final Environmental Impact Statement (FEIS). Some of these protection measures include some of the above mitigation measures.

Endangered Wildlife Species

Gray Wolf (*Canis lupus*)

Regulatory Framework: Since the translocation of wolves to Central Idaho in January 1995, the species in the Central Idaho population is now considered experimental, nonessential. Strategies to protect and recover populations are outlined in the Northern Rocky Mountain Wolf Recovery Plan (U.S. Fish and Wildlife Service 1987) and Draft Environmental Impact Statement for the Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho (U.S. Fish and Wildlife Service 1993a).

Existing Condition: The Lolo Creek drainage is within the boundary of the Central Idaho nonessential population area for the gray wolf. Approximately 10 wolves currently occupy habitat in and adjacent to the project area. There will be no animal control activities associated with this project that requires consultation with USFWS. Additionally, there are currently no known denning or rendezvous sites in the project area. If a wolf were found within the project area, we would immediately consult USFWS.

Determination: Based on this information, suction dredging and gold panning in the Lolo Creek area **would not jeopardize** the continued existence of the gray wolf.

Threatened Wildlife Species

Bald Eagle (*Haliaeetus leucocephalus*)

Regulatory Framework: The bald eagle is protected under the ESA (1973), Bald Eagle Protection Act (1940), Migratory Bird Treaty Act (1918), and Lacey Act (1901). The Pacific Bald Eagle Recovery Plan (U.S. Fish and Wildlife Service 1986) provides strategies to protect and recover bald eagle populations in Idaho. Forest Plan standards direct the Clearwater National Forest to "manage active identified bald eagle nesting, roosting, and perching sites to maintain their use [and] cooperate with future recovery efforts" (II-24).

Habitat Requirements: In north central Idaho, bald eagles use forests along rivers, lakes, and reservoirs (Davis 1994). Until recently, only wintering bald eagles have been known to use the Clearwater Basin. In the spring of 1999, an unsuccessful nest attempt was documented nearby to the Clearwater National Forest on Dworshak Reservoir. This location is at least 60 miles from the project area. No historical or current evidence documents nesting or breeding on the Clearwater National Forest. Essential habitat for bald eagles on the Clearwater National Forest is restricted to 0.5 miles on either side of the Lochsa River, Middle Fork of the Clearwater River, North Fork of the Clearwater River, and lower portions of the Weitas, Kelly, and Cayuse Creeks, for a total of 175,000 acres of suitable winter habitat.

Existing Condition: No use has been documented for the Lolo Creek drainage.

Determination: Suction dredging and gold panning in the drainage would have **no effect** on individual eagles, the population or on bald eagle recovery in Idaho.

Lynx (*Lynx canadensis*)

Regulatory Framework: On March 24, 2000 lynx was listed as a threatened species under ESA.

Existing Condition: The lynx is also a wide-ranging predator that could use the project area on occasion. Nellis (1989) estimated that most home ranges fell between 5 and 20 square miles, but home ranges up to 94 square miles have been reported. Ruggiero (1994) reported the lynx "... occurs primarily in the boreal forest of Alaska and Canada, but its range extends south into the northern portions of the western mountains, where environmental conditions at high elevations support boreal forest habitats similar to those found in northern regions." The project area does support boreal forest habitat conditions, and the likelihood of use by the lynx is low.

The Idaho Fish and Game Department has no records (historical or otherwise of reliable) lynx sightings in Clearwater County. Ruggiero's (1994) observations and Fish and Game records of lynx distribution both concur with Koehler's observation that most lynx use occurs further north and along the Montana/Idaho divide.

Determination: In summary, the project area has very few historical and current observations and it is not within suitable lynx habitat, therefore, suction dredging and gold panning would have **no effect** of lynx or its habitat.

Threatened Fish Species

Fall Chinook Salmon (*Oncorhynchus tshawytscha*)

Regulatory Framework: The National Marine Fisheries Service (NMFS) Federal Register (issued 12/28/93) identified a reach of the mainstem Clearwater River as critical habitat for Snake River fall chinook salmon. Critical habitat for the fall run chinook includes only the mainstem of the Clearwater River up to the Idaho/Clearwater county line below the town of Greer, Idaho. Distance from the proposed suction dredging in Lolo Creek to the Clearwater River is over 25 miles. Consequently, no critical habitat for this species occurs within the Clearwater National Forest. Under the ESA, the Forest Service must assess cumulative impacts from federally authorized or funded projects on the Clearwater National Forest to fall chinook salmon populations in both the lower Clearwater River and Palouse River below the falls.

Existing Condition: No historical records or current documentation of fall chinook salmon spawning or rearing within the Lolo Creek watershed are available. The mouth of the Lolo Creek on the mainstem of the Clearwater River is the upstream boundary of designated critical habitat for fall chinook. Current data suggests that fall chinook salmon may have a historic distribution only up to the Lochsa River. The majority if not all of the fall chinook salmon spawning documented over the last 13 years has occurred within the designated critical habitat reaches of the Clearwater River, mostly downstream of the North Fork Clearwater River. Some limited spawning has been observed in the reach around Orofino Creek, the area near the Lolo Creek confluence and upstream of the critical habitat near the confluence of the South Fork Clearwater River. These are assumed sporadic and not considered viable/natural sustaining populations (due to natural constraints regarding rearing habitat, water temperatures during incubation and early rearing).

Spawning ground surveys conducted by the Nez Perce Tribe from 1988-2004 have found up to 628 redds in the lower mainstem Clearwater River (Garcia 2000; Nez Perce Tribe 2003, 2004, 2005). Redd counts have ranged from four redds in 1990 and 1992 to 524, 571, 628 redds in 2002, 2003 and 2004 respectively (Garcia 2000; Nez Perce Tribe 2003, 2004, 2005). The majority of redds were located downstream of the North Fork Clearwater River; less than five percent in any one year were located upstream of the North Fork Clearwater River confluence. Increased spawning success over the past ten years has been attributed to supplementation efforts in the subbasin.

Effects of Proposed Action: The effects of suction dredging within upper Lolo Creek primarily involve changes in substrate conditions and instream cover, thereby affecting spawning and rearing habitat for salmonids. Changes in water quality conditions (i.e. turbidity and suspended sediment levels) also occur in localized areas during project operations. Any substrate changes and redistribution of fine sediment produced by suction dredging would be localized not be measurable in stream reaches immediately downstream of the project area. Effects to lower Lolo Creek and the mainstem Clearwater River would be nonexistent (see discussions for steelhead trout and bull trout).

Determination: Due to the absence of fall chinook salmon spawning within the Lolo Creek direct impacts to fall chinook salmon spawning and rearing are nonexistent. Due to the small scale of the dredging operations operating at anyone time, the small areas being disturbed, and the mitigation measures mandated under the permit process, any substrate changes caused by suction dredging would be localized and not measurable downstream of the project area. No effects to the mainstem Clearwater River are expected. Therefore suction dredging and gold panning in the Lolo Creek drainage would have no effect on recovery of fall chinook salmon in the Clearwater River subbasin.

Lolo Creek Habitat Conditions

(The following summaries include excerpts from the mainstem Clearwater River Assessment; USDA Forest Service – Clearwater National Forest 1997)

Stream conditions in the Lolo Creek have been altered by farming, mining, grazing, timber harvest and road building. Farming impacts have been located throughout the watershed below the Forest boundary. Timber harvest, road construction and grazing impacts are located throughout the entire watershed. Mining impacts are localized primarily within the Forest boundary. The mainstem Lolo Creek and nine tributaries have been designated a WQLS by the State of Idaho. The primary pollutants of concern are sediment and water temperature. Past, current, and future monitoring within the Lolo Creek drainage will emphasize substrate conditions in terms of sediment and stream water temperatures.

Past reports and personal accounts and more recent observations lends support to the fact that road construction along the mainstem of Lolo Creek and other fish bearing tributaries were most likely the dominant impact to the stream channel, riparian and fish habitat conditions. The construction of USFS roads #100, 103, 500, 535, and 540 altered the stream channel in numerous locations and eliminated the recovery of the riparian areas where the road was within 150 feet of the stream. Besides the initial and chronic influx of sediment due to the proximity of the native surfaced and gravel roads, additional sources of erosion were developed due to the confinement of the stream channel in various locations. Riparian vegetation removed from the road right-of-way decreased the streamside shade and potential woody debris; high summer water temperatures and decreased quantity and quality of spawning and rearing habitats were a result of the development. As more roads were constructed within the tributaries and headwater reaches, additional sources of sedimentation were created in the smaller fish bearing tributaries as well as the mainstems of Lolo, Eldorado and Musselshell creeks. Associated timber harvest along these roads also affected the streams as riparian vegetation was removed along most streams. The riparian alterations created stream channel instability, reduced streamside shade, higher summer water temperatures and reduced instream habitat conditions such as reduced cover, and reduced acting and potential woody debris.

Channel Morphology: Channel types found in the Lolo Creek watershed are A1-4, B1-6, C1-6, E4-6 and G5. The A and B gradient reaches are generally found in the steeper headwater, non-fish bearing streams. B5 and B6 stream types were found in the headwaters of White, Mike White, Nevada, Alder, Cole, Greer, Trout, Fan, Austin, Panther, Brick, May, Cedar and Eldorado creeks. These streams have more than likely been altered by sediment from logging and roading. The natural stream in these landforms would usually be B4 channel type. Many of the C4-6 channel types found in the headwaters of Mike White, Dutchman, Siberia, Molly, Rat, Relaskop, Alder, Cole, Greer, Trout, Fan, Six Bit, Four Bit, Panther, Brick and May creeks may be altered E4-6 stream types. Sediment inputs from logging and roading would tend to decrease the width to depth ratios of these streams causing bank erosion and changes in sinuosity. One E6 reach in Six Bit Creek had a bank stability of 28 percent. This stream is responding to impacts and will change channel types. E6 streams cannot maintain themselves in dynamic equilibrium with that level of disturbance on the stream banks. Single reaches of the G5 channel type were observed in Trout, Six Bit and Two Bit creeks. These are gullied B4 channel types that are not natural to the landforms in the watershed. Although stream banks tend to be stable indicating most streams are within dynamic equilibrium, levels of cobble embeddedness, or sediment tend to be higher than that found in undisturbed watersheds.

Habitat Conditions: Information regarding the lower mainstem of Lolo Creek (downstream of USFS lands) and its tributaries is limited to site monitoring and survey data from the Bureau of Land Management and a complete habitat and fish population survey conducted by a BLM contractor in 1992. Inter-Fluve, Inc (1993) reported that of the 15 stream reaches downstream of USFS lands, seven reaches

have physical habitat conditions that are basically pristine due to the inaccessibility and high "canyon-type" confinement; these reaches primarily make up the lower 14 miles of the 31 miles of mainstem on non-USFS lands. Of the remaining eight reaches, six are located directly downstream of USFS lands; these reaches had lower stream gradients and less confined than the reaches lower canyon. The report noted that while impacts physical impacts were not noticeable in the lower canyon reaches (except the lower reach near the mouth); the reaches downstream of the USFS lands were heavily impacted by grazing. Although the survey noted that the lower gradient reaches downstream of USFS lands appeared to have better spawning and rearing habitat than the lower canyon reaches, salmonid densities were found to be lower in the impacted reaches than in the relatively unimpacted lower canyon reaches (Inter-Fluve, Inc. 1993). The primary limiting factor for salmonid production within the lower mainstem Lolo Creek is the high summer water temperatures; BLM and USFS monitoring data shows water temperatures well above optimum temperatures for salmonid production.

From 1988-1994, all streams within the USFS boundary in the Lolo Creek drainage were surveyed by the USFS and/or USFS contractors. Recent surveys administered by the USFS have showed that a number of streams within the Lolo Creek drainage can be characterized by fair-poor substrate conditions, fair-good riparian conditions, and fair rearing habitats (Clearwater BioStudies, Inc. 1988, 1991, 1992a, 1992b, 1993c and Isabella Wildlife Works 1995b, 1995c, 1995d, 1995e). The reports mostly identified the moderate to high levels of cobble embeddedness as a primary limiting factor to fish production. The poor substrate conditions affect the quality and quantity of summer and winter rearing habitat. Low levels of acting debris and sub-optimal levels of instream cover were noted as limiting factors in a number of stream reaches. Habitat enhancement projects that were completed from 1981-92 have increased the acting woody debris and have resulted in better rearing habitat. Instream sediment removal activities have also taken place in the mainstem Lolo Creek, Eldorado Creek, Yoosa Creek and several tributaries. This removal of instream sediment from natural and constructed sediment traps has improved substrate conditions in localized areas; long-term cumulative effects are believed to be positive, but the limited extent of the activities to specific sites and few years of monitoring data do not show any definite trends.

Resurveys of specific streams are planned every five to ten years dependent upon stream conditions and management proposals. Approximately 20 miles of the mainstem of Lolo Creek (including the project area) were resurveyed during the summer of 1998 to assess any changes in habitat stream conditions from surveys conducted in 1988 and 1993. In general, the surveys noted that the fish habitat within Lolo Creek drainage were generally similar to conditions documented during the 1993 survey. No changes in overall substrate conditions were observed; the 1998 overall cobble embeddedness levels of 41.5 percent for the 20 miles of stream was basically the same as the 1993 level of 41.0 percent. Of the 49 stream reaches, 25 reaches showed decreases and 24 showed increases in cobble embeddedness levels. The substrate conditions do not meet the DFC for the appropriate Forest Plan standard. Average cobble embeddedness levels within twelve reaches of Lolo Creek met the desired conditions for a "high fishable" standard of 30-35% cobble embeddedness. The remaining stream reaches exhibited average cobble embeddedness levels of 36% to over 61%; although these levels are higher than the desired conditions, the extent the levels are within or outside natural conditions have not been assessed at this time.

Water Temperatures: The stream temperatures within the lower mainstem of Lolo Creek downstream of the USFS boundary approach the lethal limits for salmonid production. Inter-Fluve, Inc. (1993) reported water temperatures up to 27° C in the lower mainstem Lolo Creek in 1992.

Water temperatures within the mainstem Lolo Creek and various tributaries have been monitored by the Forest and Nez Perce Tribe from 1990-2003. The maximum water temperatures within the mainstem of

Lolo Creek (at the section 6 bridge) have ranged from 26° C during the hot, dry summers of 1992 and 1994 to 19° C during the relatively cool, wet summer of 1993. Water temperatures within the lower reaches of the two major tributaries of Lolo Creek, Musselshell Creek and Eldorado Creek have also shown similar high water temperatures. These three streams provide the majority of the current/potential spring chinook spawning during the late summer and early fall period. Water temperatures during the spring chinook spawning period are rated as poor during the late summer to good during the early fall period. The streams provide good water temperature conditions for the overwintering incubation of the eggs and early rearing of the juveniles in the spring. Summer rearing of juveniles is rated as poor to fair due to the high water temperatures.

Stream temperature data for the smaller tributaries of Lolo, Musselshell and Eldorado creeks show water temperatures mostly conducive to salmonid production. Spring spawning conditions for steelhead trout and westslope cutthroat trout are rated as good in the early spring to fair-poor during the mid-summer incubation period. The fair to poor conditions are a result of the higher than optimum water temperatures during the spawning and incubation period. Most of the streams that were monitored have exceeded the 13° C maximum spawning temperature slightly (14-15° C) during June and July. However, summer water temperatures within these streams provide good conditions for rearing of the steelhead trout and westslope cutthroat trout. The maximum water temperatures of these tributaries remain below 16° C in most years; the exception for several streams (Camp Creek, Six Bit Creek, Fan Creek, Gold Creek, and Yakus Creek) was during the hot, dry summers of 1992 and 1994 that showed maximum water temperatures peaking between 16-18° C. Overall, these higher temperature periods in these tributaries are different from the larger mainstem streams as they are relatively short duration.

During 2004, stream temperatures were monitored throughout the summer at 21 sites on 19 streams within the Lolo Creek drainage to evaluate habitat conditions for steelhead trout, spring chinook salmon, westslope cutthroat trout and bull trout. The following data is for Lolo Creek tributaries operated by the Forest, as the data recorders operated by the Nez Perce Tribe (i.e. Camp Creek, Eldorado Creek etc.) have not been summarized. Comparison of the 2004 stream temperature data from the monitoring sites and the desired maximum temperatures as defined for appropriate standards in the Forest Plan revealed that:

The desired steelhead trout rearing temperature of 17°C was met at six streams (Dutchman Creek, Knoll Creek, Mike White Creek, Fan Creek, Lunch Creek, and Trout Creek) out of the eleven streams monitored with a "high fishable" standard. Lolo Creek, Eldorado Creek, Musselshell Creek, Nevada Creek and Yoosa Creek did not meet the "high fishable" standard for steelhead trout rearing.

The desired spring chinook trout rearing temperature of 17°C was not met at the current or potential spring chinook salmon streams (Lolo Creek, Yoosa Creek, Eldorado Creek and Musselshell Creek).

The desired westslope cutthroat trout rearing temperature of 16°C or below was met at four streams (Brick Creek, Chamook Creek, Panther Creek, and White Creek) out of the seven streams monitored with a "high fishable" standard.

The desired westslope cutthroat trout rearing temperature of 18°C or below (moderate fishable standard) was met in Gold Creek and Mud Creek.

The desired westslope cutthroat trout rearing temperature of 20°C or below (low fishable standard) was met in Dan Lee Creek.

Overall, water temperatures within 18 of the 19 streams were under the State standard for cold-water biota; water temperatures did not exceed the daily maximum of 22°C and the maximum daily average of 19°C. The temperature data showed Lolo Creek (at the gage) and Musselshell Creek (at the mouth) exceeded the State cold-water biota standard. The State standard of 13°C for the spring spawning period (steelhead trout) was not met at any site. However, three streams (Knoll Creek, Lunch Creek and Trout Creek) exceeded the spawning period standard by six days or less. All streams exceeded the bull trout maximum rearing temperature of 12°C (consecutive seven-day average of daily maximums during June-September) that EPA issued as final guidance for water quality standards throughout the Pacific Northwest.

Project Area Habitat Conditions: The environmental baseline data for the mainstem Lolo Creek was determined by supporting data in the stream reaches of LO-19 through LO-41 (Clearwater BioStudies, Inc. 1999). This area extends from Musselshell Creek to the confluence of Yoosa Creek. This is the stream segment where suction dredging is proposed for 2006 and 2007. The critical reaches are B1c, B2, B1c, B2c, B3, and B3c channel types (Rosgen stream classification) with an average gradient of 1.0 % and a dominant substrate of small rubble.

Habitat conditions within the mainstem Lolo Creek (Musselshell Creek to Yoosa Creek) have shown slight improvements over the past 12 years. Comparison of the 1988 and 1993 surveys showed average cobble embeddedness levels decreasing from 51.4 percent to 44.0 percent. However, the 1998 survey has shown no recovery trend from 1993 regarding the substrate conditions.

In general, the 1998 survey noted that the fish habitat within 23 streams reaches within the project area were generally similar to conditions documented during the 1993 survey. Slight changes in overall substrate conditions were observed in individual reaches. The average cobble embeddedness levels measured during the 1993 and 1998 surveys for the 9.6 miles of stream increased slightly from 44 % to 46 %. The substrate conditions do not meet the DFC for the "high fishable" Forest Plan standard of 30-35% for B and C channel types. Although these levels are higher than the desired conditions, the extent the levels are within or outside natural conditions have not been assessed at this time. Slight decreases in acting woody debris levels and bank stability ratings were found in 1998 compared to the 1993 survey. Moderate increases in pool habitat (quantity and quality) were also observed in the 1998 survey.

Steelhead Trout (*Oncorhynchus mykiss*)

Regulatory Framework: The Snake River steelhead ESU was listed under the ESA as threatened on October 17, 1999, (62 FR 43937), and proposed for revision on June 14, 2004, (69 FR 33102). The revised Snake River steelhead ESU is proposed for re-listing as the Snake River Basin /O. mykiss /ESU, which includes both resident and anadromous forms within the range of the existing steelhead ESU, and also includes the North Fork Clearwater River drainage upstream of Dworshak Dam.

Critical habitat for the Snake River Basin /O. mykiss /ESU was proposed on December 14, 2004 (69 FR 74572). Proposed critical habitat for the Snake River Basin/ O. mykiss/ ESU includes a subset of the accessible streams and rivers within the range of the existing Snake River steelhead ESU. Streams proposed for critical habitat designation are identified in the December 14, 2004, Federal Register by their corresponding fifth-field hydrologic unit codes.

The project area is located within the mainstem of Lolo Creek (1706030616 and 1706030618) which is proposed for critical habitat for steelhead trout (69 FR 74766 and 74792).

Life History: Snake River Basin steelhead trout are summer steelhead trout, as are most inland steelhead trout, and comprise two groups, A-run and B-run, based on migration timing, ocean-age, and adult size. Snake River Basin steelhead trout enter fresh water from June to October and spawn during the following spring from March to May. B-run fish, which occur in the Clearwater River Basin, enter fresh water from late August to October, passing Bonneville Dam after August 25. B-run steelhead trout are thought to be age 2 ocean fish. They are 75 to 100 mm larger than A-run steelhead trout of the same age due to their longer residency in the ocean. Unlike other Pacific salmon, steelhead trout are capable of spawning more than once before they die. However, most steelhead trout in the Clearwater Basin survive to spawn only once.

Spawning and initial rearing of juvenile steelhead trout generally take place in moderate gradient (generally 3-5%) streams. Females dig redds and deposit 1,500 to 6,000 eggs in pea to baseball size gravel. The eggs hatch in about 35-50 days, dependent upon water temperature. The alevins remain in the gravel 2 to 3 weeks until the yolk sac is absorbed, then emerge as fry in late spring, and begin to actively feed. Egg to fry survival is usually near 15%. Snake River Basin steelhead trout usually smolt as 2 or 3 year olds and migrate to the ocean.

Productive steelhead trout habitat is characterized by complexity, primarily in the form of large and small wood and/or boulders and rock. Juveniles will take advantage of microhabitats to seek refuge from high water velocity and/or temperatures. Juveniles may move around in a basin to take advantage of favorable habitat. Fry prefer protected and complex edge habitat with low velocity (<0.3 ft/s). They are seldom observed in water over 15 inches deep. Summer rearing takes place primarily in the faster parts of small and deep scour pools with some form of surface cover and wood or medium to large substrate (cobble or boulders). Other important habitat components for juveniles are pools with "bubble curtains", undercut/scoured areas, and pocket water in deep riffles and rapids. Winter rearing occurs more uniformly at lower densities across a wide range of fast and slow habitat types. Small tributaries and lakes are probably important winter habitat. As juveniles get older, some tend to move downstream to rear in larger tributaries and mainstem rivers.

Existing Condition and Environmental Baseline: Historical and current information regarding the physical and biological characteristics of the Lolo Creek watershed are presented in the *Section 7 Watershed Biological Assessment for the Lolo Creek Drainage, Mainstem Clearwater River Subbasin*, dated June 30, 1999 (U.S.D.A. Forest Service - Clearwater National Forest 1999). This biological assessment also summarized the overall presence/absence, relative abundance, habitat conditions and current trends for steelhead trout in the Lolo Creek drainage. The matrix information developed for the Section 7 watershed assessment for the Lolo Creek drainage (U.S.D.A Forest Service - Clearwater National Forest 1999) was updated to reflect current conditions and the specific segment of the mainstem Lolo Creek within the project area.

The environmental baseline was summarized using the *Matrix of pathways and indicators of watershed conditions adapted for the Clearwater River Subbasin and Lower Salmon River* (Appendix D). The environmental baseline data for the mainstem Lolo Creek was determined by supporting data in the stream reaches of LO-19 through LO-41 (Clearwater BioStudies, Inc. 1999). Critical reaches are B1c, B2, B1c, B2c, B3, B3c, and C3 channel types (from Rosgen stream classification) with an average gradient of 1.0% and a dominant substrate of small rubble.

Existing Population Condition in Clearwater River subbasin: Present distribution includes the Salmon River and Clearwater River subbasins. Wild, indigenous steelhead trout, unaltered by hatchery stocks, are rare and present in 25 percent of the current steelhead trout distribution. Within the Central Idaho

Mountains, recent steelhead trout runs are described as critically low. Key factors to the decline of steelhead trout in the Pacific Northwest include predation and competition from introduced fish, blocked access to historical habitat, passage mortality at major dams, habitat degradation, hatchery interactions, and harvest.

Existing Population Condition in Lolo Creek: The Lolo Creek drainage produces very few steelhead trout due to overall low adult escapement and habitat conditions. Steelhead trout production is most likely a combination of wild/natural and hatchery production as adult and juvenile plantings have occurred over the past 20 years. Juvenile steelhead rearing has been documented and spawning has been observed in the upper mainstem of Lolo Creek. The overall number of redds observed has been relatively low. Very little spawning has been observed in the Musselshell drainage, presumably due to fine textured substrates in the alluvial meadow systems of that drainage. Although steelhead habitat is available in the Eldorado Creek drainage, natural-returning steelhead trout have only been observed a few times. The Eldorado Falls may still present a partial migration barrier during various streams flows.

The status of steelhead trout populations have been documented during the past 30 years for the Lolo Creek drainages by the Forest, Idaho Department of Fish and Game (IDFG) and the Nez Perce Tribe. Documentation of steelhead trout spawning within Lolo Creek was first documented by Murphy and Metsker (1962) during 1959 and 1960 surveys. They also noted that adult steelhead trout were observed spawning in June 1960 in the headwaters of Lolo and Yoosa creeks. The earliest report regarding redd counts was when a Forest contractor reported that 88 steelhead redds were identified within the mainstem Lolo Creek during their July 1988 stream survey (Clearwater BioStudies, Inc. 1988). The report noted that the redds were found upstream of Musselshell Creek and downstream of Yoosa Creek; most of the redds were associated with the recent enhancement structures in the upper mainstem portion and near or in side channels in the lower mainstem portion. Steelhead trout mostly spawn in the mainstem of Lolo Creek (from Musselshell Creek to Yoosa Creek) and any accessible tributaries in upper Lolo Creek drainage, and Yoosa Creek drainage. Some limited spawning may also occur in the Musselshell Creek and Eldorado Creek drainages; although spawning data is unavailable and population data shows low numbers of juvenile steelhead.

Fish population surveys over the past 19 years have documented juvenile steelhead trout at most sampling sites throughout the mainstem Lolo Creek (Table 1). A summary of the available fish population data shows that between 1985 and 2003, a total of 551 snorkel stations were surveyed within the mainstem Lolo Creek and steelhead trout juveniles were observed at 94 percent of these stations (Table 1). The probability of finding steelhead trout in the tributary streams was lower at approximately 62 percent, but overall 81 percent of the 908 sites monitored in the Lolo Creek drainage indicated the presence of steelhead trout.

Average densities of steelhead trout (age 1+) documented by the Forest during the 1988-1995 period have ranged from 6.7 fish/100m² (1988) to 0.8 fish/100m² (1992). Fish population surveys conducted by the Forest and a contractor (Clearwater BioStudies, Inc.) in 1996 and 1998 showed very low densities of 0.51 and 0.33 fish/100m² of steelhead trout (age 1+) in the mainstem Lolo Creek respectively.

Steelhead trout populations rebounded slightly in 1999 with an average density of 0.95 fish/100m². However, densities during last four years (2000-2003) indicate very low production as average densities ranged from 0.3 fish/100m² (2000) to 2.1 fish/100m² (2003). Steelhead trout (age 1+) densities of 0.4 fish/100 m² observed in 2004 were the lowest observed by the Forest since in Lolo Creek since 2000 (U.S.D.A. Forest Service - Clearwater National Forest 2005). The densities were below the 16-year average (1988-2003) of 2.43 age 1+ fish/100 m². Population data continues to indicate that steelhead trout production is very low in Lolo Creek. The low densities of steelhead trout (0.4 age 1+ fish/100 m²)

observed by the Forest were validated by the Nez Perce Tribe's snorkeling work. The Tribe's monitoring project involves snorkeling similar stream reaches within the mainstem of Lolo Creek.

Information suggests that steelhead trout production over the last 10 years has been in a static to downward trend within the Lolo Creek system. The less than optimal downstream survival of adults and juveniles has influenced the production, but the overall impacts are unknown at this time. In general, natural steelhead adults migrating and spawning within the Lolo Creek drainage is considered very low (most likely under 100 spawning pairs) in any given year.

Effects of Proposed Action: The effects of suction dredging (under the "one step" permit) primarily involve changes in substrate conditions and instream cover, thereby affecting spawning and rearing habitat for salmonids. Changes in water quality conditions (i.e. turbidity and suspended sediment levels) also occur in localized areas during project operations. The proposed suction dredging areas within the mainstem Lolo Creek are located within some of the spawning areas for steelhead trout. The effects of instream suction dredging primarily involve changes in substrate, spawning and rearing habitat for salmonids.

Spawning/incubation/early rearing: Direct effects to steelhead trout within the spawning gravels would be avoided as suction dredging and panning would occur only during the July 1 to August 15 period. Instream activities during suction dredging will introduce measurable, but localized amounts of sediments immediately downstream of the dredge site. The sediments and increased turbidity levels will settle out downstream; the distance is dependent upon the stream size and stream flows. This increase in sediment transport may have short-term degradation to substrate conditions immediately downstream of the dredge site as fine sediment deposit over existing gravels. Dependent upon the magnitude of the sediment deposition, any fish eggs or fry within spawning areas may be entrained and killed. Due to warmer water temperatures at the lower elevation streams, egg incubation and fry emergence are expected to be completed by July 1 in the mainstem Lolo Creek. The deferment of instream activities until after July 1, would avoid incidental take of juvenile steelhead trout in potential redds at and downstream of the dredge sites.

Rearing: Suction dredging activities will cause a short-term increase in fine sediment entering project area streams and will have minimal effects on juvenile steelhead trout. Sediments (mostly turbidity) generated by the seven dredging operations may affect juvenile steelhead trout immediately downstream of each operation. The major effect to steelhead trout during suction dredging would be displacement of fish during dredging operations and possible delays in fish movement through the dredge area. Proposed mitigation and conservation measures designed for these suction dredging operations (see below) will minimize or avoid adverse effects of the proposed suction dredging activities on steelhead trout populations and habitat.

Several provisions under the suction dredging permit are considered mitigation measures to minimize or avoid impact to steelhead trout. Besides the avoidance of the spawning season, the mining season restriction will avoid disturbance during the late summer and early fall period when juvenile steelhead trout from the smaller tributaries are migrating into winter habitats in the mainstem Lolo Creek. The mainstem Lolo Creek is considered summer and winter rearing habitat for steelhead trout. Another effective provision entails the prohibition of dredging or processing of stream bank materials, which avoids the introduction of "new" sediments in the streams. Proposed mitigation and conservation measures designed for these suction dredging operations will minimize or avoid adverse effects of the proposed suction dredging activities on steelhead trout populations. The sediments generated by the gold panning activities are expected to be negligible and substantially less than the suction dredging operations.

Table 1. Summary of fish population data depicting the presence/absence of steelhead trout and bull trout in selected streams within the Lolo Creek drainage, mainstem Clearwater River from 1985-2004 (Table does not include data from IDFG 1989-1992, USFS pre-1988, and NPT 2004).

Stream/Reach	Number of Fish Population Stations	Number of Stations with Steelhead Trout	Number of Stations with Bull Trout	Bull Trout Age Classes and Densities
Lolo Creek (mainstem)	269 ¹	252	0	
11 Lolo Tributaries	18 ²	2	0	
Eldorado Creek	20 ²	6	0	
14 Eldorado Tributaries	29 ²	3	0	
Musselshell Creek	9 ²	1	0	
7 Musselshell Tributaries	14 ²	1	0	
Yoosa Creek	39 ²	30	0	
7 Yoosa Tributaries	26 ²	8	0	
Lolo Creek (mainstem) US Fish & Wildlife Service – Dworshak	15 ³	15	2	two (1-4" and 1-5") - 1987
Lolo Creek (mainstem) Idaho Department of Fish & Game	47 ⁴	46	0	
Eldorado Creek Idaho Department of Fish & Game	18 ⁴	14	0	
Lolo Creek (mainstem) Nez Perce Tribe	232 ⁵	209	12	two 5" - 1990 (electrofishing), two (3", 11") - 1993 (snorkel), one (13") 1994 (snorkel), one (16") 1995 (screw trap), two (1juv, 18") - 1998 (snorkel/weir) two (juv) - 1999 (screw trap), one (13") - 2000 (weir), two (juv) - 2000 (screw trap) two (>8") - 2003 weir/screw trap)
Eldorado Creek Nez Perce Tribe	122 ⁵	103	0	
Yoosa Creek Nez Perce Tribe	62 ⁵	55	0	
Lolo Creek (downstream USFS lands) Bureau of Land Management	3 ⁶	3	1	one 6-9" - 2000 (snorkel)
Total	923	748	15	

¹ Snorkeling data collected between 1988-1996, 1998-1999 and 2001-2004 by USFS personnel or USFS contracts (Clearwater BioStudies, Inc 1988, 1994, 1999).

² Snorkeling and/or electrofishing data collected between 1991 and 1997 by USFS personnel or USFS contracts (Clearwater BioStudies, Inc. 1992a-b, 1993a-b, 1998 and Isabella Wildlife Works 1995a-d).

³ U.S. Fish and Wildlife Service – Idaho Fishery Unit: Snorkeling data from 1987-1988, and 1990-1991. Two bull trout were observed during the 1987 survey on mainstem Lolo Creek (between White Creek and Yoosa Creek).

⁴ Idaho Department of Fish and Game: Snorkeling data from 1985 (Petrosky and Holubetz 1986), and 1994 (Griswold et al. 1995).

⁵ Nez Perce Tribe: Snorkeling data from 1993 (Hesse and Arnsberg 1994), 1994 (Hesse and Arnsberg 1995), 1989-2003 (data files from Nez Perce Tribe – Dana Weigeld, Scott Struhs and Ryan Johnson, personal communication). The Tribe intensified their efforts in 2001-2003 by increasing the area sampled. The 1996-1999 average of approximately 14,400 m² sampled was increased about fourfold to approximately 57,900 m² sampled within in the mainstem Lolo Creek. The increased sampling was also conducted in lower Eldorado Creek and lower Yoosa Creek. The new monitoring design calls for the sampling of about 20 percent of their study areas in Lolo, Eldorado and Yoosa creeks). Sampling sites within Eldorado Creek and Yoosa Creek are located only downstream of Eldorado Falls and in lower Yoosa Creek (in Chamook Creek vicinity).

⁶ Bureau of Land Management: Snorkeling data from 2000 (Johnson 2001), BLM monitors three snorkeling sites downstream of USFS lands (stream miles: 0.9, 6.7 and 22.0).

The specifics regarding the proposed suction dredge mining for the 2006 and 2007 field seasons are summarized in Appendix B. The total linear stream distance proposed for dredging is about 4,600 feet or 9.1 percent of the total distance of the mainstem Lolo Creek between Musselshell Creek and Yoosa Creek (Table 2). This estimate is considered the maximum area of disturbance (worst-case scenario) for each year. The total distance proposed for dredging for both years will most likely be substantially less than the two-year sum of 9,200 feet due to the limitations of the availability dredge sites and feasibility of dredging some areas based on mitigation and conservation measures. A closer examination reveals that approximately 27,500 ft² of stream will be affected by dredging each year; this is approximately 1.5 percent of the total area of the mainstem Lolo Creek between Musselshell Creek and Yoosa Creek. As noted above, no other streams would be disturbed. All of the areas proposed for suction dredging in 2006 and 2007 are located within areas subjected to mining activities in past years.

Table 2. Comparison of proposed suction dredging areas for 2006 and 2007 mining seasons and total stream lengths and acreages for the mainstem Lolo Creek within mainstem Clearwater River subbasin.

Stream	Total Linear Stream Distance (ft) ¹	Total Linear Stream Distance Proposed Annually for Dredging (ft)	Total Fish-Bearing Stream Area (ft ²) ¹	Total stream area Proposed Annually for Dredging (ft ²)
Lolo Creek (Mainstem within Project Area)	50,495 ²	4,587 (9.1 %)	1,822,415	27,498 (1.5 %)
Lolo Creek (Mainstem within USFS Lands)	105,025	4,587 (4.4 %)	3,098,200	27,498 (0.9 %)

¹ Clearwater BioStudies, Inc. (1998).

² Stream length from Musselshell Creek to confluence of Yoosa Creek.

Proposed Critical Habitat: On December 14, 2004, NOAA Fisheries issued a proposed rule to design critical steelhead habitat (U.S.D.C. NOAA Fisheries 2004). Proposed designation of the Potlatch River and Little Boulder Creek as critical steelhead trout habitat requires the Forest to confer with the NOAA Fisheries on any agency action which is likely to result in the destruction or adverse modification of proposed critical habitat. Regulations implementing Section 7(a) (2) of the ESA define destruction or adverse modification of critical habitat as alteration of primary constituent elements “that appreciable diminishes the value of critical habitat for both the survival and recovery of a listed species” (50 CFR 402.02). Of the five primary constituent elements listed in the proposed rule, three elements pertain to the Clearwater River subbasin (freshwater spawning sites, freshwater rearing sites, and freshwater migration corridors). Any potential impacts regarding these three primary constituent elements requires the Forest to confer with the NOAA Fisheries. The potential impacts for the proposed Little Boulder Campground Hazard Tree Removal Project are summarized below:

“Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning; incubation and larval development”. As noted in the effects analysis above, the proposed suction dredging activities will have localized noticeable effects, but overall these effects are expected to have minimal impacts to the designated habitat in the Lolo Creek. Due to various mitigation measures, (i.e. PACFISH riparian buffers, no disturbance of stream banks, no

introduction of new sediments from outside the stream, avoidance of spawning areas, and timing of instream activities until after fry emergence), no direct impacts to steelhead trout redds are expected. In addition, several mitigation measures are geared to minimize effects to areas that may have potential substrate for spawning. Besides the guiding measure to avoid spawning areas, substrate materials moved and/or relocated from the streambed during the mining operation will be placed back into the original location. In addition, gravels will not be sorted and deposited in one area; gravels need to be re-distributed with existing larger substrate materials to avoid creating artificial spawning areas.

“Freshwater rearing sites with:

- i. Water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility;*
- ii. Water quality and forage supporting juvenile development; and*
- iii. 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.”*

The changes to the riparian zone along the mainstem Lolo Creek in the project area are considered negligible in relation to the effects on rearing habitat. PACFISH default riparian buffers will protect all streams adjacent to vegetative treatment areas. No changes in water quantity and floodplain connectivity are expected. As noted above, slight increases in turbidity and suspended sediment levels are expected directly downstream of suction dredging activities. The increases are expected to be localized and cause minimal changes to existing substrate conditions. One effective provision entails the prohibition of dredging or processing of stream bank materials, which avoids the introduction of “new” sediments in the streams. While some redistribution of substrate materials are expected, several mitigation measures (i.e. provide adequate water depth in the primary stream channel to allow for fish mitigation, processed gravels will be re-distributed with existing larger substrate materials to avoid creating artificial spawning areas, boulders and large woody debris will be retained in the stream channel) will minimize the effects to instream cover. No changes to streamside cover (i.e. undercut banks, large woody debris along banks and overhanging the stream) will occur.

“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 supporting juvenile and adult mobility and survival.” Suction dredging activities will not create any impediments to steelhead trout migration due to the mitigation measures. Although short-term displacement of fish during dredging operations and possible delays in fish movement through the dredge area are expected, the maintenance of stream flows to allow for fish passage is required (i.e. The operations will provide adequate water depth in the primary stream channel to allow for fish mitigation, no damming, restoration of substrate conditions). PACFISH default riparian buffers will protect all streams adjacent to vegetative treatment areas. No changes in natural cover and shade are expected within the mainstem Lolo Creek.

Cumulative Effects regarding State and Private Lands: As defined in 50 CFR 402.02, cumulative efforts are “those effects of future state and private activities, not involving Federal activities that are reasonably certain to occur within the action area of the Federal action subject to consultation”. The Lolo Creek drainage, upstream of Musselshell Creek is under the administration of the USFS. One patented mining claim exists within USFS lands in the Musselshell Creek drainage (Alder Creek), but no activity is expected in 2006 and 2007.

Cumulative Effects downstream of the Lolo Creek Drainage: The potential impacts from the proposed suction dredging in the Lolo Creek drainage during the 2006 and 2007 mining seasons on the steelhead trout populations in the Clearwater River drainage are expected to be insignificant and discountable. Due to the small scale of the dredging operations operating at anyone time, the small areas being disturbed, and the mitigation measures mandated under the permit process, any sediment produced by suction dredging would not be measurable downstream of the project area. Suction dredging changes the mobility of sediment dislodged by the dredge, but it does not add sediments to the stream channel. Since no riparian vegetation or bank alterations would occur with the proposed mining activities, no changes in water temperatures are expected in Lolo Creek. Therefore, no effect to downstream steelhead trout within lower Lolo Creek or the mainstem Clearwater River is expected as suction dredging activities within the Lolo Creek drainage.

Determination: The suction dredging and gold panning activities will avoid impacts to adult spawning, egg incubation and fry emergence because dredging operations and gold panning activities would occur after July 1 when steelhead juveniles have emerged from the substrate. Due to the mitigation measures of avoiding mining activities in potential spawning areas, the potential effects of entrainment of juvenile steelhead trout (age 0+) via suction dredging are considered insignificant and discountable. Suction dredging and gold panning activities may have short-term minimal impacts on individual steelhead trout due to an increase in turbidity, localized increases in sedimentation, and fish movements during project implementation. However, due to the presence of juvenile steelhead (age 0+ to 2+ fish) within the mining area, the direct effects to individual steelhead trout and habitats cannot be considered negligible. Therefore, the determination for the suction dredging and gold panning activities in the Lolo Creek drainage is **may affect, likely to adversely affect** steelhead trout and their continued existence in the Lolo Creek drainage. The proposed suction dredging may have short-term adverse effects to proposed steelhead trout critical habitat in the Lolo Creek drainage, but because it is limited in scope, both spatially and temporally, is **not likely to destroy or adversely modify that habitat**.

Bull Trout (*Salvelinus confluentus*)

Regulatory Framework: On July 10, 1998, bull trout were listed as a threatened species within the Snake River under ESA (63 FR 31647). On November 29, 2002, a proposed rule to designate critical habitat for the Klamath and Columbia River populations of bull trout was published in the Federal Register (67 FR 71235). A final rule designating critical habitat for these populations was published on October 6, 2004 (69 FR 59996). The Final Rule excluded PACFISH/INFISH areas among others. The USFWS was challenged on the Final Rule on December 14, 2004 in a complaint filed by the Alliance of the Wild Rockies and Friends of the Wild Swan. The USFWS subsequently requested a voluntary partial remand to reconsider the Final Rule. On September 26, 2005, a new Final Rule was published in the Federal Register (70 FR 56212). The Final Rule excluded areas that were already covered by approved conservation agreements and habitat management plans; the Clearwater River Subbasin was excluded from critical habitat designation.

Life History: Bull trout are found in cold-water streams, rivers, and lakes. Two distinct forms of bull trout, resident and migratory, exist throughout the range. Resident adults range from 150 to 300 millimeters in length while migratory fish commonly exceed 600 millimeters. Resident populations are often found in small headwater streams where they spend their entire lives. Most information indicates bull trout mature when they are between five and seven years of age and they may spawn each year or in alternate years. Spawning occurs in clear, headwater streams with a gravel or rubble bottom. In the spring, migratory adults return to spawning streams from rivers or lakes. Spawning occurs from mid-

August to November and begins when stream temperatures fall between 5 and 9 degrees Celsius. Eggs hatch in January and the fry remain within the gravel until early spring. Migratory, adfluvial juveniles migrate to the lakes and larger rivers by mid-summer. Migratory, fluvial juveniles may rear in tributary streams for three to four years before recruiting to larger streams and rivers.

Existing Condition and Environmental Baseline: Historical and current information regarding the physical and biological characteristics of the Lolo Creek watershed are presented in the *Section 7 Watershed Biological Assessment for the Lolo Creek Drainage, Mainstem Clearwater River Subbasin*, dated June 30, 1999 (U.S.D.A. Forest Service - Clearwater National Forest 1999). This biological assessment also summarized the overall presence/absence, relative abundance, habitat conditions and current trends for bull trout in the Lolo Creek drainage. Another document summarized the status of bull trout using presence/absence data within the Lolo Creek drainage (Clearwater Basin Bull Trout Technical Advisory Team 1998). The matrix information developed for the Section 7 watershed assessment for the Lolo Creek drainage (U.S.D.A Forest Service - Clearwater National Forest 1999) was updated to reflect current conditions and the specific segment of the mainstem Lolo Creek within the project area.

The environmental baseline was summarized using the *Matrix of pathways and indicators of watershed conditions adapted for the Clearwater River Subbasin and Lower Salmon River* (Appendix D). The environmental baseline data for the mainstem Lolo Creek was determined by supporting data in the stream reaches of LO-19 through LO-41 (Clearwater BioStudies, Inc. 1999). Critical reaches are B1c, B2, B1c, B2c, B3, B3c, and C3 channel types (from Rosgen stream classification) with an average gradient of 1.0% and a dominant substrate of small rubble.

Existing Population Condition in Lolo Creek: Existing Population Condition in Lolo Creek: Westslope cutthroat trout is the dominant fish species in the headwater streams, with strong populations of brook trout in the Musselshell Creek drainage a few scattered populations in the Yoosa Creek drainage. The Lolo Creek drainage was probably within the historical range of bull trout, but the populations have since been extirpated. Between 1974 and 2000, very few bull trout have been observed through fish population monitoring via snorkeling and electrofishing surveys in the Lolo Creek drainage. The State of Idaho (1998) reported in the "Lower Clearwater River Bull Trout Problem Assessment" that several bull trout have been observed in the mainstem of Lolo Creek between 1987 and 1994. USFWS, IDFG and Nez Perce Tribe monitoring efforts have observed individual bull trout during snorkeling surveys in the mainstem Lolo Creek and/or monitoring the Nez Perce Tribe's juvenile trapping facility (upstream of Eldorado Creek) in 1987, 1993-1995, 1998-2000, and 2003. In these years, a total of 16 bull trout were observed. No observations of bull trout have been documented by these agencies or the Forest during monitoring activities in 1996-1997 and 2001-2002. Bull trout have not been observed in the Eldorado Creek, Musselshell Creek or Yoosa Creek drainages; the extent of bull trout spawning/production is assumed very low to nonexistent. Habitat conditions and warmer temperature regimes limit bull trout production in the Lolo Creek drainage. See Appendix D for the Matrix of Pathways and Indicators for Lolo Creek.

Overall, the fish population data does not indicate any bull trout spawning and early rearing in the Lolo Creek drainage. However, fish population surveys over the past 15 years have documented juvenile bull trout at a few sampling sites throughout the mainstem Lolo Creek (Table 1). A summary of the available fish population data shows that between 1985 and 2004, a total of 566 snorkel stations were surveyed within the mainstem Lolo Creek and bull trout juveniles or sub-adults were observed at 15 monitoring sites (about three percent). The probability of finding bull trout in the tributary streams is very minimal as no occurrences of bull trout were documented at the 357 monitoring sites.

Fish population monitoring conducted by the Nez Perce Tribe during 2001-2002 did not document any bull trout during the snorkeling surveys, electrofishing and seining activities, and at the juvenile and adult fish traps (Sherman Sprague and Scott Struhs, Nez Perce Tribe, personal communications; and provisional data). During 2003, no bull trout were observed during snorkeling, electrofishing and seining activities by the Tribe. However, two bull trout (> 8 inches) were collected at the lower weir site and screw trap on private lands downstream of USFS lands (Ryan Johnson, Nez Perce Tribe, personal communications). In 2004, the Tribe found one adult bull trout at the adult weir collection facility; no bull trout were captured at the juvenile screw trap or observed via snorkeling at the fish monitoring sites (Ryan Johnson, personal communications). During 2005, bull trout were not observed during snorkeling or captured at the weirs; screw trap data is currently being summarized (Ryan Johnson, personal communications).

Effects of Proposed Action: Instream activities within various streams within the Lolo Creek drainage have the potential to affect bull trout directly through displacement or indirectly through altered habitat conditions. Although existing bull trout numbers are low, potential habitat in upper Lolo Creek exists for bull trout production. Due to the past mining, grazing, road construction and timber harvest, habitat conditions have been degraded in the Lolo Creek drainage; the drainage has been designated an adjunct watershed for future bull trout recovery efforts.

Spawning/incubation/early rearing: To avoid direct effects to spawning bull trout, suction dredging activities would occur only during the July 1 to August 15 period. Instream activities during suction dredging activities will introduced measurable, but localized amounts of sediments immediately downstream of the dredge site. The sediments and increased turbidity levels will settle out downstream; the distance is dependent upon the stream size and stream flows. This increase in sediment transport may have short-term degradation to substrate conditions immediately downstream of the dredge site as fine sediment deposit over existing gravels. Due the absence of bull trout spawning in the mainstem Lolo Creek (most likely due to high summer water temperatures), effects to bull trout are considered negligible. Implementation of instream activities before August 15, would avoid affecting bull trout adult spawning and incidental take of bull trout in potential redds at and downstream of the dredge sites.

Rearing: Suction dredging and gold panning activities will cause a short-term increase in fine sediment entering project area streams and will have minimal effects on bull trout. Sediments (mostly turbidity) generated by the seven dredging operations may affect bull trout immediately downstream of each operation. The major effect to bull trout during suction dredging would be displacement of fish during dredging operations and possible delays in fish movement through the dredge area. The sediments generated by the gold panning activities are expected to be negligible and substantially less than the suction dredging operations.

The closure of the mining season on August 15 to avoid the late summer and fall months when water temperatures are cooler and more conducive to bull trout rearing is considered the most effective mitigation provision. The mainstem Lolo Creek is considered potential bull trout rearing habitat. However, water temperatures may preclude any spawning activity until late fall. Another effective provision entails the prohibition of dredging or processing of stream bank materials, which avoids the introduction of "new" sediments in the streams. Proposed mitigation and conservation measures designed for these suction dredging operations (as described for steelhead trout) will minimize or avoid adverse effects of the proposed suction dredging activities on bull trout populations.

On November 29, 2002, a proposed rule to designate critical habitat for the Klamath and Columbia River populations of bull trout was published in the Federal Register (67 FR 71235). The proposed designation of the Lolo Creek drainage as critical bull trout habitat requires the Forest to confer with the

USFWS on any agency action which is likely to result in the destruction or adverse modification of proposed critical habitat. The following critical habitat evaluation was completed for the proposed suction dredging biological assessment for 2004 and 2005 mining seasons (U.S.D.A. Forest Service - Clearwater National Forest 2004). On September 26, 2005, a new Final Rule was published in the Federal Register (70 FR 56212). The Final Rule excluded areas that were already covered by approved conservation agreements and habitat management plans; the Clearwater River Subbasin was excluded from critical habitat designation. As support to the effects analysis the critical habitat evaluation was retained for this biological assessment.

Regulations implementing Section 7(a)(2) of the ESA define destruction or adverse modification of critical habitat as alteration of constituent elements "that appreciable diminishes the value of critical habitat for both the survival and recovery of a listed species" (50 CFR 402.02). The nine constituent elements listed in the proposed rule and any potential impacts requires the Forest to confer with the USFWS on any agency action which is likely to associated with the proposed suction dredging and gold panning activities are summarized below:

Permanent water having low levels of contaminants such that normal reproduction, growth and survival are not inhabited. As noted in the effects analysis above, suction dredging and gold panning activities will low to moderate effects to designated habitat in the Lolo Creek drainage. The conservation and mitigation measures are expected to minimize any adverse changes to stream habitat conditions.

Water temperatures ranging from 2 to 15°C (36 to 59°F), with adequate thermal refugia available for temperatures at the upper end of this range. Specific temperatures within this range will vary depending on bull trout life history stage and form, geography, elevation, diurnal and seasonal variation, shade, such as that provided by riparian habitat, and local groundwater influence. The suction dredging and gold panning activities proposed will not alter the streamside shade within Lolo Creek drainage. The conservation and mitigation measures will avoid/ minimize impacts to riparian areas and subsequent changes in shade and water temperatures.

Complex stream channels with features such as woody debris, side channels, pools, and undercut banks to provide a variety of depths, velocities, and instream structures. Suction dredging and gold panning activities are expected to have low to moderate adverse impacts to this element. Although conservation and mitigation measures prohibit stream bank disturbance and movement of large LWD and boulders, dredging is expected to have short-term adverse effects to pool habitats and substrate conditions.

Substrates of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine substrate less than 0.63 cm (0.25 in) in diameter and minimal substrate embeddedness are characteristic of these conditions. As noted above, sediment impacts from suction dredging and gold panning activities will localized and primarily involve the redistribution of substrate materials; no "new" sediments from the stream banks or terrestrial sources would be introduced to the stream. Restricting suction dredging and gold panning activities prior to the bull trout spawning period would avoid direct impacts to bull trout spawning, egg and embryo overwinter survival and fry emergence. Other than localized, short-term changes to water quality (turbidity) and substrate conditions (sediment levels) in the vicinity of suction dredging and gold panning activities, no long-term changes in substrate conditions are expected.

A natural hydrograph, including peak, high, low, and base flows within historic ranges or, if regulated, a hydrograph that demonstrates the ability to support bull trout populations. The hydrograph of Lolo Creek is un-regulated and natural. Therefore Lolo Creek and its tributaries

that have or potentially have the ability to support bull trout populations will maintain favorable hydrographs.

Springs, seeps, groundwater sources, and subsurface water connectivity to contribute to water quality and quantity. The conservation and mitigation measures will avoid/minimize impacts to riparian areas.

Migratory corridors with minimal physical, biological, or chemical barriers between spawning, rearing, overwintering, and foraging habitats, including intermittent or seasonal barriers induced by high water temperatures or low flows. The conservation and mitigation measures will avoid/minimize impacts to migrating bull trout.

An abundant food base including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish. Suction dredging and gold panning activities are expected to have no impacts to terrestrial sources, but low to moderate adverse impacts in localized areas regarding macroinvertebrates and forage fish. The conservation and mitigation measures are expected to minimize long-term adverse changes to stream habitat conditions.

Few or no predatory, interbreeding, or competitive nonnative species present. Suction dredging and gold panning activities proposed will not alter the aquatic fish assemblages within Lolo Creek drainage.

Cumulative Effects downstream of the Lolo Creek Drainage: The potential impacts from the proposed suction dredging and gold panning activities in the Lolo Creek drainage during 2004 and 2005 on the bull trout populations in the Clearwater River drainage are expected to be insignificant and discountable. As noted above, current information suggests that the Lolo Creek drainage contributes a small number of the bull trout to the mainstem Clearwater River. Numerous stronger populations of bull trout have been documented in other areas in the Clearwater River basin, such as, the Lochsa River, Selway River, and South Clearwater River subbasins; many drainages in these subbasins have been designated focal drainages for bull trout. Due to the small scale of the dredging operations operating at anyone time, the small areas being disturbed, and the mitigation measures mandated under the permit process, any sediment produced by suction dredging would not be measurable downstream of the project area. Since no riparian vegetation or bank alterations would occur with the proposed mining activities, no changes in water temperatures are expected in Lolo Creek. Therefore, no effects to downstream bull trout within lower Lolo Creek or the mainstem Clearwater River is expected as suction dredging and gold panning activities within the Lolo Creek drainage.

Determination: The suction dredging and gold panning activities will avoid impacts to adult spawning, egg incubation and fry emergence because dredging operations would occur before August 15 when bull trout spawn and eggs are within the substrate. Due to absence of potential spawning within the mining areas and immediately upstream (primarily due to high water temperatures during the spawning season), the potential for early rearing of age 0+ to 2+ juveniles within the mainstem Lolo Creek is very unlikely. Therefore, the potential effects of entrainment of juvenile bull trout via suction dredging are considered insignificant and discountable. Due to the small scale of the dredging operations operating at anyone time, the small areas being disturbed, the low numbers of bull trout suspected in the mining areas, and the mitigation measures mandated under the permit process, it is very unlikely that mining operations will have any direct or indirect impacts on the smaller juvenile bull trout. Any instream sediment redistributed by suction dredging activities would be localized at the mining sites; downstream impacts are not expected to be measurable. Suction dredging and gold panning activities may have short-term minimal impacts on individual bull trout (adult and larger juveniles) due to an increase in turbidity, localized increases in sedimentation, and fish movements during project implementation. However, due to the low numbers of bull trout suspected in the mining areas, these impacts are expected to be

insignificant and discountable. Therefore, the determination for the suction dredging and gold panning activities in the Lolo Creek drainage is **may affect, not likely to adversely affect** bull trout and their continued existence in the Lolo Creek drainage. The proposed suction dredging and gold panning may have short-term adverse effects to proposed bull trout critical habitat in Lolo Creek, but because it is limited in scope, both spatially and temporally, is **not likely to destroy or adversely modify that habitat**.

Effects of the Proposed Action on Essential Fish Habitat

In accordance with applicable requirements of section 305(b) of the Magnuson-Stevens Act and its implementing regulations (50 CFR Part 600.920), the Forest needs to evaluate potential effects of the suction dredging activities within the Lolo Creek drainage on Essential Fish Habitat. Spring chinook salmon are not listed under ESA within the Clearwater River basin, but spring chinook salmon production (naturally and hatchery supplemented) occurs in the Lolo Creek drainage. All the proposed dredge sites are located within spring chinook salmon habitat. Generally, the proposed suction dredging operations and gold panning activities are expected to have low to moderate effects on salmon habitat in the mainstem Lolo Creek.

Re-introduction of coho salmon has been undertaken by the Nez Perce Tribe in tributaries of the mainstem Clearwater River, including the Lolo Creek drainage. Historically, coho most likely inhabited tributaries in the lower Clearwater River Basin including some in the lower Lochsa River subbasin. Since designated critical habitat for Snake River steelhead trout in the Lolo Creek drainage is identical to the area designated as EFH for chinook salmon, the EFH analysis, potential adverse effects on designated critical habitat for ESA-listed species and EFH MSA-managed species are considered to be functionally equivalent. Effects on salmon EFH (spring chinook and coho salmon) would be the same as those described for steelhead trout and bull trout within the biological assessment.

Effects of Proposed Action: Instream activities within various streams within the Lolo Creek drainage have the potential to affect spring chinook salmon directly through displacement or indirectly through altered habitat conditions. Due to the past mining, grazing, road construction and timber harvest, habitat conditions have been degraded in the Lolo Creek drainage. Cooperative, watershed restoration activities (i.e. road decommissioning) by the Forest and Nez Perce Tribe have set the stage for long-term recovery. Over the past ten years, salmon supplementation efforts by the Nez Perce Tribe have contributed to naturally-reproducing spring chinook runs in the drainage.

Spawning/incubation/early rearing: Implementation of instream activities before August 15, would avoid affecting spring chinook salmon spawning and incidental take of spring chinook salmon in potential redds at and downstream of the dredge sites. Although some spawning activity occurs before August 15, the majority of the spawning action is a week or two later.

One of the two major concerns regarding suction dredging and gold panning activities in potential spawning areas is the disturbance of the substrate materials and subsequent effect on spawning. Disturbed substrate areas may not be conducive to spawning fish due to unnatural assortment of gravels, changes in stream flows and velocities over the gravel areas, and deposition of fine sediments. Instream activities during suction dredging activities will introduce measurable, but localized amounts of sediments immediately downstream of the dredge site. The sediments and increased turbidity levels will settle out downstream; the distance is dependent upon the stream size and stream flows. This increase in sediment transport may have short-term degradation to substrate conditions immediately downstream of the dredge site as fine sediment deposit over existing gravels. Any redds immediately downstream of dredging activity may be adversely affected by sedimentation.

The second major concern involves the displacement of adult fish during dredging operations and possible delays in fish movement through the dredge area. Suction dredging activities may cause fish to move into less secure areas and possibly spawn in less favorable conditions.

Rearing: Suction dredging and gold panning activities will cause a short-term increase in fine sediment entering project area streams and will have minimal effects on spring chinook salmon. Sediments (mostly turbidity) generated by the seven dredging operations may affect spring chinook salmon immediately downstream of each operation. The major effect to spring chinook salmon during suction dredging would be displacement of fish during dredging operations and possible delays in fish movement through the dredge area. Proposed mitigation and conservation measures designed for these suction dredging operations (as described for steelhead trout) will minimize or avoid adverse effects of the proposed suction dredging activities on spring chinook populations. The sediments generated by the gold panning activities are expected to be negligible and substantially less than the suction dredging operations.

Determination: The suction dredging and gold panning activities will avoid impacts to adult spawning, egg incubation and fry emergence because dredging operations would occur before August 15 when the majority of spring chinook salmon start spawning. The mitigation measure of terminating suction dredging whenever spawning occurs within 50 feet downstream will avoid effects to earlier spawning fish. Suction dredging and gold panning activities may have short-term minimal impacts on individual spring chinook salmon due to an increase in turbidity, localized increases in sedimentation, and fish movements during project implementation. These impacts are expected to be minimal, but the effects cannot be considered negligible. Therefore, the determination for the suction dredging and gold panning activities in the Lolo Creek drainage is **may affect, may likely to adversely affect** spring chinook salmon and their continued existence in the Lolo Creek drainage.

/s/ Patrick K. Murphy January 19, 2006
Patrick K. Murphy
Forest Fisheries Biologist

/s/ Dan Davis January 19, 2006
Dan Davis
Forest Wildlife Biologist

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**APPENDIX A
RESULTS OF 2001 SUCTION DREDGE MINING
LOLO CREEK DRAINAGE
MAINSTEM CLEARWATER RIVER**

LOLO CREEK MINING 2001

Eight operators suction dredged in Lolo Creek between July 1 and August 15, 2001. Their operations were scattered from T. 34 N., R. 6 E., sec. 5 (downstream of the Nevada Creek confluence) to T. 36 N., R. 6 E., sec. 24 (the confluence Belle Creek) with Lolo Creek. The following is a list of the suction dredge operators; dredge sizes; days dredging; area of disturbance and days monitored:

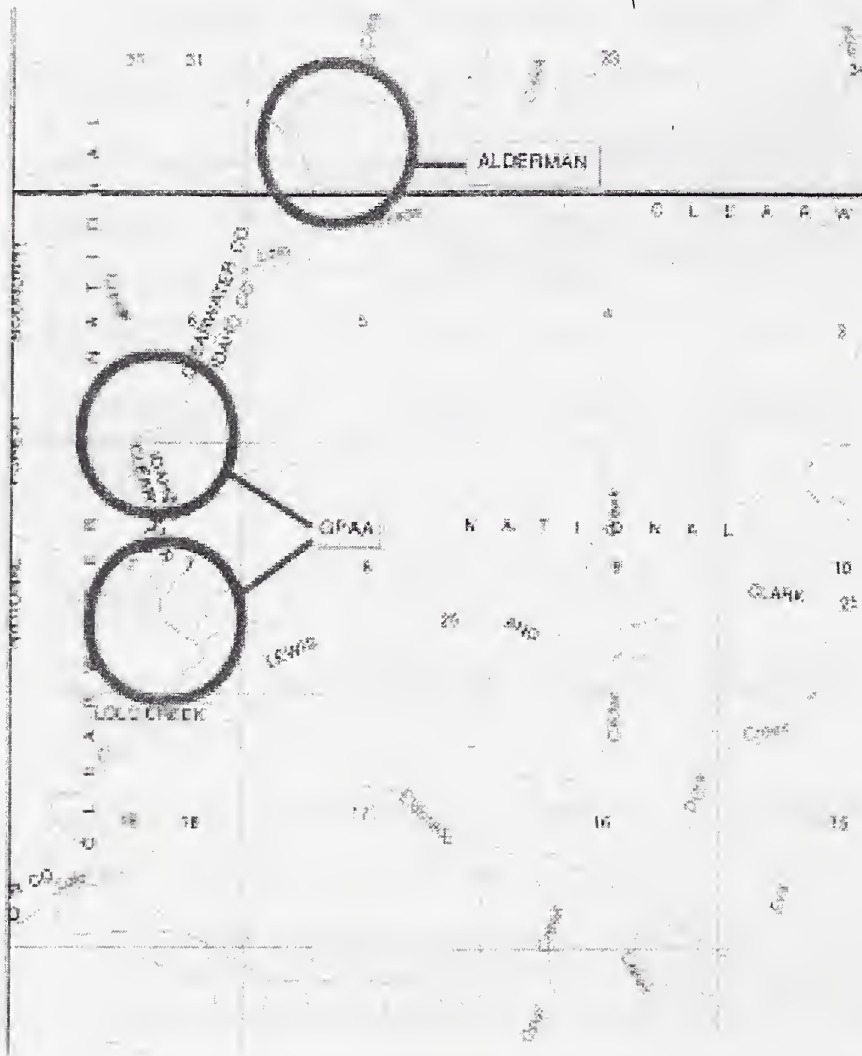
OPERATOR	NOZZLE SIZE	MAX. DAYS PROPOSED	ACTUAL DAYS OPERATED	MAX. AREA OF DISTURBANCE PROPOSED	ACTUAL AREA OF DISTURBANCE	DAYS MONITORED
Alderman, Alan	4"	40 days	2 days	2496 sq. ft.	200 sq. ft.	1 day
Brown, Fred	2-1/2"	8 days	5 days	240 sq. ft.	230 sq ft	1 day
Bunch, Gordon	5"	6 days	3 days	612 sq. ft.	280 sq ft	1 day
Crecelius, Pete Fezatt, Pete	2"	5 days	1 day	90 sq. ft.	50 sq ft	0
Calkins, Brandon Calkins, Daniel West, Shane Leonard, Rick	4"	20 days	10 days	1320 sq. ft.	300 sq ft	1 day
Happ, Robert Haley, Ken	4"	15 days	10 days	990 sq. ft.	550 sq. ft.	1 day
Patterson, Jack Patterson, Cora Steiner, David	5"	14 days	40 days	1140 sq. ft.	5000 sq ft.	2 days
West, Mike	4"	14 days	4 days	1000 sq. ft.	210 sq ft	1 day

The miners dredged an average of 5 hours per day. The average depth to bedrock was 3-1/2 feet. The total area of disturbance was 6820 square feet (0.16 acres). The sum of the lengths of their disturbances was approximately 785 lineal feet.

Because of fire emergencies, only 4 days were devoted to monitoring from July 11 to August 15. During that time, all the suction dredgers were visited at least once (except for Patterson/Steiner's operation (2 days) and Crecelius/Fezatt's operation (0 days)). Information concerning the total days operated was provided by the miners. Most of the dredging disturbances were measured in the field. Some locations were visually estimated. All estimates and measurements were rounded upward to the nearest ten.

**APPENDIX B
LOCATIONS OF SUCTION DREDGE MINING CLAIMS
LOLO CREEK DRAINAGE
MAINSTEM CLEARWATER RIVER**

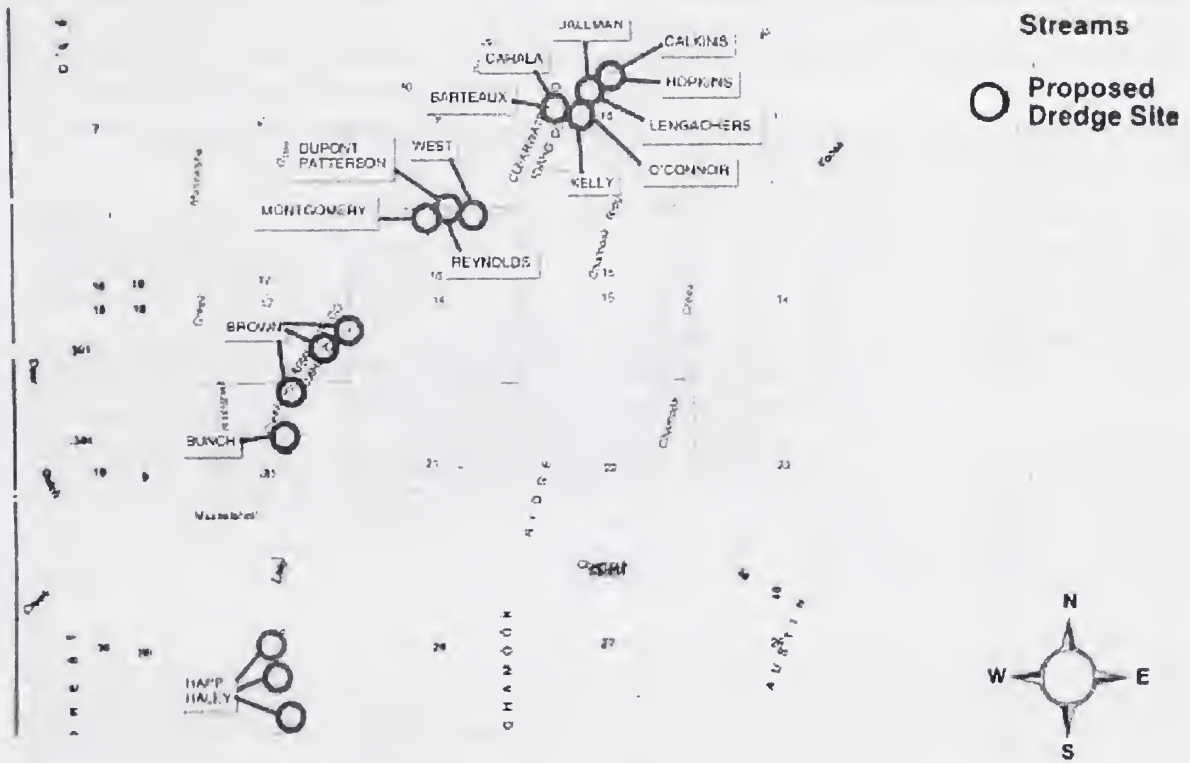
LOLO CREEK PROPOSED SUCTION DREDGE SITES T. 34 N., R. 6 E. & T. 35 N., R. 6 E.



Streams
Proposed Dredge Site



LOLO CREEK
 PROPOSED SUCTION DREDGE SITES
 T. 35 N., R. 6 E.



APPENDIX C
SPECIFIC PROJECT INFORMATION
SUCTION DREDGE MINING CLAIMS
LOLO CREEK DRAINAGE
MAINSTEM CLEARWATER RIVER

2006-2007 LOLO CREEK MINING PROPOSALS

There are 13 mining claims listed in the Bureau of Land Management mining claim database in the LoloCreek drainage. We have received 18 proposals to suction dredge in Lolo Creek. The proposals are scattered from Nevada Creek (T. 34 N., R. 6 E., sec. 5) upstream to Dutchman Creek (T. 35 N., R. 6 E, sec 10). The Idaho Special #2 is a Gold Prospectors Association of America (GPAA) claim located in T. 34 N., R. 6 E., sections 6 and 7. Although no member has submitted a proposal to date, there exists a potential for 3 more short term operations within the GPAA claim. The following is a list of the suction dredge operators; dredge sizes; days dredging; estimated length of disturbance; estimated area of disturbance and minimum days the Forest Service will monitor:

OPERATOR	NOZZLE SIZE (inches)	MAX. DAYS OPERATING	MAX. LENGTH DISTURBANCE (feet)	MAX. AREA OF DISTURBANCE (square ft.)	MAX. AREA OF DISTURBANCE (acres)	DAYS MONITORED
Alderman, Alan	5	46	518	3,108	0.07	23
Bartcaux, Bill & Sheila	2-1/2 or 5	46	518	3,108	0.07	23
Brown, Fred	2, 3, or 5	14	158	948	0.02	7
	5"	7	79	474	0.01	4
Cahala, James		10	113	678	0.02	5
Calkins, Daniel	5	46	518	3,108	0.07	23
Calkins, Gary						
Crooks, Mike						
Dallman, Ted		14	8	24	>0.01	7
	2-1/2 or 5		113	678	0.02	5
			113	678	0.02	5
			113	678	0.02	5
	4	15	113	678	0.02	8
		10	113	678	0.02	5
Lengachers, Ron & Ellen	2-1/2 or 5	30	338	2,028	0.05	15
Montgomery, Richard	2-1/2 or 5	46	518	3,108	0.07	23
O'Conner, L.R.	2-1/2 or 5	10	113	678	0.02	5
Patterson, Jack & Cora	2-1/2 or 5	46	518	3,108		23
DuPont, Del					0.07	
Reynolds, Dennis & Marla	2-1/2 or 5	46	518	3,108	0.07	23
West, Mike	4	14	105	630	0.01	7
TOTAL			4,587	27,498	0.65	

The area and length of disturbance are estimations based on the dredge nozzle area. All of the miners have submitted the maximum number of days they may operate. The area and length of disturbance is an estimation based on the volume of material excavated per hour for 1-1/2" to 5" suction dredges*. The estimate assumes an average 5-hour workday, an average depth to bedrock of 4 feet.

♦ SUCTION DREDGE EXCAVATION POTENTIAL

There are several factors controlling the volume of gravels processed per hour by a suction dredge. Compacted substrate, boulder factor, and large cobble all can slow an operation down. Equipment setup, fueling, breakdowns, plugged nozzles or hoses, and operator fatigue will also slow production. For efficient gold recovery, the volume of gravels processed will vary according to the sluice box width and riffle configuration. Realistically, 5-inch suction dredges actually process an average of two cubic yards of gravel per hour. The following factors were calculated for suction dredges with nozzle diameters ranging from 1-1/2 inches to 4 inches using two cubic yards/hour using a 5-inch dredge as the baseline:

Nozzle Diameter	¹ Area (Cu. In.)	² Factor	³ Cubic Yards Per Hour
5"	19.64	1	2
4"	12.57	0.64	1.3
3"	7.07	0.36	0.7
2-1/2"	4.91	0.25	0.5
2"	3.14	0.16	0.3
1-1/2"	1.77	0.09	0.2

¹Area = πr²

²Factor = nozzle area/19.64

³Cubic Yards/Hour = Factor * 2 Cubic Yards/Hour

**APPENDIX D
ENVIRONMENTAL BASELINE INFORMATION
PROJECT EFFECTS ANALYSIS
SUCTION DREDGE MINING CLAIMS
LOLO CREEK DRAINAGE
MAINSTEM CLEARWATER RIVER**

Drainage: Lolo Creek
Watershed: Lolo Creek
Subbasin: Mainstem Clearwater River

Project or Actions	Suction Dredging – USFS Lands
Watershed Road Density	
Streamside Road Density	
Landslide Prone Road Density	
Disturbance History	
Riparian Vegetation Condition	
Peak/Base Flow	
Water Yield (ECA)	
Sediment Yield	
Width/Depth Ratio	
Stream Bank Stability	
Floodplain Connectivity	
Temperature - Spawning	
Temperature -Rearing and Migration	
Turbidity or Suspended Sediment	-4
Chemical Contaminants - Nutrients	-2
Physical Barriers - Adults	-1
Physical Barriers - Juvenile	-1
Cobble Embeddedness	-2
% Fines (Surface or by Depth)	-2
Large Woody Debris	-2
Pool Frequency	-4
Pool Quality	-4
Off-Channel Habitat	
Habitat Refugia	
Harassment	-3
Reed Disturbance	
Juvenile Harvest	-2

ND – no data

Blank boxes indicate no effect on the indicator by the action

Probability of Effect					
Potential Level of Effect	None	Very Low	Low	Moderate	High
None	0	0	0	0	0
Very Low	0	1	1	1	1
Low	0	1	1	2	2
Moderate	0	2	3	3	4
High	0	3	4	4	4

**CHECKLIST FOR DOCUMENTING ENVIRONMENTAL BASELINE AND
EFFECTS OF ACTION (S) ON RELEVANT INDICATORS**

Drainage: Lolo Creek
Watershed: Lolo Creek
Subbasin: Mainstem Clearwater River

PATHWAYS: INDICATORS	ENVIRONMENTAL BASELINE¹			EFFECTS OF THE ACTION (S)		
	High	Moderate	Low	Restore²	Maintain³	Degrade⁴
Watershed Conditions:						
Watershed Road Density			5.2 mi./mi. ²		X	
Streamside Road Density			5.1 mi./mi. ²		X	
Landslide-prone Road Density			6.1 mi./mi. ²		X	
Riparian Vegetation Condition		No Data			X	
Peak/Base Flow	5.0 %				X	
Water Yield (ECA)	11.9 %				X	
Sediment Yield		50 %			X	
Channel Condition & Dynamics:						
Width/Depth Ratio	14-24				X	
Stream bank Stability		4.6			X	
Floodplain Connectivity		No Data			X	
Water Quality:						
Temp - Steelhead Trout Spawning			X		X	
Temp - Steelhead Trout Incubation			X		X	
Temp - Bull Trout Spawning (S), Incubation (I), Rearing (R)			S = X I = X R = X		X	

¹ Indicators of high, moderate, or low habitat condition.

² For the purposes of this checklist, "restore" means to change the function of an indicator for the better, or that the rate of restoration rate is increased.

³ For the purposes of this checklist, "maintain" means that the function of an indicator will not be degraded and that the natural rate of restoration for this indicator will not be retarded.

⁴ For the purposes of this checklist, "degrade" means to change the function of an indicator for the worse, or that the natural rate of restoration for this indicator is retarded. In some cases, a low environmental baseline indicator maybe further worsened, and this should be noted.

PATHWAYS: INDICATORS	ENVIRONMENTAL BASELINE ¹			EFFECTS OF THE ACTION (S)		
	High	Moderate	Low	Restore ²	Maintain ³	Degrade ⁴
Turbidity/Suspended Sediment	X					X
Chemical Contamination/Nutrients		No Data			X	
<u>Habitat Access:</u>						
Physical Barriers - Adult	X (Mainstem)		X (Tributaries)		X	
Physical Barriers - Juvenile	X (Mainstem)		X (Tributaries)		X	
<u>Habitat Elements:</u>						
Cobble Embeddedness			46.0 %		X	
Percent Surface Fines			17-19 %		X	
Percent Fines by Depth			No Data		X	
Large Woody Debris A = acting P = potential (#/100m)			A = 4.4 P = 5.1-17.0		X	
Pool Frequency (primary pools)		23.1			X	
Pool Quality			2.9		X	
Off-channel Habitat		X			X	
Habitat Refugia		X			X	
<u>Take:</u>						
Harassment	B = X	S = X				X
Redd Disturbance	S = X B = X				X	
Juvenile Harvest	B = X	S = X			X	
<u>Bull Trout Subpopulation Characteristics & Habitat Integration:</u>						
Subpopulation Size			X		X	
Growth and Survival			X		X	
Life History Diversity, Isolation			X		X	
Persistence & Genetic Integrity			X		X	
Integration of Species and Habitat Conditions			X			X

A. ENVIRONMENTAL BASELINE DATA:

Habitat: The environmental baseline data was determined by supporting data in the critical reaches of LO-19 through LO-41 (from Habitat conditions and salmonid abundance in Lolo Creek, Idaho, Summer 1998; Clearwater BioStudies, Inc. 1999). This area extends from the confluence of Yoosa Creek downstream to the confluence of Musselshell Creek. This is the stream segment where suction dredging is proposed for 2001. The critical reaches are B2, B3, B1c, B2c, B3c, and C3 channel types (Rosgen stream classification) with an average gradient of 1.0 % and a dominant substrate of rubble (53 %).

Fish Populations: Fish population surveys conducted over the past 15 years have indicated that rainbow/steelhead trout juveniles and spring chinook salmon are the dominant salmonids within the project area. A few westslope cutthroat trout are present in the upper reaches in most years. One or two brook trout individuals have been observed in the project area on an infrequent basis. No bull trout have been observed via snorkeling with the project area during the past five years.

B. WATERSHED CONDITIONS

1. Watershed Road Density: Used Supervisors Office records; 2002 GIS data file for Lolo Creek drainage upstream of Musselshell Creek.
 - a) Environmental baseline = Low. 5.2 miles of road/mile².
 - b) Effects of actions = Maintain.
2. Streamside Road Density: Used Supervisors Office records; 2002 GIS data file for Lolo Creek drainage upstream of Musselshell Creek.
 - a) Environmental baseline = Low. 5.1 miles of road/mile².
 - b) Effects of actions = Maintain.
3. Landslide Road Density: Used Supervisors Office records.
 - a) Environmental baseline = Low. 6.1 miles of road/mile².
 - b) Effects of actions = Maintain.
4. Riparian Vegetation Condition:
 - a) Environmental baseline = No data is available.
 - b) Effects of actions = Maintain. Removal or alterations of riparian vegetation is not permitted.
5. Peak/Base flow: Used WATBAL watershed model for increased percentage of the peak runoff.
 - a) Environmental baseline = High. Approximately 5.0 % increase in peak flow was estimated for 2002.
 - b) Effects of actions = Maintain. No change is expected.
6. Water Yield (ECA): Used WATBAL watershed model to get ECA/total watershed acres.
 - a) Environmental baseline = High. Current modeling shows the ECA in Lolo Creek to be 11.9 % for 2002.
 - b) Effects of actions = Maintain. No change is expected.

7. Sediment Yield: Used WATBAL watershed model which calculated tons/mile/year for the three-year mean for increased sediment.
 - a) Environmental baseline = High. Current sediment yield is for 2002 estimated by WATBAL to be 50 % above natural conditions.
 - b) Effects of actions = Maintain. Since soil-disturbing activities (i.e. stream bank alterations) are not permitted, no additional sediment will be transported into the stream channel.

C. CHANNEL CONDITIONS AND DYNAMICS

1. Width/Depth Ratio: Bankfull width and bankfull depth data from 1998 survey was used (Clearwater BioStudies, Inc. 1999).
 - a) Environmental baseline = High. The width/depth ratio ranged from 14 to 24, which is high quality for C channel types.
 - b) Effects of actions = Maintain. Since no excavation of the stream banks is permitted, the width/depth ratio is not expected to increase. Some local decreases in width/depth ratios may occur and these would be considered a positive effect.
2. Stream bank stability: Stream bank stability was determined by using a rating of 1 (low) to 5 (excellent) by the survey crew as they walked up the stream channel.
 - a) Environmental baseline = Moderate. Stream bank stability is rated as 4.6.
 - b) Effects of actions = Maintain. No excavation or alterations of stream banks will occur. Therefore, no change is expected.
3. Floodplain Connectivity:
 - a) Environmental baseline = No data is available.
 - b) Effects of actions = Maintain.

D. WATER QUALITY

For determining the temperature, the Forest reviewed all annual summaries for stream temperatures recorded at the permanent monitoring site at the Section 6, bridge (downstream of Utah Creek). This was done to determine the highest constraining temperature for the fish present in the watershed.

1. Temperature - steelhead trout spawning/incubation: The Forest used the spawning period of February 1 to July 15.
 - a) Environmental baseline = Low. Water temperature data collected during an eleven-year period (1990 and 2000, exception of 1996 and 1999 due to equipment vandalism) indicated that the range of average seven-day maximum water temperatures within the mainstem Lolo Creek was between 13.6° C and 23.6° C during the spawning/incubation period. The highest water temperature recorded during spawning/incubation period was 24.7° C (1992).
 - b) Effects of actions = Maintain. No alterations in riparian vegetation and streamside shade are proposed under the permit. Therefore, no change in water temperatures is expected.
2. Temperature – steelhead trout rearing: The Forest used water temperature data throughout the year (if available) for the rearing assessment.

- a) Environmental baseline = Low. Water temperature data collected during an eleven-year period (1990 and 2000, exception of 1996 and 1999 due to equipment vandalism) indicated that the average seven-day maximum water temperatures within the mainstem Lolo Creek was between 18.8° C and 24.8° C during the yearlong rearing period. The highest water temperature recorded during yearlong rearing period was 25.7° C (1992).
 - b) Effects of actions = Maintain. No alterations in riparian vegetation and streamside shade are proposed under the permit. Therefore, no change in water temperatures is expected.
3. Temperature - bull trout spawning: The Forest used the spawning period of September 1 to December 31.
- a) Environmental baseline = Low. Water temperature data collected during an eleven-year period (1990 and 2000, exception of 1996 and 1999 due to equipment vandalism) indicated that the average seven-day maximum water temperatures within the mainstem Lolo Creek was between 17.0° C and 21.7° C during the spawning season. The highest water temperature recorded during spawning season was 22.1° C (1998).
 - b) Effects of actions = Maintain. No alterations in riparian vegetation and streamside shade are proposed under the permit. Therefore, no change in water temperatures is expected.
4. Temperature - bull trout incubation: The Forest used an incubation period from September 1 to April 30. Data is only available from September 1 to early November. Temperature recorders are not usually put into the water until May to June. However, temperatures during the November to April period would reflect the colder water temperatures of winter conditions or stream runoff and are expected to be below the incubation temperature threshold of 5° C.
- a) Environmental baseline = Low. Water temperature data collected during an eleven-year period (1990 and 2000, exception of 1996 and 1999 due to equipment vandalism) indicated that the average seven-day maximum water temperatures within the mainstem Lolo Creek was between 17.0° C and 21.7° C during the incubation period. The highest water temperature recorded during incubation period was 22.1° C (1998).
 - b) Effects of actions = Maintain. No alterations in riparian vegetation and streamside shade are proposed under the permit. Therefore, no change in water temperatures is expected.
5. Temperature - bull trout rearing: The Forest used water temperature data throughout the year (if available) for the rearing assessment.
- a) Environmental baseline = Low. Water temperature data collected during an eleven-year period (1990 and 2000, exception of 1996 and 1999 due to equipment vandalism) indicated that the average seven-day maximum water temperatures within the mainstem Lolo Creek was between 18.8° C and 24.8° C during the yearlong rearing period. The highest water temperature recorded during yearlong rearing period was 25.7° C (1992).
 - b) Effects of actions = Maintain. No alterations in riparian vegetation and streamside shade are proposed under the permit. Therefore, no change in water temperatures is expected.
6. Turbidity/Suspended Sediment:
- a) Environmental baseline = High. 13-year average of ISCO data at Section 6 bridge showed 17 days/year >25mg/l and 0.3 days/year >80 mg/l.
 - b) Effects of actions = Degrade. Slight increases in turbidity and suspended sediment levels are expected directly downstream of suction dredging operations. These increases are expected to extend 200 to 500 feet downstream dependent upon the specific geology of the mining site. Turbidity levels will also increase, but these levels are expected to meet

the high criteria.

7. Chemical Contamination/Nutrients:

- a) Environmental baseline = No data.
- b) Effects of actions = Maintain. Fuel storage and fueling provisions of the "one step" permit will minimize any potential impacts from fuel spillage.

E. HABITAT ACCESS

1. Physical Barriers - Adult:

- a) Environmental baseline = High (mainstem Lolo Creek). Low (tributaries). There are no known human-caused migration barriers within the mainstem Lolo Creek. Several culverts on tributary streams have been identified as partial or complete barriers to steelhead trout and bull trout; these structures are proposed for replacement in future years.
- b) Effects of actions = Maintain. Mining operations will maintain fish passage. Steelhead adult migration occurs prior to the mining season. Mining operations will cease on August 15, which will allow for unimpeded bull trout migration during late August and September.

Physical Barriers - Juvenile:

- a) Environmental baseline = High (mainstem Lolo Creek). Low (tributaries). There are no known human-caused migration barriers within the mainstem Lolo Creek. Several culverts on tributary streams have been identified as partial or complete barriers to upstream migration of juvenile steelhead trout and bull trout; these structures are proposed for replacement in future years.
- b) Effects of actions = Maintain. Mining operations will maintain mainstream channel for fish passage.

F. HABITAT ELEMENTS

1. Cobble Embeddedness: Cobble embeddedness was visually estimated for the majority of the 30-meter transects. Calibration with a direct measurement (Burns method) stratified by habitat type was taken every 20th transect.

- a) Environmental baseline = Low. Average cobble embeddedness level for the mainstem Lolo Creek within the project area is approximately 46.0 %.
- b) Effects of actions = Maintain. Current activities on USFS lands are not expected to result in a change in this indicator on a reach-wide basis. Some decreases in cobble embeddedness levels are expected in stream substrate areas that are overturned by suction dredging activities. Increases in cobble embeddedness levels are also expected directly downstream of the mining operation, but these are expected to be within 100 feet or so (dependent upon stream flows).

2. Percent Surface Fines:

- a) Environmental baseline = Low. Substrate sediment conditions were measured via the Riffle Stability Index methodology (i.e. Wolman pebble counts) at two locations within the project area. The data shows percent sediment (from 0-8 mm) is approximately 19 %. This sediment level is an overestimate of fine sediment since the methodology classifies

sediment particles up to 8.0 mm instead of 6.4 mm (which is the standard size threshold for fine sediment). Therefore the percent surface fines is most likely about 17 % (based on the percent of particles in the 6-8 mm category); this level also indicates low quality habitat which is consistent with the cobble embeddedness ratings.

- b) Effects of actions = Maintain. Current activities on USFS lands are not expected to result in a change in this indicator on a reach-wide basis. Since dredging would only occur in the streambed, fine sediment levels would not increase over the existing levels already present in the stream channel (i.e. no bank erosion etc.). Some decreases in surface fines levels are expected in stream substrate areas that are overturned by suction dredging activities. Increases in surface fines levels are also expected directly downstream of the mining operation, but these are expected to be within 100 feet or so (dependent upon stream flows).

3. Percent Fines by Depth:

- a) Environmental baseline = No data is available for Lolo Creek.
- b) Effects of actions = Maintain. Current activities on USFS lands are not expected to result in a change in this indicator on a reach-wide basis. Decreases in surface fines levels are expected in stream substrate areas that are overturned by suction dredging activities.

4. Large Woody Debris: LWD was broken into acting and potential categories. Acting debris is defined as stable woody debris at least 10 cm in diameter which influenced habitat within each transect-bound segments of stream, and expressed as number of pieces / 100 meters. Potential debris is the number of trees on each bank that could contribute large organic debris in to the stream and expressed as pieces / 100 meters.

- a) Environmental baseline: Low. Large woody debris levels in the project area are low with 4.4 pieces of acting LWD/100 meters and between 5.1 and 17.0 pieces of potential LWD/100 meters.
- b) Effects of actions = Maintain. The proposed activities will not remove any riparian vegetation. No reduction in acting and potential LWD is expected.

5. Pool Frequency: The Clearwater National Forest used primary pools counted within each reach of stream and expressed as number per mile.

- a) Environmental baseline: Moderate. Pool frequency of primary pools in the project area is 23.1 pools/mile. This is slightly below the desired 26 pools/miles for streams with an average channel width of 25-50 feet (This segment of Lolo Creek has an average width of about 36 feet).
- b) Effects of actions = Maintain. Some small-localized changes in pool frequency may occur due to redistribution of substrate materials. However, the overall pool frequency for any stream reach is not expected to change substantially.

6. Pool Quality: Is rated on a scale of 1 (poor) to 5 (excellent).

- a) Environmental baseline: Low. Assessment of quality of pools in the project area is below the moderate category with an average pool quality of 2.9.
- b) Effects of actions = Maintain. Some small-localized changes in pool quality may occur due to redistribution of substrate materials, filling pools and removal of instream cover. Since most of the areas proposed for dredging has been altered in past years, changes to existing pool quality is expected to be minimal with no substantial changes on a reach basis.

7. Off - Channel Habitat:
 - a) Environmental baseline = No data is available.
 - b) Effects of actions = Maintain.
8. Habitat Refugia:
 - a) Environmental baseline = No data is available.
 - b) Effects of actions = Maintain.

G. TAKE

1. Harassment, Redd Disturbance, and Juvenile Harvest (Steelhead Trout)
 - a) Environmental baseline = Moderate. Existing harassment and harvest is rated as moderate due to fishing.
 - b) Effects of actions = Degrade/Maintain. Some harassment (redistribution) of juvenile steelhead trout is expected. Existing information indicates that proposed mining sites are located in steelhead trout spawning and early rearing areas. However, redd disturbance and juvenile harvest is expected to be insignificant or discountable. Intensive monitoring during the 2004 and 2005 mining seasons will verify this assumption.
2. Harassment, Redd Disturbance, and Juvenile Harvest (Bull Trout)
 - a) Environmental baseline = High.
 - b) Effects of actions = Maintain. No harassment (redistribution) of adult and sub-adult bull trout is expected. Existing information indicates that proposed mining sites are not located in bull trout spawning and early rearing areas. Therefore, redd disturbance and juvenile harvest is expected to be insignificant or discountable. Intensive monitoring during the 2004 and 2005 mining seasons will verify this assumption.

H. BULL TROUT SUBPOPULATION CHARACTERISTICS AND HABITAT INTEGRATION

1. Subpopulation Size:
 - a) Environmental baseline: Low. Limited data is available, assumed very small.
 - b) Effects of actions = Maintain.
2. Growth and Survival:
 - a) Environmental baseline = Low. No data is available.
 - b) Effects of actions = Maintain.
3. Life History Diversity, Isolation:
 - a) Environmental baseline = Moderate. Limited data is available.
 - b) Effects of actions = Maintain.
4. Persistence and Genetic Integrity:
 - a) Environmental baseline = Low. No data is available, however, strong brook trout populations that exist in the Musselshell Creek and Yoosa Creek drainages may preclude establishment of strong bull trout populations in the Lolo Creek drainage. Connectivity

between the few fish in the Lolo Creek drainage and other potential populations in mainstem Clearwater River (none are presently known) or upstream populations within the South Fork Clearwater River, Lochsa River and Selway River drainages is present, but the potential for populations to interact is minimum due to distances and habitat constraints (water temperatures).

b) Effects of actions = Maintain.

5. Integration of Species and Habitat Conditions:

- a) Environmental baseline = Moderate. Habitat conditions in the Lolo Creek drainage are expected to improve over the long-term due to watershed restoration activities (i.e. road obliteration), minimal timber harvest and no new road construction.
- b) Effects of actions = Degrade. Proposed mining activities will cause delays in habitat recovery in localized areas, but improved recovery trends are expected drainage-wide.

BIOLOGICAL EVALUATION: CANDIDATE AND SENSITIVE SPECIES
Suction Dredging on USFS Lands in the Lolo Creek Drainage

Regulatory Framework: The Secretary of Agriculture's Policy (Dept. Reg. 9500-4) and Forest Service objectives (FSM 2670.22) for sensitive species require the Forest Service to: "(1) Develop and implement management practices to ensure that species do not become threatened or endangered because of Forest Service actions, and (2) Maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest lands." Furthermore, "a documented Forest Service review of Forest Service programs or activities will be completed in sufficient detail to determine how an action or proposed action may affect any... sensitive species. This documented review is a biological evaluation (BE)" (FSM 2670.5).

Species identified by the Regional Forester as sensitive are listed in update of Northern Region Sensitive Species List, March 31, 2005.

Proposed Action: See Biological Assessment (BA)

Environmental Consequences: The direct, indirect, and cumulative effects of the proposed action results in four possible conclusions: (1) No impact, (2) May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the population or species, (3) Likely to impact individuals or habitat with a consequence that the action may contribute toward Federal listing or result in reduced viability for the population or species, and (4) Beneficial impact.

SUMMARY OF CONCLUSION OF EFFECTS

Species	No Impact	MIH*	Rationale
Wolverine	X		Suitable habitat not present
Harlequin Duck	X		Suitable habitat not present
Fisher	X		Suitable habitat not present
Flammulated Owl	X		Suitable habitat not present
Black Backed Woodpecker	X		Suitable habitat not present
Northern Goshawk	X		Suitable habitat not present
Coeur D' Alene Salamander	X		Suitable habitat not present
Boreal Toad	X		Suitable habitat not present
Townsend's Big-eared Bat	X		Suitable habitat not present
Northern Leopard Frog	X		Suitable habitat not present
<i>Asplenium trichomanes</i>	X		Suitable habitat not present
<i>Belchnin spicant</i>	X		Suitable habitat not present
<i>Botrychium crenulatum</i>	X		Suitable habitat not present
<i>Botrychium lanceolatum lanceolatum</i>	X		Suitable habitat not present
<i>Botrychium minganense</i>	X		Suitable habitat not present
<i>Botrychium montanum</i>	X		Suitable habitat not present
<i>Botrychium simplex</i>	X		Suitable habitat not present
<i>Buxbaumia aphylla</i>	X		Suitable habitat not present
<i>Buxbaumia viridis</i>	X		Suitable habitat not present
<i>Calochortus nitidus</i>	X		Suitable habitat not present

Species	No Impact	MIIH*	Rationale
<i>Cardamine constancei</i>	X		Suitable habitat not present
<i>Carex hendersonii</i>	X		Suitable habitat not present
<i>Carex leptalea</i>	X		Suitable habitat not present
<i>Cetraria subalpina</i>	X		Suitable habitat not present
<i>Cladonia andereggii</i>	X		Suitable habitat not present
<i>Cornus nuttalli</i>	X		Suitable habitat not present
<i>Cypripedium fasciculatum</i>	X		Suitable habitat not present
<i>Dasynotus daubenmirei</i>	X		Suitable habitat not present
<i>Haplopappus hirtus sonchifolius</i>	X		Suitable habitat not present
<i>Hookeria lucens</i>	X		Suitable habitat not present
<i>Lomatium salmoniflorum</i>	X		Suitable habitat not present
<i>Mimulus alsinoides</i>	X		Suitable habitat not present
<i>Mimulus ampliatus</i>	X		Suitable habitat not present
<i>Pentagramma triangularis triangularis</i>	X		Suitable habitat not present
<i>Petasites frigidus palmatus</i>	X		Suitable habitat not present
<i>Petasites sagittatus</i>	X		Suitable habitat not present
<i>Polypodium glycyrrhiza</i>	X		Suitable habitat not present
<i>Rhizomnium nudum</i>	X		Suitable habitat not present
<i>Synthyris platycarpa</i>	X		Suitable habitat not present
<i>Thelypteris nevadensis</i>	X		Suitable habitat not present
<i>Triantha occidentalis brevistyla</i>	X		Suitable habitat not present
<i>Waldsteinia idahoensis</i>	X		Suitable habitat not present
Westslope Cutthroat Trout (<i>Oncorhynchus clarki lewisi</i>)		X	<p>Lolo Creek provides the strongest populations of westslope cutthroat trout within the mainstem Clearwater River tributaries. The closest drainage system that is comparable to Lolo Creek is the Clear Creek drainage that drains into the Middle Fork Clearwater River. Presence of westslope cutthroat trout has been primarily documented in the upper tributaries within the USFS lands. Although data is lacking, most of the westslope cutthroat observed in Lolo Creek are of small size and the populations are suspected of being of a resident nature with very little migration to and from the mainstem Clearwater River. The lower mainstem Lolo Creek most likely provides some over-winter habitat to migrating cutthroat, but high summer water temperatures most likely limit any permanent rearing downstream of Yakus Creek. A survey conducted for the Bureau of Land Management in 1992, a contractor did not find any presence of cutthroat downstream in the 28 miles of Lolo Creek from the USFS boundary to the confluence with the mainstem Clearwater River (Inter-Fluve, Inc. 1993).</p> <p>Documentation of westslope cutthroat trout populations have been reported by a number of surveys. Falter (1975) reported that Yakus Creek had high numbers of cutthroat trout when it was</p>

Species	No Impact	MIH*	Rationale
			<p>surveyed in 1973-75. He noted the high densities (14.9 fish/100 m²) may be due to the lack of competition from steelhead trout as migration barriers prevent anadromous fish migration upstream in Yakus Creek. A survey conducted by Clearwater BioStudies, Inc. (1988) on the mainstem of Lolo Creek from the USFS boundary to the Yoosa Creek confluence showed very few cutthroat trout. A follow-up survey of the mainstem of Lolo Creek in 1993, including the headwaters reaches upstream of Yoosa Creek, showed fairly high densities (1-6 age 2+ fish/100 m²) of westslope cutthroat trout within the headwater reaches of Lolo Creek (Clearwater BioStudies, Inc. 1994). Annual fish population surveys conducted by the USFS from 1989-99 have shown very few if any cutthroat trout observed in the mainstem of Lolo Creek downstream of Yoosa Creek. A second follow-up survey of the mainstem of Lolo Creek in 1998, including the headwaters reaches upstream of Yoosa Creek, showed fairly high densities (1-10 age 2+ fish/100 m²) of westslope cutthroat trout within the headwater reaches of Lolo Creek (Clearwater BioStudies, Inc. 1999).</p> <p>The Nez Perce Tribe has also conducted fish population surveys within the mainstem of Lolo Creek from 1992-96; very few cutthroat trout were observed during the annual surveys (Dave Johnson, personal communication).</p> <p>Surveys conducted for the USFS by various contractors have reported westslope cutthroat populations within most tributaries of Lolo Creek (Clearwater BioStudies, Inc. 1992a, 1992b, 1993a, 1993b; Isabella Wildlife Works 1995a, 1995b, 1995c, 1995d). Density information indicates that populations ranged from a low numbers to very strong viable populations (up to 16 age 2+ fish/100m²). Rearing and spawning habitat for westslope cutthroat trout is present throughout the Lolo Creek drainage. Potential effects are similar to bull trout (see Biological Assessment).</p>
Spring Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)		X**	<p>Historically, Lolo Creek was a significant producer of spring chinook salmon in the Clearwater River subbasin.</p> <p>The current populations of chinook salmon within the Lolo Creek drainage are considered natural spring chinook stock. The majority of the spawning occurs within the mainstem of Lolo Creek from White Creek to Dutchman Creek; some minor spawning has occurred in the Eldorado Creek to White Creek mainstem segment.</p> <p>The Eldorado Falls were modified between 1984 and</p>

Species	No Impact	MIH*	Rationale
			<p>1989 to permit anadromous fish passage. From 1989 to mid-1990's, the Nez Perce Tribe has outplanted spring chinook smolts and fingerlings in upper Eldorado Creek to establish a spring chinook salmon population. Subsequent spawning surveys from 1990-1998 did not find any spawning activity upstream of Eldorado Falls. During 2000 and 2001, one and 16 spring chinook salmon redds were documented in Eldorado Creek upstream of Eldorado Falls respectively.</p> <p>Spawning ground surveys on the two major index areas (both located in Lolo Creek, above the Musselshell/Lolo confluence) showed natural spring chinook production has fluctuated over the last 14 years. The total number of spring chinook redds in the Lolo Creek drainage for the 1988-2001 spawning periods ranged from 6 redds in 1995 to 501 (2001). During 1996, 2000 and 2001, the number of spring chinook redds increased substantially due to an adult outplanting effort by the Nez Perce Tribe.</p> <p>The Nez Perce Tribe is planning to continue augmenting spring chinook populations in the Lolo Creek drainage through a hatchery supplementation program associated with a juvenile rearing facility planned for Yoosa Creek. Adults would be captured and reared at a hatchery facility (at Cherrylane on the Clearwater River) until fingerling stage and then transferred to a rearing facility near the headwaters of Lolo Creek. The intent of this program is to stimulate natural production in the Lolo drainage to a level that will allow a modest Tribal fishery and sustainable natural production within 20 years.</p> <p>Habitat for spring chinook salmon production is present within the mainstem Lolo Creek, lower Yoosa Creek, and lower Musselshell Creek and Eldorado Creek. Potential effects are similar to steelhead trout and bull trout (see Biological Assessment).</p> <p>In accordance with applicable requirements of section 305(b) of the Magnuson-Stevens Act and its implementing regulations (50 CFR Part 600.920), the Forest needs to evaluate potential effects of the suction dredging activities within the Lolo Creek drainage on Essential Fish Habitat. Proposed mitigation and conservation measures designed for these suction dredging operations (as described for steelhead trout) will minimize or avoid adverse effects of the proposed suction dredging activities on spring chinook populations. These impacts are expected to be minimal, but the effects cannot be</p>

Species	No Impact	MIH*	Rationale
			considered negligible. Therefore, the determination for the suction dredging and gold panning activities in the Lolo Creek drainage is may affect, may likely to adversely affect spring chinook salmon and their continued existence in the Lolo Creek drainage (see Biological Assessment).
Pacific Lamprey (<i>Lampetra tridentata</i>)		X	Suitable habitat is available in the mainstem Lolo Creek, Musselshell Creek and Eldorado Creek. Juvenile lamprey have been observed in Musselshell Creek by Forest personnel during the early 1990's. The Nez Perce Tribe have collected juvenile lamprey in the fish trap on Lolo Creek during recent years. The proposed suction dredging will avoid the spring/early summer spawning period for lamprey. Effects to juveniles within the substrate will be minimized through the avoidance of potential rearing areas. Potential effects are similar to steelhead trout and bull trout (see Biological Assessment).
Interior Redband Trout (<i>Oncorhynchus mykiss gairdneri</i>)	X***		Suitable habitat is available in the Lolo Creek drainage. Based on information presented in Quigley et al. (1997) and Campbell and Cegelski (2004) the focus of identifying unique populations of interior redband trout should focus upstream of fish migration barriers. With the exception of the anadromous life history form (steelhead trout) which is listed under ESA and possible resident interior redband trout (of steelhead progeny) interior redband trout populations that have been isolated from steelhead trout (allopatric redband trout) have not been documented nor are expected in the Lolo Creek drainage. Potential effects are similar to steelhead trout and bull trout (see Biological Assessment).

* MIH - May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the population or species.

** Spring chinook salmon were not listed under ESA in the Clearwater River subbasin. However long-term impacts of the proposed activities were determined to likely impact individuals or habitat with a consequence that the action may result in reduced viability for the population or species in Lolo Creek.

*** Based on the current status of no existing populations of Interior Redband Trout (besides steelhead trout) within Lolo Creek drainage.

Literature Cited:

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U.S.D.A. Forest Service, Clearwater National Forest, Orofino, Idaho.

Clearwater BioStudies, Inc. 1992b. Habitat conditions and salmonid abundance in selected streams in Musselshell Creek drainage, Pierce Ranger District, summer 1991. Contract report no. 53-0276-1-46, prepared for U.S.D.A. Forest Service, Clearwater National Forest, Orofino, Idaho.

Clearwater BioStudies, Inc. 1993a. Habitat conditions and salmonid abundance in Eldorado Creek, Pierce Ranger District, summer 1992. Contract report no. 53-0276-2-26, prepared for U.S.D.A. Forest Service, Clearwater National Forest, Orofino, Idaho.

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Isabella Wildlife Works 1995b. Fisheries survey report, Lolo Creek tributaries, Pierce Ranger District. Contract No. 53-0276-4-36. Final report submitted to U.S.D.A. Forest Service, Clearwater National Forest, Orofino, Idaho.

Isabella Wildlife Works 1995c. Fisheries survey report, Musselshell Creek tributaries, Pierce Ranger District. Contract No. 53-0276-4-36. Final report submitted to U.S.D.A. Forest Service, Clearwater National Forest, Orofino, Idaho.

Isabella Wildlife Works 1995d. Fisheries survey report, Yoosa Creek tributaries, Pierce Ranger District. Contract No. 53-0276-4-36. Final report submitted to U.S.D.A. Forest Service, Clearwater National Forest, Orofino, Idaho.

Quigley, T. M. and S. J. Arbelbide, tech. eds. 1997. An assessment of ecosystem components in the interior Columbia basin and portions of the Klamath and Great Basins: Volume 3. Gen. Tech. Rep. PNW-GTR-405. U.S.D.A. Forest Service, Pacific Northwest Research Station, Portland, Oregon.

/s/ Dan Davis February 6, 2006

Dan Davis
Forest Wildlife Biologist

/s/ Patrick K. Murphy February 6, 2006

Patrick K. Murphy
Forest Fisheries Biologist

ATTACHMENT 2

BIOLOGICAL ASSESSMENT: THREATENED, ENDANGERED AND PROPOSED SPECIES

Suction Dredging on USFS Lands in the Moose Creek Drainage

Final Version – January 19, 2006

This biological assessment addresses potential effects to designated Threatened and Endangered Species from proposed suction dredging activities within the Moose Creek drainage. All sites occur within the North Fork Ranger District, Clearwater National Forest. The project legal descriptions are in the Boise Meridian from T39N, R11E to T40N, R11E. The projects are located in the mainstem Moose Creek, Independence Creek and Deadwood Creek, within Idaho County, Idaho (Figure 1).

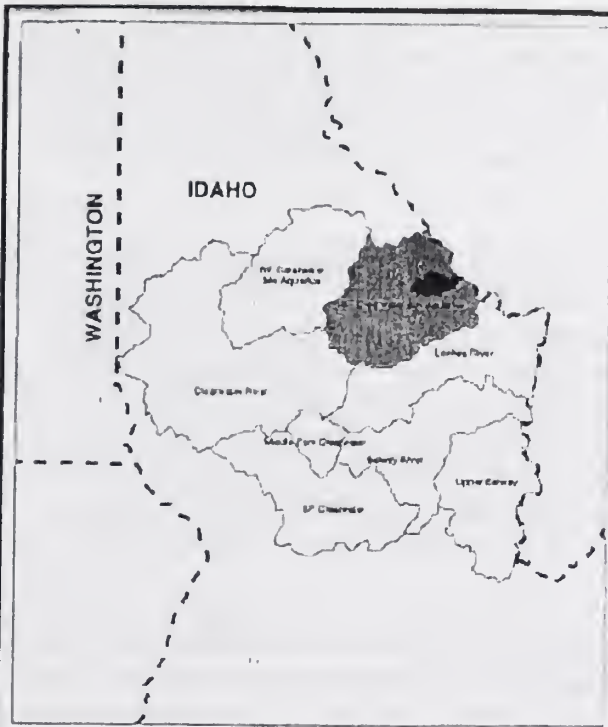
The Endangered Species Act of 1973 directs federal agencies to conserve Endangered and Threatened Species and to ensure that federal actions authorized, funded, and carried out are not likely to jeopardize their continued existence or result in the destruction or adverse modification of critical habitat. In response to Section 7(c) of the Endangered Species Act and Forest Service Manual (FSM) 2670, this biological assessment displays the potential effects of 38 suction dredging operations upon Threatened and Endangered Species that are known or may occur in the area. The analysis area used to evaluate effects of the proposed project includes the watersheds listed above.

The U.S. Fish and Wildlife Service (USFWS) species list of September 1, 2005, (from Bi-annual Forest-wide Species List, 1-4-05-SP-736), identified two endangered, seven threatened species under ESA within North Central Idaho. The following species were included in the list: gray wolf (E:YN), sockeye salmon (E), bald eagle (T), fall chinook salmon (T), spring chinook salmon (T), steelhead trout (T), bull trout (T), Canada lynx (T). Two of the fish species, sockeye salmon and spring chinook salmon were not listed within the Clearwater National Forest (specifically the Clearwater River and Palouse River subbasins); therefore these species will not be discussed as ESA species in this Biological Assessment.

Background Information

Moose Creek is a major tributary of lower Kelly Creek located within the upper North Fork Clearwater River drainage (Figure 1). Since its discovery near Moose City in the 1860s, gold has been mined sporadically in the Moose Creek drainage. Early mining activities included sluicing and hydraulic mining in the early 1900's. In the 1950's, dragline dredges mined the mainstem Moose Creek from the Independence Creek upstream to Deadwood Creek. The entire stream valley was impacted by the dragline. Moose Creek was relocated and flowed along and around high berms of mine tailings. With the rise in prices in the 1970s, the drainage experienced a renewed interest in prospecting for gold. It was also around this time that prospectors started using suction dredges to explore and process instream gravels. While the numbers who actually prospect varies from year to year, miners have established and maintained 30 placer claims on Moose, Independence, and Deadwood Creeks.

1998-1999 Mining Seasons: Following the listing of bull trout in July 10, 1998, the Forest assessed the mining operations within the Moose Creek drainage during 1998. Due to the low numbers of bull trout documented in the mining area, direct impacts to bull trout were

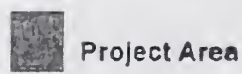
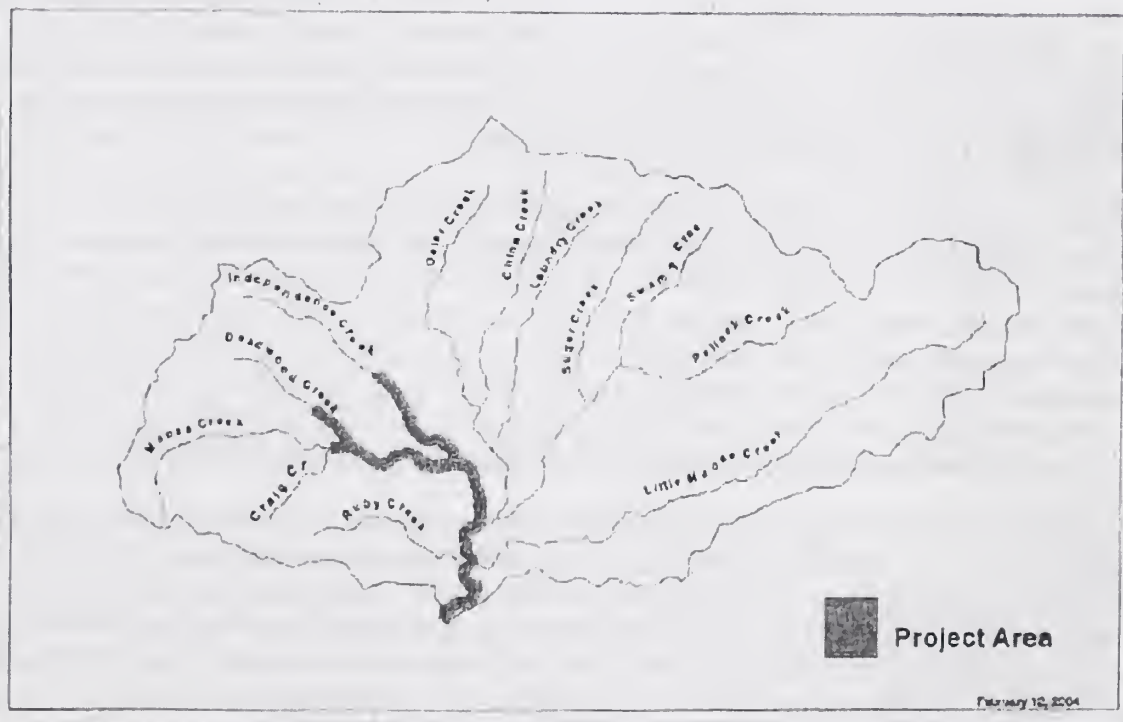
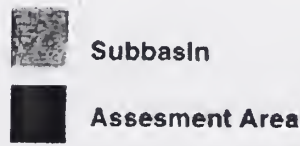


Clearwater River Basin

4th Field HUC/Subbasin:
 17060307 NF Clearwater River
 abv Aqaurius

5th Field HUC:
 1706030740 Kelly Creek

6th Field HUC:
 170603074005 Moose Creek
 14.2 miles



February 16, 2004

determined to most likely limited to displacement of individuals during mining operations. The Forest did note that impacts to spawning were a possibility because the mining season extended to September 30. During 1998 and 1999, the Forest worked on a biological assessment (BA) to assess the all ongoing and proposed activities within the North Fork Clearwater River drainage on bull trout. The Forest continued to monitor the suction dredging within the Moose Creek drainage during the 1999 season.

The Forest submitted a BA for the North Fork Clearwater River watershed (U.S.D.A. Forest Service - Clearwater National Forest 2000a) and a letter dated February 4, 2000 requesting concurrence on number of projects including the proposed suction dredging within the Moose Creek drainage and four small suction dredge operations located on the mainstem North Fork Clearwater River and in Orogrande Creek. The U.S. Fish and Wildlife Service (USFWS) concurred with the Forest's determination of "may affect, not likely to adversely affect" bull trout in a concurrence letter dated March 10, 2000 (U.S. Fish and Wildlife Service 2000a). The mining activities within the Moose Creek drainage were included in the watershed BA, but consultation and concurrence on these activities were deferred until additional review and discussion.

2000 Mining Season: The Forest submitted a biological assessment, dated June 16, 2000 to the USFWS for concurrence regarding the 2000 mining season in the Moose Creek drainage (U.S.D.A. Forest Service - Clearwater National Forest 2000b). On July 11, 2000, the USFWS concurred with the Forest's determination via concurrence letter that the recreational suction dredging in the Moose Creek drainage during the summer of 2000 will may affect, not likely to adversely affect bull trout (U.S. Fish and Wildlife Service 2000b). The concurrence was based on eight considerations and rationale that the Forest and USFWS agreed upon during the consultation process. One major change implemented in 2000 was the shortening of the mining season to August 15 to avoid impacts to bull trout spawning.

2001 Mining Season: For the 2001 mining season, the Forest submitted a biological assessment, dated April 26, 2001, to the USFWS for concurrence (U.S.D.A. Forest Service - Clearwater National Forest 2001). The BA was the modified 2000 BA that included the review of the 2000 mining season, project and fish population monitoring activities and plans for the 2001 mining season. On May 29, 2001, the USFWS concurred with the Forest's determination via concurrence letter that the suction dredging in the Moose Creek drainage during 2001 will may affect, not likely to adversely affect bull trout (U.S. Fish and Wildlife Service 2001). The concurrence was contingent upon the same considerations and rationale as the previous year.

Assessment of the 2001 Mining Activities: Field reviews were conducted during the 2001 mining season by the Forest to assess the effectiveness of the permit provisions. Implementation reviews conducted by the Forest during the field season did not identify any major problems or violations. A follow-up field review was held on August 29, 2001 with regulatory and miners. Several problems at various mining sites were identified by the Level One team. These included stream bank alterations, and modification of stream channels (i.e. leaving large holes with excavated materials along banks or in mid-channel areas).

Implementation monitoring also determined that the amount of disturbance and potential impacts of the mining activities were smaller than predicted during the 2001 analysis. Eight operators (12 were originally submitted proposals) worked their claims for approximately 113 days during

the July 1 to August 15 mining season; this is 58 days less than the proposed 171 days. Of the 944 ft of stream that was estimated to be affected by suction dredging in 2001, the actual suction dredging affected only 570 ft; this is approximately 60 percent of the area predicted in the 2001 analysis (see Appendix A).

Bull Trout Monitoring – 2001: On August 22 and 29, 2001, field reviews were conducted by the Forest Fisheries Biologist and Level One team respectively to assess the effectiveness of the permit provisions. As noted above, several problems at various mining sites were identified by the Level One team.

As part of suction dredging mining monitoring, fish population surveys were conducted by Forest personnel on August 22, 2001, on Moose Creek to assess bull trout presence/absence and identify juvenile rearing areas. Ten sites within the mining areas in the mainstem Moose Creek within the mining areas were snorkeled; three adult bull trout were observed. The adult bull trout were observed in the mainstem Moose Creek, downstream of Osier Creek. An additional two adult bull trout were observed within a pool within Osier Creek, immediately downstream of Swamp Creek.

During 2001, the IDFG conducted fish population surveys via snorkeling within the Little Moose Creek and Ruby Creek drainages. No juvenile or adult bull trout were observed during the mid-summer survey at three monitoring sites within lower Little Moose Creek and the one site within lower Ruby Creek.

Bull trout spawning ground surveys in the upper North Fork Clearwater River drainage were conducted by Forest and Idaho Department of Fish and Game (IDFG) personnel during September 2001 to locate spawning areas and juvenile rearing areas. As in 2001, IDFG conducted surveys in the Osier Creek and Swamp Creek drainages. However, the large number of kokanee salmon spawning in the bull trout spawning areas prevented observers from counting any bull trout redds; bull trout were observed intermixed with the kokanee salmon. Due to larger substrate conditions and lack of spawning habitat identified during the 2000 surveys, no spawning surveys were conducted by Forest personnel in the mainstem Moose Creek, Independence Creek, Deadwood Creek, and Ruby Creek during 2001.

2002 Mining Season: For the 2002 mining season, the Forest re-evaluated the determination regarding bull trout based on additional fish population and spawning data collected by the IDFG and the Forest. Due to the higher than anticipated occurrences of bull trout within the Moose Creek drainage, the Level One team decided to upgrade the determination that the suction dredging activities would may affect, likely to adversely affect bull trout (Appendix B).

The Forest submitted a BA for the Moose Creek drainage and a letter dated June 10, 2002 requesting formal consultation on the proposed suction dredging activities for the 2002 mining season (U.S.D.A. Forest Service - Clearwater National Forest 2002). However, no mining was authorized by the Forest in 2002 due to the pending completion of an Environmental Impact Statement (EIS). Since no mining was authorized in the Moose Creek drainage during 2002, the completion of the biological opinion was not imperative for 2002. As agreed upon during a Level One conference call on July 30, 2002 and subsequent memo, dated August 6, 2002 the Forest requested the time frame of the BA be extended to include the 2003 mining season. The U.S. Fish and Wildlife Service (USFWS) concurred with the Forest's determination of "may affect, likely to adversely affect" bull trout in a biological opinion dated January 15, 2003 (U.S. Fish and Wildlife Service 2003).

After the mining season, the Forest did find out that some minor instream alteration activities (unauthorized) did take place at one claim.

Bull Trout Monitoring – 2002: The IDFG conducted fish population surveys via snorkeling within the Little Moose Creek drainage. One juvenile bull trout was observed during the mid-summer survey at one of the three monitoring sites.

Bull trout spawning ground surveys were conducted in the Moose Creek drainage by Forest and Idaho Department of Fish and Game (IDFG) personnel during September 2002 to locate spawning areas and juvenile rearing areas. As in 2002, IDFG conducted surveys in the Osier Creek and Swamp Creek drainages; IDFG documented two and one redds within the lower reaches of these streams respectively. The Forest conducted two spawning ground surveys on the mainstem Moose Creek (Deadwood Creek to mouth); no redds or spawning activity were observed.

2003 Mining Season: No mining was authorized by the Forest in 2003 due to the pending completion of an Environmental Impact Statement (EIS). During a bull trout spawning survey in early September, the Forest found evidence of some instream alteration activities on two claims on Moose Creek (upstream of Independence Creek). Some minor stream bank alterations were observed at one of the claims; impacts were considered minimal due to the small area impacted. Following an investigation, the responsible party (claimant) was required to stabilize the impacted bank with rock during 2004.

Bull Trout Monitoring – 2003: The IDFG conducted fish population surveys via snorkeling within the Little Moose Creek drainage. No juvenile or adult bull trout were observed during the mid-summer survey at three monitoring sites.

Bull trout spawning ground surveys were conducted in Moose Creek drainage by Forest and Idaho Department of Fish and Game (IDFG) personnel during September 2003 to locate spawning areas and juvenile rearing areas. As in 2003, IDFG conducted surveys in the Osier Creek and Swamp Creek drainages; only one redd was observed in the lower Swamp Creek drainage. The Forest conducted one spawning ground survey on the mainstem Moose Creek (Deadwood Creek to mouth); no redds or spawning activity were observed.

2004 and 2005 Mining Seasons: Anticipating mining would commence in 2004, the Forest submitted a BA for the Moose Creek drainage and a letter dated April 29, 2004 requesting formal consultation on the proposed suction dredging activities for the 2004 and 2005 mining seasons (U.S.D.A. Forest Service - Clearwater National Forest 2004). The U.S. Fish and Wildlife Service (USFWS) concurred with the Forest's determination of "may affect, likely to adversely affect" bull trout in a biological opinion dated July 2, 2004 (U.S. Fish and Wildlife Service 2004).

No mining was authorized by the Forest in 2004 and 2005 due to the pending completion of an Environmental Impact Statement (EIS). However, during the summer of 2005, a claimant diverted a small portion of the stream flow in Moose Creek into an existing side channel to facilitate mining in future years; no instream mining occurred at the site in 2005. Although the effects of the diversion were minimal as the side channel acts as an overflow channel during high stream flows during the spring runoff, the Forest removed the diversion in the fall of 2005.

Bull Trout Monitoring – 2004 and 2005: In 2004, the IDFG did not find any tagged bull trout present within the Moose Creek drainage. During 2005, two tagged bull trout were observed in the Moose Creek drainage; one adult was located in the mainstem Moose Creek (downstream of Independence Creek) and a second adult was located in Swamp Creek near Sugar Creek (Schiff 2005).

No fish population surveys (via snorkeling) were conducted by the IDFG and Forest in 2004. In 2005, the IDFG conducted fish population surveys via snorkeling within the Little Moose Creek (three sites) and Ruby Creek (one site) drainages. No juvenile or adult bull trout were observed during the mid-summer surveys.

Bull trout spawning ground surveys were conducted in Moose Creek drainage by Forest and Idaho Department of Fish and Game (IDFG) personnel during September 2004 and 2005 to locate spawning areas and juvenile rearing areas. During 2004, IDFG (Schiff 2005) conducted one survey in the Swamp Creek drainage; no redds were observed in the lower Swamp Creek drainage (mouth to Pollock Creek). In 2005, the Forest conducted one spawning ground survey on the mainstem Moose Creek (Deadwood Creek to mouth); no redds or spawning activity were observed.

In addition to the population monitoring, the Forest completed the fourth year of the substrate-monitoring project in lower Moose Creek (mouth upstream to Little Moose Creek) in 2005 to determine trends of sediment (% fines by depth) in westslope cutthroat trout spawning areas. The monitoring data will also help assess any impacts of small suction dredge mining which occurs upstream in Moose Creek, Independence Creek and Deadwood Creek. This monitoring consists of measuring the substrate particles that are collected by digging a core into the stream bottom at selected riffle and pool tail-out sites. Preliminary analysis of the data indicates that the percentage of sediment (fine sediment < 6.4 mm) within the substrate at the monitoring sites averaged 22.5% for the 2002-2005 period. The monitoring data showed that the average percent fines were 23.0%, 18.7%, 23.4 and 25.0% for 2002, 2003, 2004 and 2005 respectively. The four-year average of approximately 22.5% fines is still above the desired condition of 12-14% fines for the "high fishable" Forest Plan standard for westslope cutthroat trout. Additional data is scheduled to be collected in 2007.

Project Proposal

The mining operations planned in the Moose Creek drainage involve processing instream sand, gravel, and cobble primarily with suction dredges. Potential and current mining areas are located primarily in the mainstem Moose Creek, Deadwood Creek, and Independence Creek drainages. Currently about 38 claimants could file notices of intent to the Forest requesting to operate in any one year. Mining claim names and locations in the Moose Creek drainage are displayed in Appendix C. In 2006 and 2007, 15 operators, involving 11 claims (one suction dredge per claim), are planning to work their claims in the Moose Creek drainage. The specifics regarding the proposed suction dredge mining for the 2006 and 2007 mining seasons are summarized in Appendix D.

Due to recommendations regulatory agencies regarding ESA protection, the Idaho Department of Water Resources made a number of changes to the Recreational Dredging "One Stop" Permit for 2000. One major change that affected the Moose Creek drainage involved the shortening of the dredging season to provide protection for migrating and spawning bull trout. The season starting date remained the same, but the closing date was moved from September 30 to August 15.

Beginning in 1998, all suction dredging was monitored by the Forest Geologist. During the 1998 dredge season, on an average the suction dredgers worked three to five hours per day, four days per week. The nozzle diameters ranged from 1-1/2 inches to 5 inches. The most popular suction dredge had a four inch nozzle diameter and was powered with five horsepower (hp) or eight hp motors.

Operators are required to obtain a permit to alter a stream channel from the Idaho Department of Water Resources. The permit is issued under an individual dredging application. Operators must adhere to IDAPA Rule 37.03.07.064, which defines the equipment class, timing and mitigation measures. Operators must also comply with the protection measures detailed in Appendix A of the 2004 Biological Opinion issued by the USFWS (U.S. Fish and Wildlife Service, 2004) and subsequently included in the Final Environmental Impact Statement.

The recreational classed suction dredges have a nozzle diameter of five inches or less, and are powered by motors with horsepower rating of 15 hp or less. In the Moose Creek drainage, current dredging involves relatively smaller dredges (between 1-4 inches). Dredging or processing of stream bank materials is not permitted under a recreational dredging permit. Besides the dredges, a few miners use gold pans and small sluice boxes to process gravel.

Prior to the mining season, a field review will be conducted by the Level One Team members to ensure that the sites proposed for suction dredging during the 2006 and 2007 field seasons are located in areas that will have minimum effects to listed species (bull trout). In past years, the proposed dredging sites were primarily located outside potential spawning areas and in areas of larger substrate materials (large cobbles to boulder substrates). Impacts to rearing habitat will be minimal as instream woody debris would not be moved during the mining operations. Areas surrounding boulders may be dredged and the boulders moved slightly, but the function of the boulders of providing rearing habitat will be maintained.

Endangered Wildlife Species

Gray Wolf (*Canis lupus*)

Regulatory Framework: Since the translocation of wolves to Central Idaho in January 1995, the species in the Central Idaho population is now considered experimental, nonessential. Strategies to protect and recover populations are outlined in the Northern Rocky Mountain Wolf Recovery Plan (U.S. Fish and Wildlife Service 1987) and Draft Environmental Impact Statement for the Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho (U.S. Fish and Wildlife Service 1993a).

Existing Condition: The Moose Creek drainage is within the boundary of the Central Idaho nonessential population area for the gray wolf. Approximately 10 wolves currently occupy

habitat in and adjacent to the project area. There will be no animal control activities associated with this project that require consultation with USFWS. Additionally, there are currently no known denning or rendezvous sites in the project area. If a wolf were found within the project area, we would immediately consult USFWS.

Determination: Based on this information, suction dredging in the Moose Creek area “**would not jeopardize the continued existence**” of the gray wolf.

Threatened Wildlife Species

Bald Eagle (*Haliaeetus leucocephalus*)

Regulatory Framework: The bald eagle is protected under the ESA (1973), Bald Eagle Protection Act (1940), Migratory Bird Treaty Act (1918), and Lacey Act (1901). The Pacific Bald Eagle Recovery Plan (U.S. Fish and Wildlife Service 1986) provides strategies to protect and recover bald eagle populations in Idaho. Forest Plan standards direct the Clearwater National Forest to “manage active identified bald eagle nesting, roosting, and perching sites to maintain their use [and] cooperate with future recovery efforts” (II-24).

Habitat Requirements: In north central Idaho, bald eagles use forests along rivers, lakes, and reservoirs (Davis 1994). Until recently, only wintering bald eagles have been known to use the Clearwater Basin. In the spring of 1999, an unsuccessful nest attempt was documented nearby to the Clearwater National Forest on Dworshak Reservoir. This location is at least 60 miles from the project area. No historical or current evidence documents nesting or breeding on the Clearwater National Forest. Essential habitat for bald eagles on the Clearwater National Forest is restricted to 0.5 miles on either side of the Lochsa River, Middle Fork of the Clearwater River, North Fork of the Clearwater River, and lower portions of the Weitas, Kelly, and Cayuse Creeks, for a total of 175,000 acres of suitable winter habitat.

Existing Condition: Wintering bald eagles are occasionally sighted within the Moose Creek drainage. Wintering eagles have been observed downstream on the North Fork Clearwater River and mainstem Clearwater River. No use has been documented for the upper Moose Creek drainage.

Determination: Suction dredging in the drainage would have “**no effect**” on individual eagles, the population or on bald eagle recovery in Idaho.

Lynx (*Lynx canadensis*)

Regulatory Framework: On March 24, 2000 lynx was listed as a threatened species under ESA.

Existing Condition: The lynx is also a wide-ranging predator that could use the project area on occasion. Nellis (1989) estimated that most home ranges fell between 5 and 20 square miles, but home ranges up to 94 square miles have been reported. Ruggiero (1994) reported the lynx “... occurs primarily in the boreal forest of Alaska and Canada, but its range extends south into the northern portions of the western mountains, where environmental conditions at high elevations support boreal forest habitats similar to those found in northern regions.” The project area does support boreal forest habitat conditions, and the likelihood of use by the lynx is low.

The Idaho Fish and Game Department has no records (historical or otherwise of reliable) lynx sightings in Clearwater County. Ruggiero's (1994) observations and Fish and Game records of lynx distribution both concur with Koehler's observation that most lynx use occurs further north and along the Montana/Idaho divide.

Determination: In summary, the project area has very few historical and current observations and it is on the edge of the range for the lynx, therefore, suction dredging would have "**no effect**" of lynx or its habitat.

Threatened Fish Species

Fall Chinook Salmon (*Oncorhynchus tshawytscha*)

Regulatory Framework: The National Marine Fisheries Service (NMFS) Federal Register (issued 12/28/93) identified a reach of the mainstem Clearwater River as critical habitat for Snake River fall chinook salmon. Critical habitat for the fall run chinook includes only the mainstem of the Clearwater River up to the Idaho/Clearwater county line below the town of Greer, Idaho.

Existing Condition: The proposed suction dredging areas within the Moose Creek drainage is located over 100 miles upstream of Dworshak Dam; the dam is a complete migration barrier to anadromous fish. Consequently, no critical habitat for this species occurs within the Clearwater National Forest. Under the ESA, the Forest Service must assess cumulative impacts from federally authorized or funded projects on the Clearwater National Forest to fall populations in both the lower Clearwater River and Palouse River below the falls.

Determination: Any sediment produced by suction dredging would not be measurable in the mainstems of Kelly Creek and upper North Fork Clearwater River and nonexistent downstream of the Dworshak Dam. Therefore, suction dredging in the Moose Creek would have "**no effect**" on fall chinook salmon.

Steelhead Trout (*Oncorhynchus mykiss*)

Regulatory Framework: On October 17, 1997, steelhead trout were listed as a threatened species within the Snake River under ESA.

Existing Condition: Present distribution includes the Salmon River and Clearwater River subbasins. The proposed suction dredging areas within the Moose Creek drainage is located over 100 miles upstream of Dworshak Dam; the dam is a complete migration barrier to anadromous and inland fish.

The effects of instream recreational dredging primarily involve changes in substrate, spawning and rearing habitat for salmonids.

Determination: Any sediment produced by suction dredging would not be measurable in the mainstems of Kelly Creek and upper North Fork Clearwater River and nonexistent downstream of the Dworshak Dam. Therefore, suction dredging in Moose Creek would have "**no effect**" on steelhead trout.

Bull Trout (*Salvelinus confluentus*)

Regulatory Framework: On July 10, 1998, bull trout were listed as a threatened species within the Snake River under ESA (63 FR 31647). On November 29, 2002, a proposed rule to designate critical habitat for the Klamath and Columbia River populations of bull trout was published in the Federal Register (67 FR 71235). A final rule designating critical habitat for these populations was published on October 6, 2004 (69 FR 59996). The Final Rule excluded PACFISH/INFISH areas among others. The USFWS was challenged on the Final Rule on December 14, 2004 in a complaint filed by the Alliance of the Wild Rockies and Friends of the Wild Swan. The USFWS subsequently requested a voluntary partial remand to reconsider the Final Rule. On September 26, 2005, a new Final Rule was published in the Federal Register (70 FR 56212). The Final Rule excluded areas that were already covered by approved conservation agreements and habitat management plans; the Clearwater River Subbasin was excluded from critical habitat designation.

Existing Condition and Environmental Baseline: Historical and current information regarding the physical and biological characteristics of the North Fork Clearwater River watershed are presented in the *Section 7 Watershed Biological Assessment for the North Fork Clearwater River Drainage*, dated January 31, 2000 (U.S.D.A. Forest Service - Clearwater National Forest 2000). This biological assessment also summarized the overall presence/absence, relative abundance, habitat conditions and current trends for bull trout in the North Fork Clearwater River drainage. Another two documents summarized the status of bull trout using presence/absence data within the North Fork Clearwater River drainage (Murphy et al. 1995 and Clearwater Basin Bull Trout Technical Advisory Team 1998). This information will not be presented in this biological assessment. However, specific information regarding bull trout and habitat conditions in the Moose Creek drainage will be included and expanded on in this document.

The presence or absence of bull trout within the Moose Creek drainage has been documented by several sources, but the bull trout observations have been very limited. Overall, westslope cutthroat trout is the dominant species with low numbers of rainbow/steelhead trout and bull trout (Clearwater BioStudies, Inc. 1991). Fish population information available is summarized in Table 1. The first fish population survey recorded in the Moose Creek drainage was conducted in 1983 by Moffitt and Bjornn (1984). They did not observe any bull trout in the limited fish population surveys in Little Moose Creek and Ruby Creek, both major tributaries of Moose Creek. Surveys conducted within the Swamp Creek drainage during 1989, did not indicate any bull trout in the relatively limited number of snorkeling stations (Clearwater BioStudies, Inc. 1990). A few age 1+ and 2+ bull trout were found in Moose Creek below the confluences with Deadwood Creek and Independence Creek during a stream survey conducted in 1990 (Clearwater BioStudies, Inc. 1991). Additional surveys conducted on China and Laundry creeks in 1994 did not find any bull trout in these drainages (Clearwater BioStudies, Inc. 1995). A resurvey of the 1983 survey by Moffitt and Bjornn (1984) by the Idaho Department of Fish and Game (IDFG) in 1994 did not find any bull trout at the stations in Little Moose Creek and Ruby Creek (IDFG 1995). The Osier Creek drainage was surveyed in 1995; no bull trout were observed (Isabella Wildlife Works 1996). The IDFG also resurveyed the 1994 stations in 1995-1997; no bull trout were observed in Little Moose Creek or Ruby Creek (IDFG 1998). Finally, no bull trout were observed during surveys on Ruby Creek, Craig Creek and the Little Moose Creek drainage in 1998 (Clearwater BioStudies, Inc. 1999).

Prior to 2000, the fish population data indicated that limited bull trout spawning and rearing was occurring in the Moose Creek drainage. However, additional snorkeling surveys and spawning ground counts conducted during 2000-2003 have found higher numbers of adult bull trout in the Moose Creek drainage. In 2000, the IDFG and the Forest continued a partnership project regarding bull trout studies within the North Fork Clearwater River subbasin. The five year project is primarily designed to determine the movements of adult bull trout collected from Dworshak Reservoir. The IDFG has tracked radio-tagged bull trout into the Moose Creek drainage during 2000, 2001 and 2002 (Cochner et al. 2001; Schriever and Schiff 2002, 2003; Schiff and Schriever 2004). No tagged bull trout were located in the Moose Creek drainage in 2003 (IDFG 2004) and 2004 (Schiff 2005). In 2005, IDFG tracked two tagged bull trout into the Moose Creek drainage; one was located in the Swamp Creek drainage near Pollock Creek and the other was holding in the mainstem Moose Creek downstream of Independence Creek (Schiff 2005). Although the numbers of radio-tagged fish ranged from one to two adults annually, the migration of these fish into the Moose Creek drainage indicates that a fluvial bull trout population is spawning and rearing in the drainage.

In 2000 and 2001, adult bull trout have been observed via snorkeling in the mainstem Moose Creek and in Osier Creek, tributary of Moose Creek. In 2005, IDFG snorkeled four permanent sites in the Moose Creek drainage; they did not observe any bull trout in the three sites in Little Moose Creek and the one site snorkeled in Ruby Creek (Schiff 2005).

Spawning ground surveys during 2002-2003 have found bull trout redds in lower Osier Creek and Swamp Creek. Although no spawning activity or redds were observed in the mainstem Moose Creek during the limited surveys, some spawning may occur annually in Moose Creek in gravel pockets throughout the mainstem including upstream of Craig Creek

Past and ongoing fish population monitoring surveys within the Moose Creek drainage indicates that bull trout are present, but in relatively low numbers. A summary of the fish population data shows that between 1983 and 2005, a total of 133 snorkel stations were surveyed and one or two bull trout were observed at ten of these stations (Table 1). In addition, two juvenile bull trout were observed during fish population surveys, conducted via electrofishing by the Idaho Department of Environmental Quality (IDEQ) and Nez Perce Tribe (NPT) in Little Moose Creek and Pollack Creek. Bull trout were only observed at 13 sites out of the total 135 fish population monitoring sites. A total of 15 fish were documented during these surveys.

Portions of the Moose Creek drainage have undergone extensive mining, roading and timber harvest on USFS and private lands. The Moose Creek drainage has a long history of placer mining, which extends back to the 1880's. Placer mining, mostly recreational suction dredging activities, varied over the years in intensity and continues in the traditional areas. In 1996, the majority of the private lands, with the exception of four patented mining claims parcels, were transferred to the USFS. The patented mining claims totaled 294 acres (0.6 percent of the Moose Creek drainage) and are located in the upper Osier Creek drainage (two claims - 160 acres), along 1.3 miles of Independence Creek (one claim - 98 acres) and a 0.6 mile segment along Moose Creek (one claim - 36 acres). The Independence Creek and Moose Creek patented claims have potential habitat for bull trout. The patented claims in the upper Osier Creek drainage are not located along fish-bearing streams.

Table 1. Summary of fish population data depicting the presence/absence of bull trout in fish bearing streams within the Moose Creek drainage, North Fork Clearwater River from 1983-2003 (Moffitt and Bjornn 1984; Clearwater BioStudies, Inc. 1990, 1991, 1995, and 1999; Isabella Wildlife Works 1996; Idaho Department of Fish and Game 1998, 2003, 2005; Idaho Department of Environmental Quality 1999).

Stream	Number of Fish Population Stations	Number of Stations with Bull Trout	Bull Trout Age Classes and Densities
Moose Creek (mainstem)	28	7	Age 1 (2) = 0.2/100m ² * Age 2 + (1) = 0.2/100m ² Age 4 + = (1) ** Age 4 = (2) and Age 4+ (1) ***
Little Moose Creek ^{1,2,3}	43	3	Age 4 (1); Age 0+ (1);
Little Moose Cr. Unnamed Tribs.	11	0	
Wapito Creek	2	0	
Wapito Cr. Unnamed Tribs.	4	0	
Swamp Creek	3	0	
Osier Creek (mainstem)	8	1	Age 4 + = 2 fish ****
West Fork Osier Creek	2	0	
China Creek	5	0	
Laundry Creek	5	0	
Sugar Creek	1	0	
Pollock Creek ⁴	2	1	Age 2 (1)
Independence Creek	5	0	
Deadwood Creek ⁵	2	0	
Craig Creek	2	0	
Ruby Creek ⁶	12	1	Age 1 (1) = 1.3/100m ² Age 2 (2) = 1.3/100m ²
Total	135	13	Total fish - 15

* In 1990, CBS noted three stations with bull trout; there were two stations with age 1 bull trout with a density of 0.2/100m².

** One adult bull trout observed by USFS in mainstem Moose Creek in 2000 directly downstream of Deadwood Creek.

*** Three adult bull trout observed by USFS in mainstem Moose Creek in 2001; two downstream of Osier Creek and one upstream mouth.

**** Two adult bull trout observed in Osier Creek in 2001, downstream of Swamp Creek.

¹ Idaho Department of Environmental Quality (IDEQ) performed a BURP survey on Little Moose Creek on 7/29/1998. During their electro-shocking, they captured one (age 4) bull trout (240 – 249 mm) approximately 0.25 miles upstream from the mouth.

² The Nez Perce Tribal Fisheries program was conducting a genetics survey on westslope cutthroat trout in Little Moose Creek in the summer of 1999. They electro-shocked in the upper portion of the drainage (approximately one mile downstream from Wapito Creek) and captured one (age 0) bull trout (approx. 50 mm). They also noted a (age 3) bull trout (approx. 200 mm) natural mortality near their shocking site (personal communication with Dana Weigel).

³ Idaho Department of Fish and Game has three snorkel transects in Little Moose Creek. They have snorkeled these sites from 1994 through 1997, 2001-2003 and 2005. They observed one bull trout at one of the transects in 2002.

⁴ Idaho DEQ performed a Beneficial Use Reconnaissance Project (BURP) survey on Pollock Creek on 8/11/1999. During their electro-shocking they captured one (age 2) bull trout (130 – 139 mm) approximately 1.5 miles upstream from the mouth.

⁵ No fish stations were done in Deadwood Creek during the 1990 survey. Two stations snorkeled in 2000.

⁶ Idaho Department of Fish and Game has one snorkel transect in Ruby Creek. They have snorkeled this site from 1994 through 1997, 2001 and 2005. They observed no bull trout during their surveys.

The Moose Creek drainage contains approximately 47,400 acres of which 29,000 acres (61 percent) are considered undeveloped. The upper Moose Creek (upstream of Deadwood Creek – 4,400 acres), Swamp Creek (9,900 acres), Ruby Creek (2,000 acres) and Little Moose Creek drainage (12,500 acres) are either roadless or relatively unimpacted drainages. All four drainages provide potential habitat for bull trout.

The environmental baseline was summarized using the *Matrix of pathways and indicators of watershed conditions adapted for the Clearwater River Subbasin and Lower Salmon River* (Appendix E). The environmental baseline data was determined by supporting data in the critical reaches of MO-12, MO-10, MO-08, and MO-6 (Clearwater BioStudies, Inc. 1991). Critical reaches are B3 channel types (from Rosgen stream classification) with an average gradient of 2.8 % and a dominant substrate of rubble. Because these four reaches are sensitive to sediment impacts, and are either downstream or within the proposed suction dredging area, any substantial impacts (cumulative or in some cases, individual) from the proposed activities would be measurable in these areas.

During 2003, six stream reaches within Moose Creek were re-surveyed to assess changes in habitat conditions since the previous survey in 1990. Since 1990, the Moose Creek drainage has undergone some obvious instream channel changes as result of the 1995-96 flood events. In addition, the high spring runoff in 1997 re-configured the stream channel in several areas between Deadwood Creek and Independence Creek. The 2003 survey found that substrate conditions remained the same in the stream reach (MO-04) upstream of Deadwood Creek (Clearwater BioStudies, Inc. *in press*). Substrate conditions showed a slight improvement in the two streams reaches immediately downstream of Deadwood Creek; the cobble embeddedness levels decreased three percent in the Deadwood Creek to Independence Creek stream reach (MO-06) and eight percent in the reach immediately downstream of Independence Creek (MO-7). The lower three stream reaches in Moose Creek drainage were located between Osier Creek and the confluence with the North Fork Clearwater River (MO-12, 15 and 16). These three reaches showed increases in cobble embeddedness (two to eight percent) which is expected due to the lower gradient and depositional characteristics of these stream reaches and the recent landslide history. Substrate conditions within all six stream reaches within Moose Creek meet the desired sediment objectives for the “high fishable” standard within the Forest Plan.

Stream substrate conditions were also re-surveyed in the lowest reach of Independence Creek (ID-6) and Deadwood Creek (DD-4). Independence Creek showed a moderate improvement of substrate conditions with cobble embeddedness levels decreasing from 43 percent in 1990 to 32 percent in 2003. However, cobble embeddedness levels in the lower reach of Deadwood Creek indicated a substantial degradation of substrate conditions; cobble embeddedness levels increased from 16 percent in 1990 to 32 percent in 2003. The substantial increase in fines within the substrate of Deadwood Creek is most likely due to the six landslides that occurred during the 1995/96 flood events. These landslides originated from the existing road network in the headwaters and deposited unknown amounts of sediment into several tributaries of Deadwood Creek. These sediment deposits are being transported downstream and are most likely the cause of the elevated cobble embeddedness levels in the lower reach of Deadwood Creek. Forest has conducted road surveys within the Deadwood Creek drainage and has identified potential roads for decommissioning pending environmental analyses and funding.

Substrate conditions within the lower reach of Independence Creek meet the desired sediment objectives for the "high fishable" standard within the Forest Plan. The substrate conditions in the lower reach of Deadwood Creek do not meet the desired sediment objectives; the current 32 percent cobble embeddedness level exceeds the desired sediment objective of 25-30 percent cobble embeddedness for the "high fishable" standard for higher gradient "A" channel types.

Effects of Proposed Action: The effects of suction dredging (under the "one step" permit) primarily involve changes in substrate conditions and instream cover, thereby affecting spawning and rearing habitat for salmonids. Changes in water quality conditions (i.e. turbidity and suspended sediment levels) also occur in localized areas during project operations.

Instream activities within various streams within the Moose Creek drainage have the potential to affect bull trout directly through displacement or indirectly through altered habitat conditions. Although existing bull trout numbers are low, potential habitat in upper Moose Creek exists for bull trout production. Due to the past mining, road construction and timber harvest, habitat conditions have been degraded in the Moose Creek drainage; the drainage has been designated an adjunct watershed for future bull trout recovery efforts. Drainages that have been affected by past mining activities include: mainstem Moose Creek (mouth to 1.0 miles upstream Deadwood Creek), lower Deadwood Creek, and the majority of the Independence Creek drainage.

Several provisions under the "one step" suction dredging permit are considered mitigation measures to minimize or avoid impact to bull trout. The most recent change of shortening the mining season to August 15 to avoid the spawning season of bull trout is considered the most effective mitigation provision. Potential bull trout spawning areas have been identified in the mainstem Moose Creek between Independence Creek and Deadwood Creek, and lower Independence Creek. Six suction dredge operations are scheduled to operate in 2006 and 2007 within or adjacent to these areas; the timing restriction will avoid impacts to spawning bull trout. Another effective provision entails the prohibition of dredging or processing of stream bank materials which avoids the introduction of "new" sediments in the streams. Additional mitigation and conservation measures are referenced in a following section of this Biological Assessment.

Due to the limited number of dredging operations operating at anyone time, the small areas being disturbed, and the low numbers of bull trout suspected in the mining areas, it is very unlikely that mining operations will have any direct impacts on juvenile bull trout. Potential effects of entrainment of juvenile bull trout via suction dredging are considered insignificant and discountable.

The specifics regarding the proposed suction dredge mining for the 2006 and 2007 mining seasons are summarized in Appendix C. The total linear stream distance proposed for dredging is about 2,300 feet or 3.1 percent of the total distance of fish bearing streams in the Moose Creek, Independence Creek and Deadwood Creek drainages (Table 2). A closer examination reveals that 15,980 ft² of stream will be affected by dredging in 2006 and the same amount in 2007; this is approximately 1.1 percent of the total area of fish-bearing streams in the Moose Creek, Independence Creek and Deadwood Creek drainages. All of the areas proposed for suction dredging in 2006 and 2007 have been altered via mining activities in past years.

Due to the limited number of dredging operations operating at anyone time, the small areas being disturbed, and the mitigation measures mandated under the permit process, any sediment

produced by suction dredging would not be measurable in lower Moose Creek and nonexistent downstream in Kelly Creek.

On November 29, 2002, a proposed rule to designate critical habitat for the Klamath and Columbia River populations of bull trout was published in the Federal Register (67 FR 71235). The proposed designation of the Moose Creek drainage as critical bull trout habitat requires the Forest to confer with the USFWS on any agency action which is likely to result in the destruction or adverse modification of proposed critical habitat. The following critical habitat evaluation was completed for the proposed suction dredging biological assessment for 2004 and 2005 mining seasons (U.S.D.A. Forest Service - Clearwater National Forest 2004). On September 26, 2005, a new Final Rule was published in the Federal Register (70 FR 56212). The Final Rule excluded areas that were already covered by approved conservation agreements and habitat management plans; the Clearwater River Subbasin was excluded from critical habitat designation. As support to the effects analysis the critical habitat evaluation was retained for this biological assessment.

Table 2. Comparison of proposed annual suction dredging areas (2006 and 2007) and total stream lengths and acreages for the major streams within the mining area, Moose Creek drainage, North Fork Clearwater River.

Statistic	Total Linear Stream Distance (ft)	Total Linear Stream Distance Proposed for Dredging (ft)	Total Fish-Bearing Stream Area (ft²)	Total stream area Proposed for Dredging (ft²)
Moose Creek	45,983	1,653 (3.59%)	1,232,838	11,640 (0.94%)
Independence Creek	19,817	499 (2.51%)	182,360	3,340 (1.83%)
Deadwood Creek	9,056	150 (1.7%)	88,964	1,000 (1.12%)
Total	74,856	2,302 (3.08%)	1,504,163	15,980 (1.06%)

Regulations implementing Section 7(a)(2) of the ESA define destruction or adverse modification of critical habitat as alteration of constituent elements "that appreciable diminishes the value of critical habitat for both the survival and recovery of a listed species" (50 CFR 402.02). The nine constituent elements listed in the proposed rule and any potential impacts requires the Forest to confer with the USFWS on any agency action which is likely to associated with the proposed suction dredging activities are summarized below:

- *Permanent water having low levels of contaminants such that normal reproduction, growth and survival are not inhabited.* As noted in the effects analysis above, suction dredging will low to moderate effects to designated habitat in the Moose Creek drainage.

The conservation and mitigation measures are expected to minimize any adverse changes to stream habitat conditions.

Water temperatures ranging from 2 to 15°C (36 to 59°F), with adequate thermal refugia available for temperatures at the upper end of this range. Specific temperatures within this range will vary depending on bull trout life history stage and form, geography, elevation, diurnal and seasonal variation, shade, such as that provided by riparian habitat, and local groundwater influence. The suction dredging activities proposed will not alter the streamside shade within Moose Creek drainage. The conservation and mitigation measures will avoid/ minimize impacts to riparian areas and subsequent changes in shade and water temperatures.

Complex stream channels with features such as woody debris, side channels, pools, and undercut banks to provide a variety of depths, velocities, and instream structures. Suction dredging activities are expected to have low to moderate adverse impacts to this element. Although conservation and mitigation measures prohibit stream bank disturbance and movement of large LWD and boulders, dredging is expected to have short-term adverse effects to pool habitats and substrate conditions.

Substrates of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine substrate less than 0.63 cm (0.25 in) in diameter and minimal substrate embeddedness are characteristic of these conditions. As noted above, sediment impacts from suction dredging activities will be localized and primarily involve the redistribution of substrate materials; no "new" sediments from the stream banks or terrestrial sources would be introduced to the stream. Restricting suction dredging prior to the bull trout spawning period would avoid direct impacts to bull trout spawning, egg and embryo overwinter survival and fry emergence. Other than localized, short-term changes to water quality (turbidity) and substrate conditions (sediment levels) in the vicinity of suction dredging activities, no long-term changes in substrate conditions are expected.

A natural hydrograph, including peak, high, low, and base flows within historic ranges or, if regulated, a hydrograph that demonstrates the ability to support bull trout populations. The hydrograph of Moose Creek is un-regulated and natural. Therefore, Moose Creek and its tributaries that have or potentially have the ability to support bull trout populations will maintain favorable hydrographs.

Springs, seeps, groundwater sources, and subsurface water connectivity to contribute to water quality and quantity. The conservation and mitigation measures will avoid/minimize impacts to riparian areas.

Migratory corridors with minimal physical, biological, or chemical barriers between spawning, rearing, overwintering, and foraging habitats, including intermittent or seasonal barriers induced by high water temperatures or low flows. The conservation and mitigation measures will avoid/minimize impacts to migrating bull trout.

An abundant food base including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish. Suction dredging activities are expected to have no impacts to terrestrial sources, but low to moderate adverse impacts in localized areas regarding macroinvertebrates and forage fish. The conservation and mitigation measures

are expected to minimize long-term adverse changes to stream habitat conditions.

Few or no predatory, interbreeding, or competitive nonnative species present. Suction dredging activities proposed will not alter the aquatic fish assemblages within Moose Creek drainage.

Cumulative Effects regarding State and Private Lands: As defined in 50 CFR 402.02, cumulative efforts are "those effects of future state and private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation". With the exception of four patented mining claims, the Moose Creek drainage is under the administration of the USFS. The patented mining claims, which totaled 294 acres, make up a small percentage of the Moose Creek drainage (0.6 percent). Overall mining activities in these four patented claims have been limited in past years. One suction dredge operation (4-inch dredge) has been operating within the claim along Moose Creek. No substantial mining activity has been observed in the two claims within the Osier Creek drainage the past several years. These two claims are located within the non-fish bearing headwaters adjacent to Deception Saddle. As noted above, only two patented claims (those located along Independence Creek and Moose Creek) have the potential to directly affect bull trout spawning and rearing. Mining activity has been noted within the claim along Independence Creek, but the level and extent of the activity is not known.

Considering a worst-case scenario, if all of the fish bearing streams within these patented claims (Moose Creek and Independence Creek) were mined in 2006 or 2007, the total stream distance would be approximately 10,000 feet or about three percent of the entire fish bearing streams in the Moose Creek drainage. Cumulatively, the total dredging activities, including USFS lands would be about 12,300 feet or about four percent of the fish bearing streams in the Moose Creek drainage (16 percent of the Moose Creek, Independence Creek and Deadwood Creek drainages). Of course, the actual mining on the patented claims is expected to be only a fraction (less than 1,000 feet) of the entire claimed area based on past several years. Therefore, the total distance of fish bearing streams expected to be affected in 2004 and 2005 is approximately 3,300 feet each year (6,600 feet for both years) or about one percent each year (two percent for both years). Surveys have indicated minimal spawning gravels in the upper reaches of Independence Creek including the patented claim areas. Therefore, effects to bull trout within the patented claim along Independence Creek is expected to primarily affect migration and possibly adult and sub-adult rearing. Based on observations of juvenile bull trout and the presence of potential spawning habitat downstream of the Deadwood Creek confluence, spawning and early rearing of bull trout most likely occurs adjacent or within the patented claim in Moose Creek. Due to the small scale dredging operation and the small areas being disturbed in the Moose Creek patented claim area, effects to bull trout spawning and early rearing is considered minimal.

Cumulative Effects downstream of the Moose Creek Drainage: The potential impacts from the proposed suction dredging in the Moose Creek drainage during 2006 and 2007 on the bull trout populations in the North Fork Clearwater River drainage is expected to be insignificant and discountable. As noted above, current information suggests that the Moose Creek drainage contributes a small number of the bull trout to the North Fork Clearwater River. Information available prior to 1995 indicated that stronger populations of bull trout were present in other drainages in the North Fork Clearwater River drainage; these were designated focal drainages

(Figure 2). With the exception of some minor adjustments, information collected since 1995 has not justified major changes in habitat designations.

Due to the small scale of the dredging operations operating at anyone time, the small areas being disturbed, and the mitigation measures mandated under the permit process, any sediment produced by suction dredging would not be measurable downstream of the Moose Creek drainage in Kelly Creek. Since no riparian vegetation or bank alterations would occur with the proposed mining activities, no changes in water temperatures are expected in Moose Creek. Therefore no effects to downstream bull trout within Kelly Creek or the mainstem North Fork Clearwater River is expected as suction dredging activities within the Moose Creek drainage.

Mitigation and Conservation Measures: As directed by Section 7 (a) (1) of the ESA, the Forest proposes the implement the following mitigation and conservation measures in 2006 and 2007 to minimize or avoid adverse effects of the proposed suction dredging activities on bull trout populations and habitat. These measures also include a means to gather additional information on the locations of bull trout spawning and early rearing habitat for future consultation efforts. In addition to these measures the operators must comply with the protection measures detailed in Appendix A of the 2004 Biological Opinion issued by the USFWS and subsequently included in the Final Environmental Impact Statement.

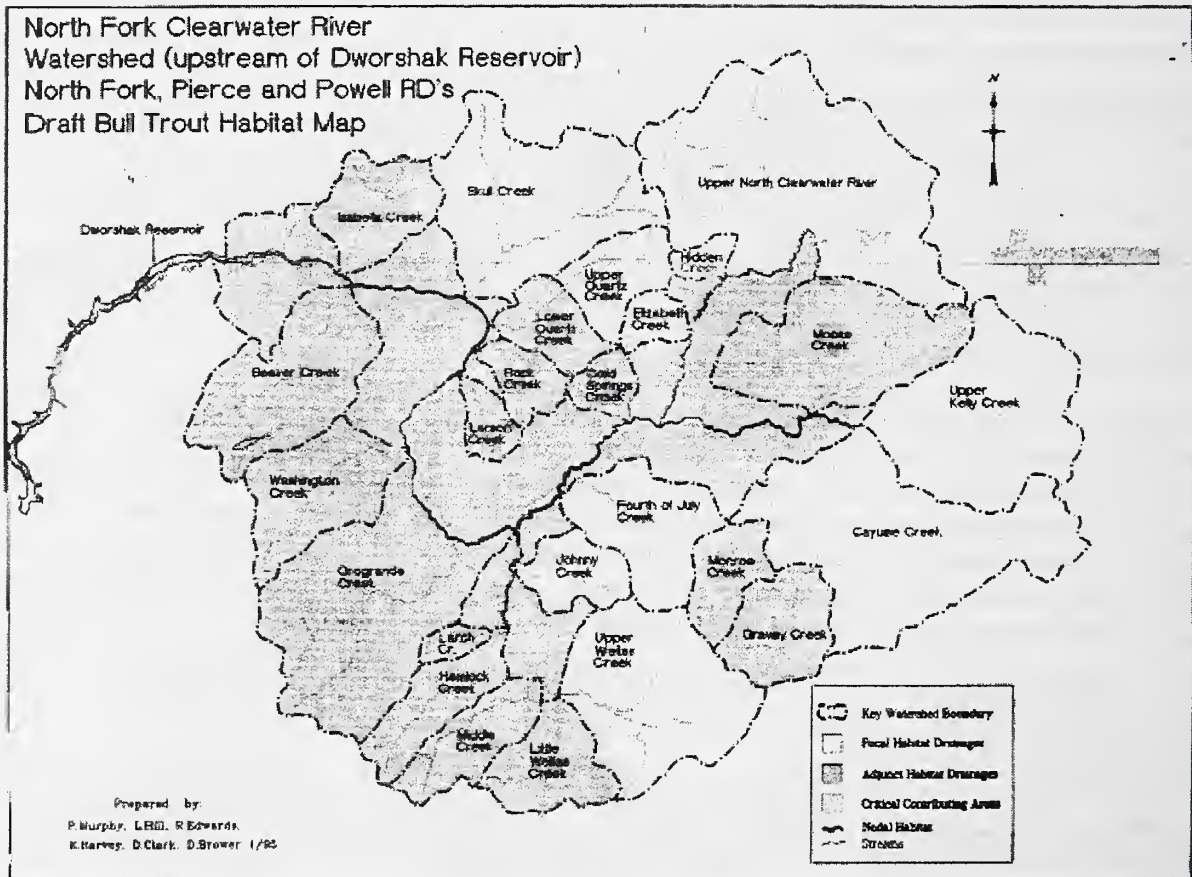
(1) *Implementation Monitoring* - The Forest Geologist will conduct field monitoring of individual suction dredging operations throughout the July 1 to August 15, 2006 and 2007 mining seasons. Each mining operation will be monitored between 5 and 23 days dependent upon the proposed length of the mining operation (Appendix C). District personnel, Forest Hydrologist and Forest Fisheries Biologist will also assist the Forest Geologist in the implementation monitoring. The Forest Geologist will provide the Level One Team a report summarizing the mining activities that occurred in 2006 and 2007.

(2) *Effectiveness Monitoring* - The Forest Hydrologist and Forest Fisheries Biologist will conduct field reviews of each mining activity and assess the effectiveness of the permit provisions (as outlined in the "one step" permit). Any additional recommendations for the 2006 and future years will be documented for the Level One consultation process. As recommended during the 2001 Level One field review, the Forest will implement the following specific effectiveness monitoring measures in 2006 and 2007:

- a). Photo points depicting the stream and riparian conditions prior to and following mining operations will be established at selected mining operations. Digital photos will be taken at the actual mining sites and directly downstream of the mining operations.
- b). Substrate monitoring sites will be established at selected mining operations. Wolman pebble counts will be completed on in selected areas that were mined and immediately downstream.

(3) *Bull Trout Monitoring* - Under the direction of the Forest Fisheries Biologist, forest personnel (biologists and biotechnicians) will completed fish population surveys (via snorkeling) on Moose Creek and selected tributaries during July and August to assess bull trout presence/absence and identify juvenile rearing areas. Bull trout spawning ground surveys will continue to be completed during August 28 and October 15, 2006 and 2007 to identify bull trout

North Fork Clearwater River
 Watershed (upstream of Dworshak Reservoir)
 North Fork, Pierce and Powell RD's
 Draft Bull Trout Habitat Map



Prepared by:
 P. Murphy, L.H.H. R. Edwards,
 K. Harvey, D. Clark, D. Stover 1/95

spawning areas. The Forest Fisheries Biologist will document the results of the surveys for the Level One consultation process.

(4) *General Mitigation Measures* - The following activities are prohibited under the "one step" recreational dredging permit for the State of Idaho (see form 3804-A 2/00). Implementation monitoring will assess compliance of each operation and notify the Idaho Department of Water Resources where violations are observed.

Disturbance of any vegetated stream bank or undercutting of any stream bank areas.
Hydraulic mining operations of any type or introduction of material from outside the stream channel.

Damming of a stream channel for any reason.

Removal of boulders from the streambed to the bank.

Deposition of discharged material to redirect stream current.

(5) *Specific Mitigation Measures* - As discussed and agreed to by the Level One Team, several restorative actions were identified as necessary to minimize effects to bull trout. As recommended during the 2001 Level One field review, the mining operators will implement the following specific mitigation measure in 2006 and 2007:

- a) Substrate materials moved and/or relocated from the streambed during the mining operation will be placed back into the original location. For example, substrate material will not be left along banks or in piles within the stream channel. All mining depressions (artificial pools) will be filled in with the dredge materials.
- b) As recommended during the 2000 field review, the following actions need to be continued at the Three Feathers mining claim at the confluence of Independence Creek and Moose Creek:

Stream banks need immediate restoration along Independence Creek and Moose Creek at the confluence of these streams where mining activities during previous years have affected the stability.

Mining operations during the 2006 and 2007 mining seasons will have concurrent reclamation; areas previously worked will be restored while new areas are being mined.

The operations will provide adequate water depth in the primary stream channel to allow for fish mitigation.

Gravels will not be sorted and deposited in one area; gravels need to be re-distributed with existing larger substrate materials to avoid creating artificial spawning areas.

- c) In addition to the general and site specific mitigation measures noted above, operators must comply with the 29 protection measures detailed in Appendix A of the 2004 Biological Opinion issued by the USFWS (U.S. Fish and Wildlife Service. 2004).

Determination: The suction dredging activities will avoid impacts to adult spawning, egg incubation and fry emergence because dredging operations would occur after before August 15 when bull trout spawn and eggs are within the substrate. Potential effects of entrainment of juvenile bull trout via suction dredging are considered insignificant and discountable. During 2000-2001 mining seasons, the infrequent sightings of bull trout during previous fish population surveys in the Moose Creek drainage led to a “may affect, not likely to adversely affect” determination. However, fish population and spawning surveys during the 2000-2001 have found adult spawners in the drainage and spawning activity in Osier Creek. In addition, bull trout spawning have been documented in the Osier Creek drainage during 2002 and 2003 and within the Moose Creek and Swamp Creek drainages in 2005. Therefore, suction dredging activities may have short-term minimal impacts on individual bull trout due to an increase in turbidity, localized increases in sedimentation, and fish movements during project implementation. These impacts are expected to be minimal, but the effects cannot be considered negligible. Therefore, the determination for the suction dredging in the Moose Creek drainage is **may affect, likely to adversely affect** bull trout and their continued existence in the Moose Creek drainage. The proposed suction dredging may have short-term adverse effects to proposed bull trout critical habitat in the Moose Creek drainage, but because it is limited in scope, both spatially and temporally, is **not likely to destroy or adversely modify that habitat**.

/s/ Patrick K. Murphy January 19, 2006
Patrick K. Murphy
Forest Fisheries Biologist

/s/ Dan Davis January 19, 2006
Dan Davis
Forest Wildlife Biologist

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APPENDIX A
RESULTS OF 2001 SUCTION DREDGE MINING
MOOSE CREEK DRAINAGE
NORTH FORK CLEARWATER RIVER

MOOSE CREEK DRAINAGE SUCTION DREDGING 2001

Of the 12 proposals received, only eight operators suction dredged in the Moose Creek drainage during the 2001 season. The eight operations were scattered along Moose Creek, Independence Creek, and Deadwood Creek. The following is a list of suction dredge operators; dredge sizes; days dredged; and length of disturbance:

DREDGE MINER	NOZZLE SIZE	DAYS OPERATED	LENGTH OF DISTURBANCE	STREAM
Andrews, T.K.	4"	10 days	100 ft.	Deadwood Cr.
Blimka, Gerald Marvel, Billy	5"	14 days	85 ft.	Moose Cr.
Hoskins, Howard Nawocki, Rodger	2"	2 days	5 ft.	Independence Cr.
Neuman, Rod	4"	40 days	120 ft.	Moose Cr.
Root, Eric	4"	14 days	165 ft.	Independence Cr.
Thomas, Jim	2-1/2"	3 days	5 ft.	Moose Cr.
Whitcomb, Jay	4"	15 days	60 ft.	Moose Cr.
Yount, Larry	4"	15 days	30 ft.	Moose Cr.
Allert, Clinton	0	0 days	0 ft.	Independence Cr.
Kircher, Carol Kircher, Ben	0	0 days	0 ft.	Moose Cr.
Porter, Larry	0	0 days	0 ft.	Moose Cr.
Powers, Ray	0	0 days	0 ft.	Moose Cr.
TOTAL		113	570 ft.	

Jay Whitcomb (Three Feathers Claim located at the confluence of Moose/Independence Creeks) attempted to level several piles of rocks he stacked in past years along the stream bank. Not all piles were leveled.

Most of the suction dredgers complied with the State of Idaho's standards and criteria for suction dredging. Two operators, however, stacked rocks. TK Andrews piled rocks along the banks of Deadwood Creek. Rod Neuman stacked rocks near along his dredge holes in Moose Creek.

Because of fires and other work details, the suction dredgers were only monitored for 3 days during the 2001 season.

APPENDIX B
MEMO – DETERMINATIONS - SUCTION DREDGE MINING
MOOSE CREEK DRAINAGE
NORTH FORK CLEARWATER RIVER

Paul: As we agreed during our phone conversation this past Thursday (August 8), the following is a summary of the information we used to support the change in determination from a not likely to adversely affect (NLAA) or likely to adversely affect (LAA) regarding the recreational suction dredging in the Moose Creek drainage. Although most of this information is referred to in the biological assessment (BA), it was included in different sections and not summarized in this format.

The NLAA determination for the 2000 mining season was based on (1) low numbers of bull trout documented in the project area, (2) absence of any documented spawning and subsequent early rearing of juvenile bull trout, and the (3) relatively degraded habitat conditions due to past activities. The BA and letter of concurrence (LOC) included provisions to increase sampling via fish population and spawning surveys.

In 2001, the determination of NLAA or LAA was considered due to the information collected during 2000. The fish population surveys conducted by the Forest found one sub-adult bull trout in the project area (Moose Creek near Deadwood Creek). Spawning surveys conducted by the IDFG and Forest found five bull trout redds in the Osier Creek (3) and Swamp Creek (2). The IDFG located two tagged bull trout in the Moose Creek drainage (Moose Creek and Swamp Creek) during their bull trout studies. These two tagged fish represented about 10 percent of the fish (21 fish tagged) that were tagged in Dworshak Reservoir in 2000.

Even though the data collected in 2000 suggested that the Moose Creek drainage supported more bull trout we originally suspected, a NLAA determination was made and with the stipulation that more fish population data needs to be collected to if the spawning population is only in the Osier Creek drainage, thereby avoiding the majority of mining effects to early rearing areas.

During 2001, fish population surveys conducted by the Forest found two sub-adult and one adult bull trout within the mainstem Moose Creek. Two additional adult bull trout were sighted in lower Osier Creek. None of these fish were tagged. IDFG located two tagged bull trout in the Moose Creek drainage (Moose Creek downstream of Little Moose Creek and Swamp Creek). These two tagged fish were two of 72 fish tagged in Dworshak Reservoir in 2001. Due to the high kokanee numbers spawning in the Moose Creek drainage, no bull trout spawning surveys were possible. However, some spawning most likely occurred in Osier Creek and other areas.

Considering the additional fish population data collected in 2001, the Level One team decided to upgrade the determination to a LAA based on the situation that the limited survey efforts have been consistent in finding adult bull in the drainage and that spawning is most likely occurring in various drainages. The surveys were supported by IDFG's bull trout studies which shows a portion of the fluvial (adfluvial) bull trout in the North Fork Clearwater River subbasin are migrating and spawning in the Moose Creek drainage. In addition to potential effects to migrating adult bull trout and sub-adult rearing, instream activities can have major impacts to juvenile fish. Bull trout spawning within or upstream of the project area increases the risks of adverse effects as early rearing of 0+ and 1+ fish may be directly or indirectly impacted by instream activities. The 2000 spawning surveys concluded that no major spawning areas were identified in the areas surveyed and spawning may occur in "pocket" areas wherever the habitat is available. Therefore, the lack of intensive fish population and spawning data over a period of years supports the contention to err on the side of the fish when assessing risks to habitat and potential harm or harassment to bull trout.

Supplemental to the increased presence of bull trout, the Level One team also noted some problems with dredging activities in 2001 (bank alterations and stream channel modifications) that would have longer-term effects to bull trout habitat and prolong recovery efforts in the drainage. Although habitat conditions in the project area are considered fair to marginal for bull trout rearing, recent water temperature data shows water temperatures are better than we expected (albeit still warmer than desired conditions) and more conducive to bull trout than Lolo Creek (the other major bull trout drainage with recreational suction

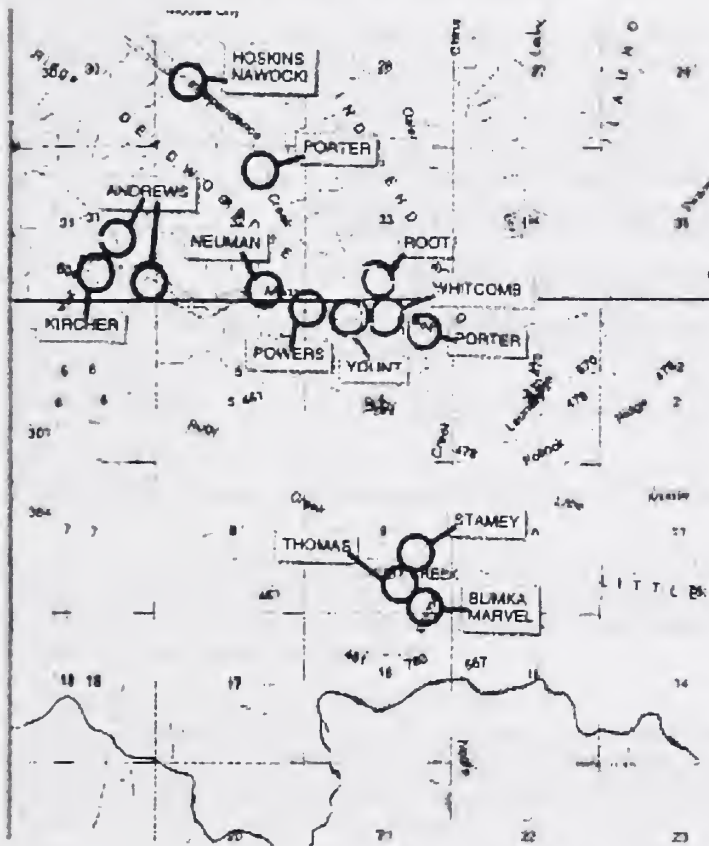
dredging activities on the Forest). Therefore, based on the presence of bull trout (even in the current habitat conditions), we would have to consider the Moose Creek drainage a good recovery area for bull trout.

Data collected by the IDFG this summer shows that one adult bull trout (tagged in Dworshak Reservoir) is currently residing in Moose Creek; additional radio tracking and snorkeling by IDFG is planned through September. This year, extensive fish population (snorkeling) and spawning surveys are planned for August and September.

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APPENDIX C
LOCATIONS OF SUCTION DREDGE MINING CLAIMS
MOOSE CREEK DRAINAGE
NORTH FORK CLEARWATER RIVER

**MOOSE CREEK
PROPOSED SUCTION DREDGE SITES
T. 39 N., R. 11 E. & T. 40 N., R. 11 E.**



Streams
Proposed
Dredge Site



APPENDIX D
SPECIFIC PROJECT INFORMATION
SUCTION DREDGE MINING CLAIMS
MOOSE CREEK DRAINAGE
NORTH FORK CLEARWATER RIVER

There are 22 placer mining claims listed in the Bureau of Land Management mining claim database in the Moose Creek drainage. We have received 13 proposals to suction dredge in Moose Creek. The proposals are scattered from Ruby Creek (T. 39 N., R. 11 E., sec. 9) upstream (and including Independence Creek and Deadwood Creek tributaries) to T. 40 N., R. 11 E., sec. 31. The following is a list of the suction dredge operators; dredge sizes; days dredging; estimated length of disturbance; estimated area of disturbance and minimum days the Forest Service will monitor:

OPERATOR	NOZZLE SIZE (inches)	MAX. DAYS OPERATING	MAX. LENGTH OF DISTURBANCE (feet)	MAX. AREA OF DISTURBANCE (square ft.)	MAX. AREA OF DISTURBANCE (acres)	DAYS MONITORED
Thomas, Jim	2-1/2"	10	28	200	>0.01	5
Blimka, Gerald						
Marvel, Billy	5"	20	225	1400	0.03	10
Whitcomb, Jay	4"	46	332	2000	0.05	23
Yount, Larry	5"	46	300	3000	0.07	23
Powers, Ray	4"	10	20	200	>0.01	5
Neuman, Rod	4"	46	332	2000	0.05	23
	4"	14	84	840	0.02	7
	4"	46	332	2000	0.05	23
	4"	46	332	2000	0.05	23
Root, Eric	4"	14	84	840	0.02	7
Hoskins, Howard						
Nawocki, Rodger	2"	46	83	500	0.02	22
Deadwood Creek						
Andrews, T.K.	4"	20	150	1000	0.02	10

The area and length of disturbance are estimations based on the dredge nozzle area. All of the miners have submitted the maximum number of days they may operate. The area and length of disturbance is an estimation based on the volume of material excavated per hour for 1-1/2" to 5" suction dredges*. The estimate assumes an average 5-hour workday. The depth to bedrock varies from 2 feet to 9 feet.

* SUCTION DREDGE EXCAVATION POTENTIAL

There are several factors controlling the volume of gravels processed per hour by a suction dredge. Compacted substrate, boulder factors, and large cobbles all can slow an operation down. Equipment setup, fueling, breakdowns, plugged nozzles or hoses, and operator fatigue will also slow production. For efficient gold recovery, the volume of gravels processed will vary according to the sluice box width and riffle configuration. Realistically, 5-inch suction dredges actually process an average of two cubic yards of gravel per hour. The following factors were calculated for suction dredges with nozzle diameters ranging from 1-1/2 inches to 4 inches using two cubic yards/hour using a 5-inch dredge as the baseline:

Nozzle Diameter	Area (Cu. In.)	Factor	Cubic Yards Per Hour
5"	19.64	1	2
4"	12.57	0.64	1.3
3"	7.07	0.36	0.7
2-1/2"	4.91	0.25	0.5
2"	3.14	0.16	0.3
1-1/2"	1.77	0.09	0.2

*Area = πr^2

*Factor = nozzle area/19.64

*Cubic Yards/Hour = Factor * 2 Cubic Yards/Hour

APPENDIX E
ENVIRONMENTAL BASELINE INFORMATION
PROJECT EFFECTS ANALYSIS
SUCTION DREDGE MINING CLAIMS
MOOSE CREEK DRAINAGE
NORTH FORK CLEARWATER RIVER

Drainage: Moose Creek
 Watershed: Kelly Creek
 Subbasin: North Fork Clearwater River

Project or Actions	Suction Dredging – USFS Lands	Suction Dredging Patented Lands
Watershed Road Density		ND
Streamside Road Density		ND
Landslide Prone Road Density		ND
Disturbance History		
Riparian Vegetation Condition		ND
Peak/Base Flow		
Water Yield (ECA)		
Sediment Yield		ND
Width/Depth Ratio		ND
Stream Bank Stability		ND
Floodplain Connectivity		ND
Temperature - Spawning		ND
Temperature -Rearing and Migration		ND
Turbidity or Suspended Sediment	-4	-4
Chemical Contaminants - Nutrients	-2	ND
Physical Barriers - Adults	-1	ND
Physical Barriers - Juvenile	-1	ND
Cobble Embeddedness	-2	ND
% Fines (Surface or by Depth)	-2	ND
Large Woody Debris	-2	ND
Pool Frequency	-4	ND
Pool Quality	-4	ND
Off-Channel Habitat		
Habitat Refugia		
Harassment	-3	-3
Redd Disturbance		ND
Juvenile Harvest	-2	ND

ND – no data

Blank boxes indicate no effect on the indicator by the action

Probability of Effect					
Potential Level of Effect	None	Very Low	Low	Moderate	High
None	0	0	0	0	0
Very Low	0	1	1	1	1
Low	0	1	1	2	2
Moderate	0	2	3	3	4
High	0	3	4	4	4

**CHECKLIST FOR DOCUMENTING ENVIRONMENTAL BASELINE AND
EFFECTS OF ACTION (S) ON RELEVANT INDICATORS**

Drainage: Moose Creek

Watershed: Kelly Creek

Subbasin: North Fork Clearwater River

<u>PATHWAYS:</u> INDICATORS	ENVIRONMENTAL BASELINE ¹			EFFECTS OF THE ACTION (S)		
	High	Moderate	Low	Restore ²	Maintain ³	Degrade ⁴
<u>Watershed Conditions:</u>						
Watershed Road Density		2.2 mi./mi. ²			X	
Streamside Road Density			2.3 mi./mi. ²		X	
Landslideprone Road Density		1.5 mi./mi. ²			X	
Riparian Vegetation Condition		No Data			X	
Peak/Base Flow		5 %			X	
Water Yield (ECA)	5.6 %				X	
Sediment Yield	0 %				X	
<u>Channel Condition & Dynamics:</u>						
Width/Depth Ratio		23.5			X	
Stream bank Stability			3.8		X	
Floodplain Connectivity		No Data			X	
<u>Water Quality:</u>						
Temp - Bull Trout Spawning			17.2° C 9/1/94		X	
Temp- Bull Trout Incubation			17.2° C 9/1/94		X	
Temp - Bull Trout Rearing			22.4° C		X	

¹Indicators of high, moderate, or low habitat condition.

²For the purposes of this checklist, "restore" means to change the function of an indicator for the better, or that the rate of restoration rate is increased.

³For the purposes of this checklist, "maintain" means that the function of an indicator will not be degraded and that the natural rate of restoration for this indicator will not be retarded.

⁴For the purposes of this checklist, "degrade" means to change the function of an indicator for the worse, or that the natural rate of restoration for this indicator is retarded. In some cases, a low environmental baseline indicator maybe further worsened, and this should be noted.

PATHWAYS: INDICATORS	ENVIRONMENTAL BASELINE ¹			EFFECTS OF THE ACTION (S)		
	High	Moderate	Low	Restore ²	Maintain ³	Degrade ⁴
			7/27/94			
Turbidity/Suspended Sediment		No Data				X
Chemical Contamination/Nutrients		No Data			X	
<u>Habitat Access:</u>						
Physical Barriers - Adult	X				X	
Physical Barriers - Juvenile	X				X	
<u>Habitat Elements:</u>						
Cobble Embeddedness		26.4 %			X	
Percent Surface Fines		No Data			X	
Percent Fines by Depth		No Data			X	
Large Woody Debris A = acting P = potential (# / 100m)			A=3.8 P=3.6		X	
Pool Frequency (primary pools)		No Data			X	
Pool Quality			1.3		X	
Off-channel Habitat		No Data			X	
Habitat Refugia		No Data			X	
<u>Take:</u>						
Harassment		X				X
Redd Disturbance		X			X	
Juvenile Harvest		X			X	
<u>Bull Trout Subpopulation Characteristics & Habitat Integration:</u>						
Subpopulation Size			X		X	
Growth and Survival			X		X	
Life History Diversity, Isolation			X		X	
Persistence & Genetic Integrity			X		X	
Integration of Species and Habitat Conditions			X			X

A. ENVIRONMENTAL BASELINE DATA:

The environmental baseline data was determined by supporting data in the critical reaches of MO-12, MO-10, MO-08, and MO-6 (from Habitat conditions and salmonid abundance in selected streams within the Moose Creek drainage, North Fork Ranger District, Clearwater BioStudies 1991). The critical reaches are B3 channel types (from Rosgen stream classification) with an average gradient of 2.8 % and a dominant substrate of rubble.

Cutthroat trout were the dominant species (when surveyed in 1990), rainbow/steelhead and bull trout were also observed. Bull trout were seen at three of the six snorkel stations on Moose Creek below Deadwood Creek. In 2000 and 2001, adult bull trout have been observed in the mainstem Moose Creek and in Osier Creek, tributary of Moose Creek. Spawning ground surveys during 2001-2003 have found bull trout redds in lower Osier Creek and Swamp Creek; no spawning activity or redds were observed in the mainstem Moose Creek.

B. WATERSHED CONDITIONS

1. Watershed Road Density: Used Supervisors Office records.
 - a) Environmental baseline = Moderate, at 2.2 miles of road/mile².
 - b) Effects of actions = Maintain.
2. Streamside Road Density: Used Supervisors Office records.
 - a) Environmental baseline = Low, at 2.3 miles of road/mile².
 - b) Effects of actions = Maintain.
3. Landslide Road Density: Used Supervisors Office records.
 - a) Environmental baseline = Moderate, at 1.5 miles of road/mile².
 - b) Effects of actions = Maintain.
4. Riparian Vegetation Condition:
 - a) Environmental baseline = No data is available.
 - b) Effects of actions = Maintain. Removal or alterations of riparian vegetation is not permitted.
5. Peak/Base flow: Used WATBAL watershed model for increased percentage of the peak runoff.
 - a) Environmental baseline = Moderate at 5.0 %.
 - b) Effects of actions = Maintain.
6. Water Yield (ECA): Used WATBAL watershed model to get ECA / total watershed acres.
 - a) Environmental baseline = High at 5.6 %.
 - b) Effects of actions = Maintain.
7. Sediment Yield: Used WATBAL watershed model which calculated tons/mile/year for the three-year mean for increased sediment.
 - a) Environmental baseline = High at 0 %.
 - b) Effects of actions = Maintain. Since soil-disturbing activities (i.e. stream bank alterations) is not permitted, no additional sediment will be transported into the stream channel.

C. CHANNEL CONDITIONS AND DYNAMICS

1. Width/Depth Ratio: Bankfull width and max. Bankfull depth data was used from cross sectional area in reach one at the mouth (1990 Clearwater National Forest data).
 - a) Environmental baseline = Moderate. The width/depth ratio is 23.5.
 - b) Effects of actions = Maintain. Since no excavation of the stream banks is permitted, the width/depth ratio is not expected to increase. Some local decreases in width/depth ratios may occur and these would be considered a positive effect.
2. Stream bank stability: Stream bank stability was determined by using a rating of 1 (low) to 5 (excellent) by the contracted survey crew as they walked up the stream channel.
 - a) Environmental baseline = Stream bank stability is low at 3.8.
 - b) Effects of actions = Maintain. No excavation or alterations of stream banks will occur. Therefore, no change is expected.
3. Floodplain Connectivity:
 - a) Environmental baseline = No data is available.
 - b) Effects of actions = Maintain.

D. WATER QUALITY

For determining the temperature, the forest service looked through all of the data records and looked for the highest temperature year on record. This was done to determine the highest constraining temperature for the fish present in the watershed. Temperature was recorded at the mouth of Moose Creek above the confluence with Kelly Creek.

1. Temperature - bull trout spawning: The Clearwater National forest used the spawning period of September 1 to December 31.
 - a) Environmental baseline = Low. The highest spawning temperature of 16.8° C was recorded on 9/01/94.
 - b) Effects of actions = Maintain. No alterations in riparian vegetation and streamside shade are proposed under the permit. Therefore, no change in water temperatures is expected.
2. Temperature - bull trout incubation: The Clearwater National Forest used an incubation period from September 1 to April 30. Data is only available from September 1 to early November. Thermographs are not usually put into the water until early June.
 - a) Environmental baseline = Low. The highest incubation temperature of 16.8° C was recorded on 9/01/94.
 - b) Effects of actions = Maintain. No alterations in riparian vegetation and streamside shade are proposed under the permit. Therefore, no change in water temperatures is expected.
3. Temperature - bull trout rearing: The Clearwater National Forest used temperatures throughout the year for rearing.
 - a) Environmental baseline = Low. The highest rearing temperature of 22.4° C was recorded on 7/29/94.
 - b) Effects of actions = Maintain. No alterations in riparian vegetation and streamside shade are proposed under the permit. Therefore, no change in water temperatures is expected.
4. Turbidity/Suspended Sediment:
 - a) Environmental baseline = No data is available.
 - b) Effects of actions = Degrade. Slight increases in turbidity and suspended sediment levels are expected directly downstream of suction dredging operations. These increases are expected to extend 200

to 500 feet downstream dependent upon the specific geology of the mining site. Turbidity levels will also increase, but these levels are expected to meet the high criteria.

5. Chemical Contamination/Nutrients:

a) Environmental baseline = No data.

b) Effects of actions = Maintain. Fuel storage and fueling provisions of the "one step" permit will minimize any potential impacts from fuel spillage.

E. HABITAT ACCESS

1. Physical Barriers - Adult: There are no known human-caused migration barriers on USFS lands in the Moose Creek drainage.

a) Environmental baseline = High.

b) Effects of actions = Maintain. Mining operations will maintain fish passage. Mining operations will cease on August 15, which will allow for unimpeded bull trout migration during late August and September.

2. Physical Barriers - Juvenile: There are no known human-caused migration barriers on USFS lands in the Moose Creek drainage.

a) Environmental baseline = High.

b) Effects of actions = Maintain. Mining operations will maintain mainstream channel for fish passage.

F. HABITAT ELEMENTS

1. Cobble Embeddedness: Cobble embeddedness was visually estimated for the majority of the 30-meter transects. Calibration with a direct measurement (Burns method) stratified by habitat type was taken every 20th transect.

a) Environmental baseline = Moderate for a B channel type at 26.4 %.

b) Effects of actions = Maintain. Current activities on USFS lands are not expected to result in a change in this indicator on a reach-wide basis. Some decreases in cobble embeddedness levels are expected in stream substrate areas that are overturned by suction dredging activities. Increases in cobble embeddedness levels are also expected directly downstream of the mining operation, but these are expected to be within 100 feet or so (dependent upon stream flows).

2. Percent Surface Fines:

a) Environmental baseline = No data is available for Moose Creek.

b) Effects of actions = Maintain. Current activities on USFS lands are not expected to result in a change in this indicator on a reach-wide basis. Some decreases in surface fines levels are expected in stream substrate areas that are overturned by suction dredging activities. Increases in surface fines levels are also expected directly downstream of the mining operation, but these are expected to be within 100 feet or so (dependent upon stream flows).

3. Percent Fines by Depth:

a) Environmental baseline = No data is available for Moose Creek.

b) Effects of actions = Maintain. Current activities on USFS lands are not expected to result in a change in this indicator on a reach-wide basis. Decreases in surface fines levels are expected in stream substrate areas that are overturned by suction dredging activities.

4. Large Woody Debris: LWD was broken into acting and potential categories. Acting debris is defined as stable woody debris at least 10 cm in diameter which influenced habitat within each transect-bound segments of stream, and expressed as number of pieces / 100 meters. Potential debris is the number of trees on each bank that could contribute large organic debris in to the stream and expressed as pieces / 100 meters.

a) Environmental baseline: Low with 3.8 pieces of acting LWD and 3.6 pieces of potential LWD.

b) Effects of actions = Maintain. The proposed activities will not remove any riparian vegetation. No reduction in acting and potential LWD is expected.

5. Pool Frequency: The Clearwater National Forest used primary pools counted within each reach of stream and expressed as number per mile.

a) Environmental baseline: No data is available.

b) Effects of actions = Maintain. Some small-localized changes in pool frequency may occur due to redistribution of substrate materials. However, the overall pool frequency for any stream reach is not expected to change substantially.

6. Pool Quality: Is rated on a scale of 1 (poor) to 5 (excellent).

a) Environmental baseline: Baseline is low with an average pool quality of 1.3.

b) Effects of actions = Maintain. Some small-localized changes in pool quality may occur due to redistribution of substrate materials, filling pools and removal of instream cover. Since most of the areas proposed for dredging has been altered in past years, changes to existing pool quality is expected to be minimal with no substantial changes on a reach basis.

7. Off - Channel Habitat:

a) Environmental baseline = No data is available.

b) Effects of actions = Maintain.

8. Habitat Refugia:

a) Environmental baseline = No data is available.

b) Effects of actions = Maintain.

G. TAKE

1. Harassment, Redd Disturbance, and Juvenile Harvest

a) Environmental baseline = Moderate.

b) Effects of actions = Maintain. Some harassment (redistribution) of adult and sub-adult bull trout is expected. Existing information indicates that proposed mining sites are not located in bull trout spawning and early rearing areas. Therefore, redd disturbance and juvenile harvest is expected to be insignificant or discountable. Intensive monitoring during the 2000 mining season will verify this assumption.

H. BULL TROUT SUBPOPULATION CHARACTERISTICS AND HABITAT INTEGRATION

1. Subpopulation Size:

a) Environmental baseline: Low. Limited data is available, assumed very small.

b) Effects of actions = Maintain.

2. Growth and Survival:

a) Environmental baseline = Low. No data is available.

b) Effects of actions = Maintain.

3. Life History Diversity, Isolation:

a) Environmental baseline = Moderate. Limited data is available. However, a migratory form from the North Fork Clearwater River (fluvial) most likely spawns and rears in the Moose Creek drainage.

b) Effects of actions = Maintain.

4. Persistence and Genetic Integrity:

a) Environmental baseline = Moderate. No data is available, but connectivity between the Moose Creek population(s) can occur.

b) Effects of actions = Maintain.

5. Integration of Species and Habitat Conditions:

a) Environmental baseline = Moderate. Habitat conditions in the Moose Creek drainage are expected to improve over the long-term due to watershed restoration activities (i.e. road obliteration), minimal timber harvest and no new road construction.

b) Effects of actions = Degrade. Proposed mining activities will caused delays in habitat recovery in localized areas, but improved recovery trends are expected drainage-wide.

BIOLOGICAL EVALUATION: CANDIDATE AND SENSITIVE SPECIES
Suction Dredging on USFS Lands in the Moose Creek Drainage

Regulatory Framework: The Secretary of Agriculture's Policy (Dept. Reg. 9500-4) and Forest Service objectives (FSM 2670.22) for sensitive species require the Forest Service to: "(1) Develop and implement management practices to ensure that species do not become threatened or endangered because of Forest Service actions, and (2) Maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest lands." Furthermore, "a documented Forest Service review of Forest Service programs or activities will be completed in sufficient detail to determine how an action or proposed action may affect any... sensitive species. This documented review is a biological evaluation (BE)" (FSM 2670.5).

Species identified by the Regional Forester as sensitive are listed in update of Northern Region Sensitive Species List, March 31, 2005.

Proposed Action: See Biological Assessment (BA)

Environmental Consequences: The direct, indirect, and cumulative effects of the proposed action results in four possible conclusions: (1) No impact, (2) May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the population or species, (3) Likely to impact individuals or habitat with a consequence that the action may contribute toward Federal listing or result in reduced viability for the population or species, and (4) Beneficial impact.

SUMMARY OF CONCLUSION OF EFFECTS

Species	No Impact	MIH*	Rationale
Wolverine	X		Suitable habitat not present
Harlequin Duck	X		Suitable habitat not present
Fisher	X		Suitable habitat not present
Flammulated Owl	X		Suitable habitat not present
Black Backed Woodpecker	X		Suitable habitat not present
Northern Goshawk	X		Suitable habitat not present
Coeur D' Alene Salamander	X		Suitable habitat not present
Boreal Toad	X		Suitable habitat not present
Townsend's Big-eared Bat	X		Suitable habitat not present
Northern Leopard Frog	X		Suitable habitat not present
<i>Asplenium trichomanes</i>	X		Suitable habitat not present
<i>Belchnim spicant</i>	X		Suitable habitat not present
<i>Botrychium crenulatum</i>	X		Suitable habitat not present
<i>Botrychium lanceolatum lanceolatum</i>	X		Suitable habitat not present
<i>Botrychium minganense</i>	X		Suitable habitat not present
<i>Botrychium montanum</i>	X		Suitable habitat not present
<i>Botrychium simplex</i>	X		Suitable habitat not present
<i>Buxbaumia aphylla</i>	X		Suitable habitat not present
<i>Buxbaumia viridis</i>	X		Suitable habitat not present
<i>Calochortus nitidus</i>	X		Suitable habitat not present
<i>Cardamine constancei</i>	X		Suitable habitat not present
<i>Carex hendersonii</i>	X		Suitable habitat not present
<i>Carex leptalea</i>	X		Suitable habitat not present
<i>Cetraria subalpina</i>	X		Suitable habitat not present

Species	No Impact	MIH*	Rationale
<i>Cladonia andereggii</i>	X		Suitable habitat not present
<i>Cornus nuttalli</i>	X		Suitable habitat not present
<i>Cypripedium fasciculatum</i>	X		Suitable habitat not present
<i>Dasynotus daubenmirei</i>	X		Suitable habitat not present
<i>Haplopappus hirtus sonchifolius</i>	X		Suitable habitat not present
<i>Hookeria lucens</i>	X		Suitable habitat not present
<i>Lomatium salmoniflorum</i>	X		Suitable habitat not present
<i>Mimulus alsinoides</i>	X		Suitable habitat not present
<i>Mimulus ampliatus</i>	X		Suitable habitat not present
<i>Pentagramma triangularis triangularis</i>	X		Suitable habitat not present
<i>Petasites frigidus palmatus</i>	X		Suitable habitat not present
<i>Petasites sagittatus</i>	X		Suitable habitat not present
<i>Polypodium glycyrrhiza</i>	X		Suitable habitat not present
<i>Rhizomnium nudum</i>	X		Suitable habitat not present
<i>Synthyris platycarpa</i>	X		Suitable habitat not present
<i>Thelypteris nevadensis</i>	X		Suitable habitat not present
<i>Triantha occidentalis brevistyla</i>	X		Suitable habitat not present
<i>Waldsteinia idahoensis</i>	X		Suitable habitat not present
Westslope Cutthroat Trout (<i>Oncorhynchus clarki lewisi</i>)		X	Rearing and spawning habitat for westslope cutthroat trout is present throughout the Moose Creek drainage. Potential effects are similar to bull trout (see Biological Assessment).
Spring Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	X		Historically, Moose Creek provide habitat for spring chinook salmon. Currently spring chinook salmon are not found in the North Fork Clearwater River drainage; project area located over 100 miles upstream of Dworshak Dam, a migration barrier to spring chinook salmon. Any sediment produced by suction dredging would not be measurable in the upper Kelly Creek and upper North Fork Clearwater River, and nonexistent downstream of the Dworshak Dam. Therefore, the project proposal would have no effect on spring chinook salmon or future recovery efforts in the lower Clearwater River drainage.
Pacific Lamprey (<i>Lampetra tridentata</i>)	X**		Suitable habitat is most likely available in the Moose Creek drainage. Currently Pacific lamprey are not found in the North Fork Clearwater River drainage; project area located over 100 miles upstream of Dworshak Dam, a migration barrier to Pacific lamprey. The IDFG is currently surveying streams within the North Fork Clearwater River drainage to determine if any residual populations of lamprey exist in the drainage. If an adfluvial population exists, the proposed suction dredging will avoid the spring/early summer spawning period for lamprey. If the surveys indicate populations

Species	No Impact	MIIH*	Rationale
			exist in the North Fork Clearwater River (upstream Dworshak Dam), mitigation measures will be employed to minimize the effects to juveniles within the substrate through the avoidance of potential rearing areas. Potential effects are similar to steelhead trout and bull trout (see Biological Assessment).
Interior Redband Trout (<i>Oncorhynchus mykiss gairdneri</i>)	X***		Suitable habitat is available in the Moose Creek drainage. Based on information presented in Quigley et al. (1997) and Campbell and Cegelski (2004) the focus of identifying unique populations of interior redband trout should focus upstream of fish migration barriers. With the exception resident interior redband trout (of steelhead progeny) interior redband trout populations that have been isolated from steelhead trout (allopatric redband trout) have not been documented nor are expected in the Moose Creek drainage. Potential effects are similar to bull trout (see Biological Assessment).

* MIIH - May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the population or species.

** Based on the current status of no existing populations of Pacific lamprey within the North Fork Clearwater River drainage.

*** Based on the current status of no existing populations of Interior Redband Trout (besides residual steelhead trout) within North Fork Clearwater River drainage.

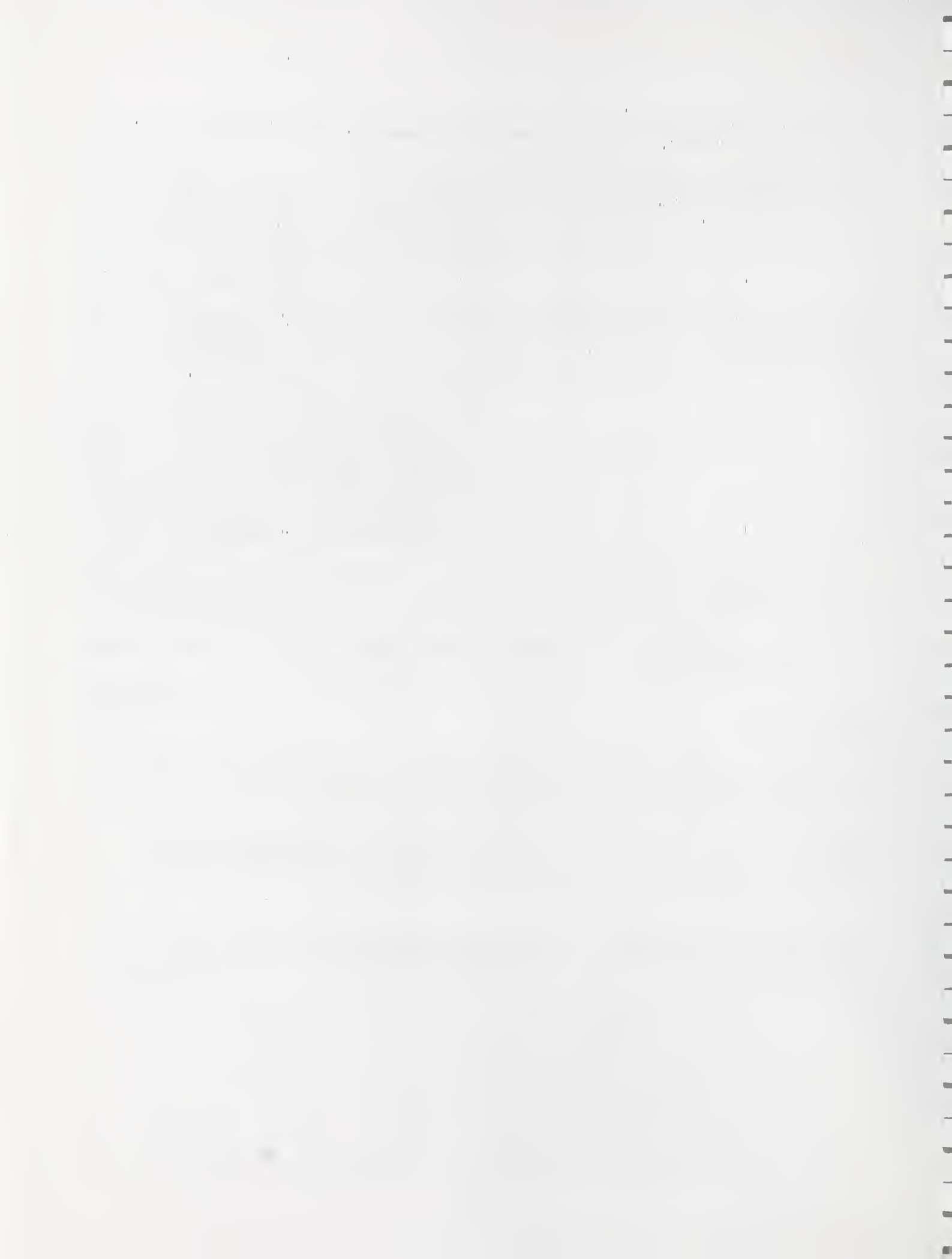
Literature Cited:

Campbell, M. and C. Cegelski. 2004. Mitochondrial DNA analysis of redband trout (*Oncorhynchus mykiss gairdneri*) from tributaries to the Salmon and Snake rivers, ID. Completion report for BLM CCS #DAF020080. Lab report 04-1. Idaho Department of Fish and Game, Eagle Fish Genetics Lab. Eagle, ID.

Quigley, T. M. and S. J. Arbelbide, tech. eds. 1997. An assessment of ecosystem components in the interior Columbia basin and portions of the Klamath and Great Basins: Volume 3. Gen. Tech. Rep. PNW-GTR-405. U.S.D.A. Forest Service, Pacific Northwest Research Station, Portland, Oregon.

/s/ Dan Davis February 6, 2006
Forest Wildlife Biologist

/s/ Patrick K. Murphy February 6, 2006
Forest Fisheries Biologist



ATTACHMENT 3



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Snake River Fish and Wildlife Office
1387 S. Vinnell Way, Room 368
Boise, Idaho 83709
Telephone (208) 378-5243
<http://IdahoES.fws.gov>



FEB 10 2006

Thomas Reilly
Forest Supervisor
Clearwater National Forest
12730 Highway 12
Orofino, Idaho 83544

Subject: Suction Dredging on Forester Service Lands in the Lolo Creek Drainage,
Idaho and Clearwater Counties, Idaho—Concurrence
File #104.7000 1 06-0336

Tom

Dear Mr. Reilly:

This letter transmits the Fish and Wildlife Service's (Service) concurrence on determinations for listed species as documented in the Biological Assessment (Assessment) for the proposed Recreational Suction Dredging on Forest Service Lands in the Lolo Creek drainage, Idaho and Clearwater Counties, Idaho, during 2006 and 2007. In a letter dated January 19, 2006, and received by the Service on January 24, 2006, the Clearwater National Forest (Forest) requested concurrence under section 7 of the Endangered Species Act (Act) of 1973, as amended, that the proposed recreational suction dredging is not likely to adversely affect bull trout (*Salvelinus confluentus*).

You also determined that the Project will have no effect on the Canada lynx (*Lynx canadensis*), and the bald eagle (*Haliaeetus leucocephalus*), and will not jeopardize the continued existence of the gray wolf (*Canis lupus*). The Service acknowledges these determinations.

The proposed recreational suction dredging occurs in the Lolo Creek 5th Field Hydrologic Unit #1706030625. The recreational mining operations planned in the Lolo Creek drainage involve using suction dredges to process sand, gravel, and cobble within instream segments of Lolo Creek. Currently in the Lolo Creek drainage, 13 mining claims are listed in the Bureau of Land Management mining claim database, and notices of intent to mine any of these 13 claims can be submitted to the Forest in any year. During 2006 and 2007, 18 operators involving the 13 listed mining claims may work within the mainstem Lolo Creek (see Appendix B of Assessment).

Service concurrence with the may affect, but not likely to adversely affect determination for bull trout is based on the following rationales presented in the Assessment.

1. The risk of adverse effects to spawning bull trout from recreational suction dredging is discountable because no spawning behavior has been documented in the Lolo Creek drainage. Bull trout are present in Lolo Creek in very low numbers. Multi-agency (the Forest, Idaho Department of Fish and Game, Nez Perce Tribe, Bureau of Land Management, and the Service) monitoring conducted in Lolo Creek using snorkeling, juvenile trapping, and electrofishing documented a total of 19 bull trout in the years between 1987 and 2004. In 2005, no bull trout were observed during snorkeling or at weirs (at the time of writing, screw trap data are not available).
2. Although bull trout spawning behavior has not been documented in the assessment area, instream suction dredging will be confined to a July 1 to August 15 work window to further reduce the risk of adverse effects to any potential spawning and early rearing that may be occurring in Lolo Creek.
3. Resource protection measures included in the required Idaho State Stream Channel Alteration Permit and in the Assessment will ensure that effects from suction dredging on bull trout and long-term effects to bull trout habitat are insignificant. These measures include restricting dredge horsepower and nozzle size, monitoring implementation by an aquatic specialist, and requiring streambed restoration during and following mining operations. Site specific resource protection measures may be added as permit conditions based upon Level 1 Streamlining Team field review to be conducted prior to July 1 of each year.
4. The Forest will conduct bull trout monitoring surveys during July and August 2006 and 2007. Survey efforts by the Nez Perce Tribe will also continue. These survey efforts will continue to update and improve the understanding of bull trout distribution and densities in the Lolo Creek drainage relative to the recreational suction dredge mining activity. New information indicating bull trout presence could compel reinitiation of this consultation.

Although bull trout appear to be present in very low numbers in the Lolo Creek drainage and spawning areas have not been located, the Service has designated bull trout in Lolo Creek as a local population¹. This designation is premised upon spawning and early rearing occurring in the drainage and is supported by the sporadic but continuing observations of juvenile fish. The Service, while acknowledging the monitoring

¹ Fish and Wildlife Service. 2002. Chapter 16, Clearwater Recovery Unit, Idaho. 196 p. In: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

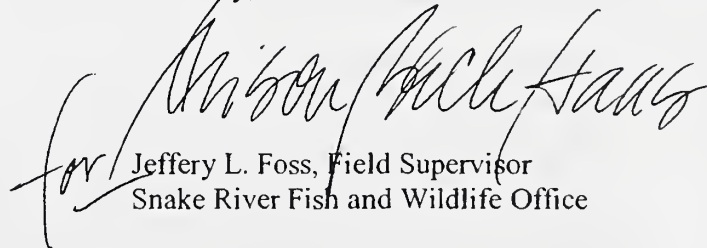
Thomas Reilly, Forest Supervisor
Suction Dredging on Forester Service Lands in the Lolo Creek Drainage

commitment described above, urges the Forest, as a conservation recommendation, to increase survey efforts in the drainage in order to specifically locate and protect bull trout spawning areas. By locating and protecting spawning areas, the Forest will be not only contributing to bull trout recovery but also fulfilling your conservation obligations under section 7(a)(1) of the Act.

This concludes informal consultation on the proposed Project under section 7 of the Act. If the proposal addressed in this letter is modified, environmental conditions change, or additional information becomes available regarding potential effects on listed species, you should verify that your conclusions are still valid.

Thank you for your continued interest in the conservation of threatened and endangered species. Please contact Clay Fletcher at (208) 378-5256 if you have questions concerning these comments.

Sincerely,


for Jeffrey L. Foss, Field Supervisor
Snake River Fish and Wildlife Office

cc: IDFG, Region II, Lewiston (Hennekey)
NOAA Fisheries, Grangeville (Brege)

SURNAME SLIP

DRAFT, Author	CF	1-27-06
DRAFT, Other	TK	2-6-06
DRAFT, Reviewer		
FINAL, Typist/Format	LIB	2/07/06
FINAL, Author	CF	2-6-06
FINAL, Reviewer <i>matted</i>	BB	2-10-06

DATES

First Contact Date 1-24-06

Date of Correspondence 1-19-06

Start Date _____

Date Formal Consultation Started _____

Draft BO Due Date _____

Draft BO Date _____

Final BO Date _____

Due Date _____

Conclusion Date **FEB 10 2006**

Core Information

Title Lolo Creek - Suction Dredging

Description Informal Consultation regarding suction dredging and Gold panning activities within The Lolo Creek Drainage

Consultation Type I Complexity STD Species Bull trout

Action/Type Work mining (Suction dredging/panning)

Lead Agency USFS Other Agencies USFS - Leeches R.D.

Biological Conclusion: Not likely to Adversely Affect.

Take _____

Re-Initiate Yes No Date _____ Withdraw YES Date _____

Rationale _____

Details

Habitat Involved _____

Recommendations Provided Yes No Final Plans Received Yes No

Comments _____

Affiliated Offices _____

Location:

Location Description Lolo Creek

Township 35N Range 6E Section 17 Declat 46.3742 Declong -115.7346

Quad Musselshell Watershed Cleanwater 17060306

References:

Associated With Fire Yes No Fire Name _____

Permit Number _____ Permit Type _____

FOIA Reference Code _____ ER # _____

Hardcopy Location 104.7000 Electronic File Location I - 06 - 0336

GIS Files Location _____

Hours:

Staff _____ Species Bull trout

QA/QC _____ Date _____ Retention Schedule _____



United States
Department of
Agriculture

Forest
Service

Clearwater National Forest

12730 Highway 12
Orofino, Idaho 83544-9333
208/476-4541
Fax: 208/476-8329

File Code: 2670

Date: January 19, 2006

Mr. Jeff Foss
Supervisor
Snake River Basin Office
U.S. Fish and Wildlife Service
1387 South Vinnell Way, Suite 368
Boise, ID 83709

Dear Mr. Jeff Foss

We would like to conclude informal consultation and acquire concurrence regarding the proposed suction dredging and gold panning activities within the Lolo Creek drainage. The Level One team has reached closure on this project. As noted in the biological assessment, the proposed activities have been determined to **may affect, not likely to adversely affect** bull trout within the Lolo Creek and mainstem Clearwater River drainages. The proposed activities are also not likely to destroy or adversely modify proposed critical habitat.

As a result of the listing of bull trout as a threatened species under the ESA on July 10, 1998, the Forest was directed to complete biological assessments and consultation on any action, which may affect bull trout prior to project implementation. This Regional Forester's direction as outlined in the memo dated January 27, 1998, was followed by the Forest with a Section 7 Watershed Biological Assessment (BA) completed for the Lolo Creek drainage using the matrix pathways and indicators of watershed condition procedures. The Lolo Creek Watershed BA was completed on June 30, 1999 and included all ongoing and proposed activities except mining projects. The Forest received a letter of concurrence on these activities on August 24, 1999.

Due to a backlog of consultation efforts regarding other forest activities and the potential impacts of instream mining activities, effects analysis and Level One discussions were delayed until Forest and Regulatory personnel had sufficient time to complete the consultation. Therefore, suction dredging was not permitted within the Lolo Creek drainage during the 1999 and 2000 mining seasons.

The Level One team discussed the proposed suction dredging activities during February through June 2001 and reviewed the 2001 BA. On June 12, 2001, an interagency field trip was held to review the mining sites with local miners to determine if any additional mitigation or conservation measures would be needed to avoid impacts to listed species. In addition to the Level One team members, representatives from the Idaho Department of Fish and Game, Idaho Department of Water Resources, and Nez Perce Tribe agreed that additional mitigation or conservation measures other than those listed in the BA would not be necessary. In 2001, the Forest permitted suction dredging within the mainstem Lolo Creek after the completion of a separate biological assessment (USDA Forest Service – Clearwater National Forest 2001) and acquiring a letter of concurrence from USFWS (dated June 22, 2001). During the field review, dredging sites were examined to ensure that they were located outside potential spawning areas, and guidelines for mitigating or avoiding adverse effects of the mining on listed fish were discussed and developed. The field review was successful as no problems with mining locations, magnitude or duration were identified.

The Forest submitted a BA for the Lolo Creek drainage and a letter dated July 11, 2002 requesting



concurrence on a number of ongoing and proposed projects for the 2002 season. However, no mining was authorized by the Forest in 2002 due to the pending completion of an Environmental Impact Statement (EIS). As agreed upon during a Level One conference call on July 30, 2002, the Forest requested the time frame of the BA be extended to include the 2003 mining season. The U.S. Fish and Wildlife Service (USFWS) concurred with the Forest's determination of "may affect, not likely to adversely affect" bull trout in a concurrence letter dated August 21, 2002. This concurrence letter covered the 2003 mining season.

As in 2002, the Forest did not authorize any mining in 2003 due to the pending completion of an EIS. Therefore the monitoring provisions, conservation measures etc that were noted in the BA and letter of concurrence did not apply to the 2002-2003 field seasons as no instream mining (suction dredging) occurred in the Lolo Creek drainage.

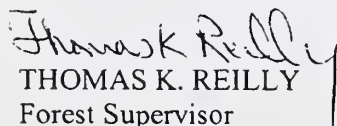
Anticipating mining would commence in 2004, the Forest submitted a BA for the Lolo Creek drainage and a letter dated April 7, 2004 requesting informal consultation on the proposed suction dredging activities for the 2004 and 2005 mining seasons. The U.S. Fish and Wildlife Service (USFWS) concurred with the Forest's determination of "may affect, not likely to adversely affect" bull trout in a letter of concurrence dated May 10, 2004. No mining was authorized by the Forest in 2004 and 2005 due to the pending completion of an Environmental Impact Statement (EIS).

Currently the Final EIS for suction dredging activities within the Lolo Creek drainage is completed and the Record of Decision is awaiting completion of the consultation efforts. The Level One team has discussed the proposed activities associated with suction dredging during 2005 and has reviewed the enclosed BA. On January 18, 2006, the Level One team agreed to consultation closure at the monthly Level 1 meeting. The BA details the mitigation and conservation measures that will be implemented and enforced during the 2006 and 2007 field seasons.

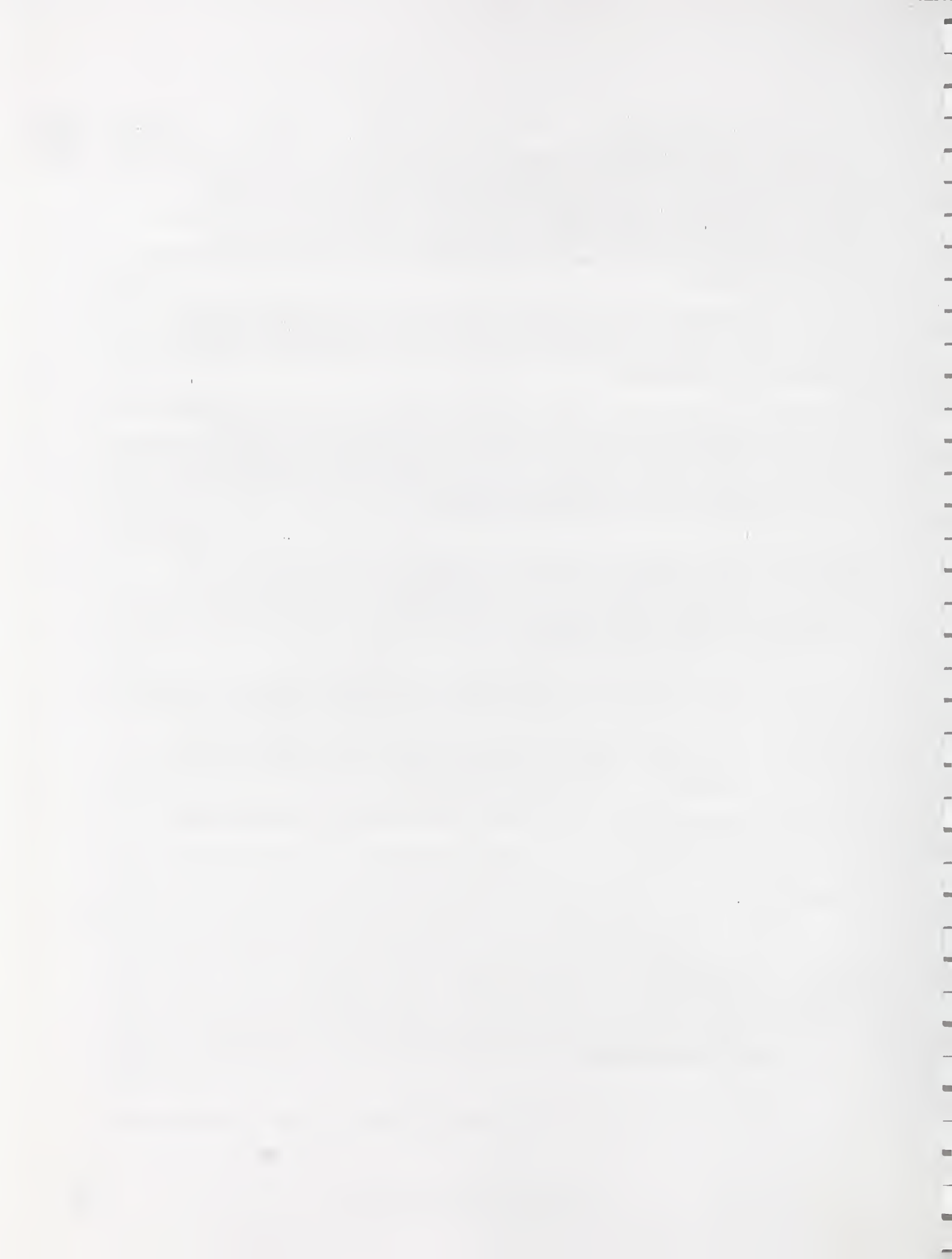
As noted in the Biological Assessment, the rationale for the not likely to adversely affect determination was based on: (1) the low number of observations of bull trout in the Lolo Creek drainage, which suggests transient individuals and no established populations; (2) absence of bull trout spawning at the project sites; (3) intensive fish population monitoring by various entities have not documented any bull trout spawning and/or early rearing in the drainage; and (4) various mitigation measures being employed to avoid or minimize impacts to the aquatic resources at the project sites.

If you need any further information or have questions regarding this request for consultation, please contact Pat Murphy at this office.

Sincerely,


THOMAS K. REILLY
Forest Supervisor

cc: Clay Fletcher, USFWS - Boise



ATTACHMENT 4



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: 2006/00236

April 28, 2006

Tom Reilly, Forest Supervisor
Clearwater National Forest
12730B Highway 12
Orofino, Idaho 83544

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for small-scale suction dredging, Lolo Creek, 1706030616, Clearwater County, Idaho.

Dear Mr. Reilly:

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 small-scale suction dredging on Lolo Creek steelhead and their designated critical habitat. The Clearwater National Forest is conducting this action under the Federal Land Policy and Management Act of 1976. In this Opinion, NMFS concludes that the action, as proposed, is not likely to jeopardize the continued existence of Snake River steelhead or result in the destruction or adverse modification of its designated critical habitat.

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

This document also includes the results of our analysis of the action's likely effects on essential fish habitat (EFH) pursuant to Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes one conservation recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. These Conservation Recommendations are a non-identical set of the ESA 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 CNF must explain why the recommendations will not be followed, including the 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, in your statutory reply to the EFH portion of this consultation, we ask that you clearly identify the number of conservation recommendations accepted.

If you have questions regarding this consultation, please contact Edmond Murrell in the Idaho State Habitat Office in Boise at (208) 378-5707.

Sincerely,

Michael R. Crouse

F.

D. Robert Lohn
Regional Administrator

Enclosure

cc: I. Jones - NPT
R. Hennekey - IDF&G
C. Fletcher - FWS

Endangered Species Act Section 7 Consultation
Biological Opinion
and
Magnuson-Stevens Act
Essential Fish Habitat Consultation

for

Lolo Creek Suction Dredging 2006 and 2007
Snake River Basin Steelhead
Lolo Creek
1706030616
Clearwater and Idaho Counties, Idaho

Lead Action Agency: U.S. Forest Service, Clearwater National Forest

Consultation
Conducted By: National Marine Fisheries Service
Northwest Region

Date Issued: April 28, 2006

Issued By: For Michael R. Crowe
D. Robert Lohn
Regional Administrator

NMFS Tracking No.: 2006/00236

TABLE OF CONTENTS

1. INTRODUCTION.....	1
1.1. Background and Consultation History	1
1.2. Proposed Action	2
1.3. Description of the Action Area	8
2. ENDANGERED SPECIES ACT.....	9
2.1. Biological Opinion.....	9
2.1.1 Status of the Species and Critical Habitat	9
2.1.1.1. Steelhead Life History	10
2.1.1.2. Status of the Species.....	11
2.1.1.3. Status of Critical Habitat	12
2.1.2 Environmental Baseline in the Action Area.....	15
2.1.3. Effects of the Action.....	16
2.1.3.1. Effects on Listed Species.....	17
2.1.3.2. Effects on Critical Habitat	19
2.1.3.3 Cumulative Effects	22
2.1.4. Conclusions	23
2.1.5. Conservation Recommendations.....	24
2.1.6. Reinitiation of Consultation	25
2.2. Incidental Take Statement.....	25
2.2.1. Amount or Extent of Take.....	26
2.2.2. Reasonable and Prudent Measures	26
2.2.3. Terms and Conditions	27
3. MAGNUSON-STEVEN'S FISHERY CONSERVATION AND MANAGEMENT ACT.....	29
3.1. EFH Conservation Recommendations	30
3.2. Statutory Response Requirement	30
3.3. Supplemental Consultation	30
4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW....	30
5. REFERENCES	31

TABLES

Table 1. Lolo Creek Recreational Suction Dredging Proposal. Values are estimates of excavation areas, based on the number of operating days and the estimated dredge capacity for a five hour workday.....	4
Table 2. Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation.....	10
Table 3. Types of sites and essential physical and biological features designated as PCEs, and the species life stage each PCE supports.	13

APPENDICES

APPENDIX A - Predicting Lolo Creek Emergence Times of Steelhead Alevins from Redds..	A-1
APPENDIX B - Alevin Mortality Estimate.....	B-1
APPENDIX C - Number of Juveniles Exposed to Dredging Effects.....	C-1

ACRONYMS

λ	Lambda (population growth rate)
BA	Biological Assessment
CRB	Columbia River Basin
CTUs	Centigrade temperature unit
DEIS	Draft Environmental Impact Statement
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
HUC	Hydrologic Unit Code
IDEQ	Idaho Department of Environmental Quality
IDWR	Idaho Department of Water Resources
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
NTUs	Nephelometric Turbidity Units
Opinion	Biological Opinion
PCE	Primary Constituent Elements
PFMC	Pacific Fishery Management Council
RPMs	Reasonable and Prudent Measures
Tribe	Nez Perce Tribe
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VSP	Viable Salmonid Population

1. INTRODUCTION

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

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

1.1. Background and Consultation History

The proposed recreational mining activities are similar to activities that occurred in Lolo Creek in 2001 and were proposed but not carried out in 2003. In the past, the Clearwater National Forest (CNF) worked cooperatively with the dredge miners to select specific locations and operating procedures that allowed dredge miners to operate with minimal disturbance to fish habitat. Field reviews of mining activities in Lolo Creek were attended by dredge operators, representatives of the CNF, U.S. Fish and Wildlife Service (USFWS), NMFS, Nez Perce Tribe (Tribe), and Idaho Department of Water Resources (IDWR) on June 12, 2001 (prior to dredging), and on August 30, 2001 (after dredging). The first field review was conducted to discuss how operations would occur, and what measures might be necessary to prevent or reduce potential unwanted effects. The second field review evaluated the effects of mining to determine if any changes were needed in the operating procedures to avoid unwanted effects in the future. The reviewers (including NMFS and USFWS) observed that the dredge mining had little physical effect on the stream channel beyond the immediate areas where gravels were either dredged or deposited, and no additional operating procedures were recommended.

A draft 2001 mining season biological assessment (BA) was updated in 2002 to reflect the findings from the 2001 field reviews. However no mining was authorized by the CNF in 2002 due to the pending need to complete an environmental impact statement (EIS). NMFS issued an Opinion on July 27, 2003, but again the CNF did not authorize any mining due to the pending EIS. On April 14, 2004, the CNF sent NMFS a revised BA and requested formal consultation for the mining seasons of 2004 and 2005. The CNF made a determination that the Lolo Creek Suction Dredging Project was a "may affect, likely to adversely affect" for Snake River steelhead and their designated critical habitat. The CNF also determined that the proposed action would adversely affect EFH for Chinook salmon and coho salmon. The CNF made a "no effect" determination for fall Chinook salmon since they are listed in the mainstem Clearwater River

only, and not within the action area. Also, designated critical habitat for fall Chinook salmon extends only to the confluence of Lolo Creek with the Clearwater River and does not extend up into the action area. Although spring/summer Chinook salmon are found in the action area, the CNF did not make a determination of effects for them since spring/summer Chinook salmon are not listed under the ESA in the Clearwater River subbasin.

The Lolo Creek recreational suction dredging activities proposed by the CNF would likely affect tribal trust resources. Because the suction dredging activities are likely to affect tribal trust resources, NMFS contacted the Tribe pursuant to the Secretarial Order (June 5, 1997). For the 2003 Opinion, copies of the draft Opinion were electronically sent to the Tribe's legal counsel (R. Eichstaedt) on September 26, 2002, February 10, 2003, and March 10, 2003. NMFS did not receive any official comments from the Tribe as a result of these electronic correspondences. In addition, NMFS (D. Brege and B. Ries) met with the Tribe (B. Hills and H. McRoberts) on April 1, 2003, at the Tribe's Fisheries Complex near their tribal headquarters in Lapwai, Idaho. Although the Tribe did not express specific concerns about the NMFS analysis of effects in the draft Opinion, the Tribe did express their objection to dredge mining in Lolo Creek since the mining occurs in the same drainage where they are trying to reestablish Chinook salmon and coho salmon. Specific tribal comments at this meeting focused on the need for additional project monitoring. Subsequently, NMFS contacted the CNF (P. Murphy) and negotiated additional monitoring to be incorporated into the 2003 Opinion. In March of 2006, NMFS (Ed Murrell, biologist) contacted the Tribe (Sherman Sprague) to obtain weir and snorkel data and any personnel observations relating to steelhead spawning in Lolo Creek.

In March of 2004, the CNF completed "Small-Scale Suction Dredging in Lolo Creek and Moose Creek, Clearwater and Idaho Counties, Idaho Draft Environmental Impact Statement" (DEIS). The CNF also sent NMFS a BA updating their ESA findings. For consultation on the 2004/2005 proposal, NMFS again sent the Tribe (S. Althouse) an electronic draft copy of the Opinion on May 11, 2004. The monitoring requested by the Tribe for the 2003 Opinion was also incorporated into this Opinion. Although the Tribe did not specifically send comments to NMFS about the Opinion, the Tribe did send a letter dated May 12, 2004, to the CNF addressing tribal concerns about the CNF suction dredge DEIS.

The CNF sent an updated draft BA to NMFS on January 3, 2006. The North Central Idaho Level One Team reviewed the BA and reached closure on January 17, 2006. This Opinion evaluates the CNF project proposal described in the 2004 suction dredge DEIS and the CNF BA dated January 19, 2006. The 2006 BA addresses the CNF proposed small-scale suction dredging actions during 2006 and 2007.

1.2. Proposed Action

Proposed actions are defined in the consultation regulations (50 CFR 402.02) as "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies

in the United States or upon the high seas." Additionally, U.S. Code (16 U.S.C. 1855(b)(2)) further defines a Federal action as "any action authorized, funded, or undertaken or proposed to be authorized, funded, or undertaken by a Federal agency." Because mining is an activity requiring CNF authorization and because it may affect ESA listed fishes, CNF must consult under ESA section 7(a)(2).

The action proposed by the CNF is to grant 18 special use permits for suction dredge mining for 2006 and 2007 in Lolo Creek. As part of their permit, some applicants may also choose to pan or use small sluice boxes within the action area. The 2006 BA identifies the work window for all proposed mining-related activity as July 1 through August 15.

Proposed recreational suction dredging activities consist of operating suction dredges with nozzles ranging from 1.5 to 5 inches in diameter, and engines with 15 horsepower or less. Individual dredges would be operated in areas ranging in size from 24 to 3108 square feet (Table 1). Suction dredges would be used to excavate streambed materials down to bedrock, where heavier gold particles may be deposited. Excavated materials are sucked into the dredge nozzle, passed through a sluice box attached to the back of the dredge, and then deposited in the stream. A suction dredge motor is generally operated for a short duration on a given day because the technique requires operators to sort through the materials that pass through the dredge, which is time consuming. Dredge sites are typically located in areas where the depth to bedrock is relatively shallow (usually less than 6 feet), to minimize the amount of material that needs to be excavated before reaching gold-bearing deposits. The better areas for locating gold are generally not the best steelhead spawning or juvenile rearing habitat. For example, miners prefer to dredge in the upstream end of pools, in seams and pockets of exposed bedrock, and sometimes on the inside of river bends where the current begins to slow and heavier materials accumulate. Usually these areas are seldom used for spawning.

The actual amount of instream disturbance is estimated for each operator and presented in Table 1 below.

Table 1. Lolo Creek Recreational Suction Dredging Proposal. Values are estimates of excavation areas, based on the number of operating days and the estimated dredge capacity for a five hour workday.

OPERATOR	NOZZLE SIZE	MAX. DAYS OPERATING	MAX. LENGTH OF DISTURBANCE	MAX. AREA OF DISTURBANCE	DAYS CNF TO MONITOR
Alderman, Alan	5"	46 days	518 ft.	3108 sq. ft.	23
Barteaux, Bill & Sheila	2.5 or 5"	46 days	518 ft.	3108 sq. ft.	23
Brown, Fred	2, 3, or 5"	14 days	158 ft.	948 sq. ft.	7
Bunch, Gordon	5"	7 days	79 ft.	474 sq. ft.	4
Cahala, James	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
Calkins, Daniel Calkins, Gary Crooks, Mike	5"	46 days	518 ft.	3108 sq. ft.	23
Dallman, Ted	Sluice box	14 days	8 ft.	24 sq. ft.	7
GPAA (1)	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
GPAA (2)	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
GPAA (3)	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
Haley, Ken Happ, Robert	4"	15 days	113 ft.	678 sq. ft.	8
Hopkins, Elwood	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
Lengachers, Ron & Ellen	2.5 or 5"	30 days	338 ft.	2028 sq. ft.	15
Montgomery, Richard	2.5 or 5"	46 days	518 ft.	3108 sq. ft.	23
O'Conner, L.R.	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
Patterson, Jack & Cora Du Pont, Del	2.5 or 5"	46 days	518 ft.	3108 sq. ft.	23
Reynolds, Dennis & Marla	2.5 or 5"	46 days	518 ft.	3108 sq. ft.	23
West, Mike	4"	14 days	105 ft.	630 sq. ft.	7

On pages 2-2 through 2-7 of the DEIS, the proposed action by the CNF requires miners to comply with the following measures to minimize or avoid effects to Snake River steelhead:

Operations may occur only below the ordinary high water line during a dredge season extending from July 1 through August 15.

2. The suction dredge may have a nozzle diameter of 5 inches or less and a horsepower rating of 15 horsepower or less.
3. Dredge sites must be located in areas of large substrate not preferred for spawning steelhead and bull trout.
4. If streambanks are disturbed in any way, they must be restored to the original contour and revegetated.
5. Prior to dredging, operators must meet with a U.S. Forest Service (USFS) fisheries biologist who will inspect the proposed dredge sites. No dredging will be allowed in areas identified as spawning habitat.
6. Operators may not move cobbles in the stream course to the extent that the deepest and fastest portion of the stream channel (the thalweg) is altered or moved.
7. Operators must cease activities during wet periods when project activities are causing excessive ground disturbance or excessive damage to roads.
8. All human waste must be kept more than 200 feet away from any live water. All refuse from dredging activities must be packed out and disposed of properly.
9. No mechanized equipment may be operated below the mean high water mark except for the dredge itself and any life support system necessary to operate the dredge. No mechanized equipment other than the suction dredge may be used for conducting operations.
10. Dredging must be conducted in a manner so as to prevent the undercutting and destabilization of stream banks, and may not otherwise disturb streambanks.
11. Dredging may not dam the stream channel.
12. Operators must maintain a minimum spacing of at least 100 linear feet of stream channel between suction dredging operations.
13. Dredges may not operate in the gravel bar areas at the tails of pools.

14. Dredges may not operate in such a way that fine sediment from the dredge discharge blankets gravel bars.
15. Operators must visually monitor the stream for 300 feet downstream of the dredging operation after the first half hour of continuous operation. If noticeable turbidity is observed downstream, the operation must cease immediately or decrease in intensity until no increase in turbidity is observed.
16. Dredges must not operate in such a way that causes erosion or destruction of the natural form of the channel, that undercuts the bank, or that widens the channel.
17. Operators may not undermine, excavate, or remove any stable woody debris or rocks that extend from the bank into the channel.
18. Operators may not remove, relocate, or disturb stable instream woody debris or boulders greater than 12 inches in diameter.
19. Gasoline and other petroleum products must be stored in spill-proof containers at a location that minimizes the opportunity for accidental spillage.
20. The suction dredge must be checked for leaks, and all leaks repaired, prior to the start of operations each day. The fuel container used for refueling must contain less fuel than the amount needed to fill the tank. The suction dredge must be on stilts or anchored to the stream bank when refueling while afloat, so that the distance over which fuel must be carried over water is minimized. Unless the dredge has a detachable fuel tank, operators may transfer no more than 1 gallon of fuel at a time during refilling. Operators must use a funnel while pouring, and place an absorbent material under the tank while refueling to catch any spillage. A spill kit must be available in case of accidental spills. If soil is contaminated by spilled petroleum products, the soil must be excavated to the depth of saturation and removed from the National Forest for proper disposal.
21. All dredge piles must be broken down and all dredge holes must be backfilled before moving to a new dredge location and by the end of the operating season, no later than August 15.
22. Dredging operations must be shut down immediately if fish eggs are excavated, if sick, dead, or injured steelhead or bull trout are observed, or if destruction of redds is observed. Operators must contact the CNF and receive authorization to proceed prior to resuming operations. Operations must record the date, time, location, and possible cause of fish injury or death.

23. Camping areas, paths, and other disturbed sites that are located along stream banks and that are associated with dredge operations must be revegetated or otherwise restored to their original conditions at the end of the dredge season.
24. Dredging operations must be shut down immediately if the operator observes steelhead in Lolo Creek. The operation must remain shut down until the fish move out of the area, to a point at least 100 feet upstream of the operation or at least 500 feet downstream.
25. Operators must obtain and comply with all required permits, including the state of Idaho Stream Channel Alteration Permit, and comply with all required conservation measures and Best Management Practices.
26. Intakes must be screened with 3/32 mesh.
27. Dredging operations must take place during daylight hours.
28. Shallow areas must be restored to their original grade each day and natural pools may not be filled. Tailings must be redistributed to avoid creating unstable spawning gravels.
29. If operators encounter mercury in dredged material, it may not be returned to the active stream channel or disposed of on USFS lands. Operators must cease operations and notify the USFS if more than two droplets of mercury are discovered during the dredging process. Operators may not use mercury, cyanide, or any other hazardous or refined substance to recover or concentrate gold.
30. No later than September 15, the operator must provide CNF a description of the actual locations of the operation, the surface areas dredged, and the number of days operated.

As identified by the DEIS (pages 2-6 and 2-7), the following specific monitoring and reporting will be implemented by the CNF:

1. Monitor active operations and the impact of mining on fish habitat in each creek at least five times during the mining season.
2. Monitor changes in stream morphology as a result of mining through specific measures as specified in the NMFS 2003 Biological Opinion: "Monitor potential changes in channel morphology as a result of mining, through the following activities at the mining site, and in the pool/riffle sequences immediately upstream and downstream from the mined area, before and after mining: (1) Wolman pebble counts; (2) channel cross-sections; (3) one longitudinal profile; and (4) pictures

showing the location of gross features such as large woody debris, boulders, bank condition. At a minimum, sampling sites shall include one control site not affected by dredging, and sites representing the range of disturbance, such as one "small" area, one "medium" area, and one "large" area of disturbance."

3. Upon notice by an operator under item 22 above of dead or injured steelhead, or if eggs are excavated, notify NMFS Law Enforcement Office in Boise at 208/321-2956, and the Grangeville Branch Office at 208/983-3859, prior to authorizing a resumption of dredging.
4. Inspect dredged areas after all dredging activities have been completed for the season.
5. Provide annual monitoring report, by November 30, to NMFS that describes operator compliance with suction dredging rules, the amount of stream area mined at each site, a photo of the mined area, and details about stream bank disturbance and revegetation, if any.
6. Provide NMFS an update of pre-season monitoring no later than June 15, and a report on post-season monitoring progress no later than September 15.

The DEIS states that under the proposed action, a claimant or operator would submit to the District Ranger a proposed Plan of Operations that included all 30 of the terms and conditions above. The proposed plan would provide site-specific information sufficient for the District Ranger to determine that the terms and conditions would be adequate for protection of surface resources on that specific site. The District Ranger will determine if the proposed Plan of Operations meets the conditions described above and are sufficient to protect surface resources on that site. A new Plan of Operations would have to be submitted and approved for each operation before each mining season.

1.3. Description of the Action Area

An action area is defined by the regulations (50 CFR Part 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The action area for this recreational suction dredging proposal consists of the mainstem of Lolo Creek, from its confluence with Musselshell Creek, upstream to Yoosa Creek. This segment of Lolo Creek is approximately 15.27 Km (9.49 miles) long and ranges in width from 6 to 11 meters (9 m average). The action area encompasses all dredge mining sites and the downstream extent of stream reaches that might be affected by sediment and/or turbidity created by the dredge operations. The fifth field hydrologic unit code (HUC) encompassing the action area is 1706030616. This area serves as spawning and rearing habitat for the Snake River Basin steelhead distinct population segment (DPS). The action area is also designated EFH for Chinook and coho salmon.

2. ENDANGERED SPECIES ACT

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

2.1. Biological Opinion

This Opinion presents NMFS' review of the status of Snake River Steelhead DPS considered in this consultation, the condition of designated critical habitat, the environmental baseline of the action area, all the effects of the action as proposed, and cumulative effects (50 CFR 402.14(g)). For the jeopardy analysis, NMFS analyzes the effect that the above combined factors have on the ESA species and its habitat to conclude whether the proposed action is likely to appreciably reduce the likelihood of either survival or recovery of the affected listed species.

The critical habitat analysis determines whether the proposed action will destroy or adversely modify designated critical habitat for listed species by examining any change in the conservation value of the essential features of the critical habitat. This analysis relies on statutory provisions of the ESA, including those in section 3 that define "critical habitat" and "conservation," those in section 4 that describe the designation process, and in section 7 that sets forth the substantive protections and procedural aspects of consultation. The regulatory definition of "destruction or adverse modification" at 50 CFR 402.02 is not used in this Opinion.

2.1.1 Status of the Species and Critical Habitat

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

Table 2. Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation.

Species	Listing Status	Critical Habitat	Protective Regulations
Steelhead (<i>O. mykiss</i>)			
Snake River Basin	T 1/05/06; 71 FR 834	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160

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

2.1.1.1. Steelhead Life History

Steelhead are anadromous fish that spawn in freshwater streams and mature in the ocean. All salmonid species, including steelhead, are cold-water species (e.g. Magnuson et al. 1979) that survive in a relatively narrow range of temperatures, which limits the species distribution in fresh water to northern latitudes and high elevations. Adult Snake River steelhead return to mainstem rivers from late summer through fall, where they hold in larger rivers for several months before moving upstream into smaller tributaries. Steelhead live primarily off stored energy during the holding period, with little or no active feeding (Pauley et al. 1986; Shapovalov and Taft 1954). The timing of adult dispersal from holding areas to spawning areas in the Snake River Basin occurs from March through May, and varies with elevation, with earlier dispersal at lower elevations (such as the action area), and later dispersal at higher elevations. The timing is presumed to correspond with suitable flows and water temperatures. Spawning begins shortly after fish reach spawning areas, which is typically during a rising hydrograph and prior to peak flows (Thurow 1987).

Steelhead typically select spawning areas at the downstream end of pools, in gravels ranging in size from 0.5 to 4.5 inches in diameter (Pauley et al. 1986). Juveniles emerge from redds in 4 to 8 weeks, depending on temperature. After emergence, fry have poor swimming ability and they drift passively downstream. To survive, fry must randomly drift into low velocity areas in side channels or along channel margins where they are able to hold a feeding position and avoid predators (Everest and Chapman 1972). Swimming skills improve within a few weeks following emergence. As swimming skills develop, juveniles redistribute to new areas as they find more favorable locations that contain cover, food, and flow velocities that do not require excessive expenditures of energy to maintain a fixed position. Juvenile steelhead move progressively toward deeper water as they grow in size (Bjornn and Rieser 1991). Mortality rates of juveniles are extremely high shortly after emergence and during the first winter. Natural rates of salmonid mortality during their first year are as high as 70 to 90% in streams (McFadden 1969; Mitro and Zale 2002; and Milner et al 2003).

Juveniles typically reside in fresh water for 2-3 years, or longer, depending on temperature and growth rate (Mullan et al. 1992). The majority of juvenile steelhead in the action area are likely to reside in fresh water for no more than two years, based on the absence or low numbers of

O. mykiss greater than two years of age in inventories of Lower Clearwater River Basin streams by Kucera and Johnson (1986), and Fuller et al. (1984). Smolts migrate downstream during spring runoff, which occurs from March to mid-June in the Snake River Basin, depending on elevation.

2.1.1.2. *Status of the Species*

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

Interim recovery numbers for Snake River steelhead in the mainstem Clearwater River are 4,900 adult spawners (NMFS 2002). NMFS uses lambda (λ) to represent the long-term population growth rate. In order to attain interim recovery numbers, lambda must be greater than one, indicating an increasing population.

Counts of wild and hatchery-origin steelhead returning to the Snake River basin declined sharply in the early 1970s, increased modestly from the mid-1970s through the 1980s, and declined again during the 1990s (NPPC 2003). The longest consistent indicator of steelhead abundance in the Snake River basin is derived from counts of natural-origin steelhead at the uppermost dam on the lower Snake River. According to these estimates, the abundance of natural-origin summer steelhead at Lower Granite Dam declined from a 4-year average of 58,300 in 1964 to a 4-year average of 8,300, ending in 1998. The most recent 4-year average of wild fish (2002-2005) is 38,700 adults (Joint Columbia River management staff. 2006). Parr densities in natural production areas have been substantially below estimated capacity (Hall-Griswold and Petrosky 1996). Adult returns at Lower Granite Dam dramatically increased since 2000; however, the increase is due primarily to hatchery returns, with wild fish comprising only 20.25% of the adult returns in that time (Joint Columbia River management staff 2006). From 1999 to 2005 the number of steelhead smolts passing Lower Granite Dam have ranged between 343,750 in 2000 to 1,192,029 in 2004 and have equaled 1 million or better since 2002. Although the last 4 years have produced good numbers of steelhead smolts, these data are not sufficient to indicate a permanent upward trend in steelhead abundance.

The Interior Columbia Basin Technical Recovery Team (ICBTRT 2003) has identified six "major groupings" of populations that are intended to assist in evaluating ESU-wide recovery scenarios. The groupings are based on similarities in genetic distances, distances between spawning aggregates, life history, and habitat or environment considerations. Major groupings of populations can be found in: (1) the Lower Snake River tributaries; (2) the Imnaha River

drainage; (3) the Grande Ronde River system; (4) the Hells Canyon tributaries; (5) the Clearwater River drainages; and (6) the Salmon River drainages. Steelhead in Lolo Creek are one of the six populations that comprise the Clearwater River population group (TRT 2005). The TRT evaluated 25 subbasins containing 271 occupied watersheds and 20 unoccupied watersheds. As part of its assessment, this team considered the conservation value of each 5th field HUC watershed in the context of the populations within these six major groupings.

In the Clearwater River drainages, lower Lolo Creek, middle Lolo Creek, upper Lolo Creek, Musselshell Creek, and Eldorado Creek all received a conservation rating value of high. One important asset of Lolo Creek is that it contains both A- and B-run steelhead. "A-run" and "B-run" fish are distinguished by differences in size, run timing, and length of ocean residence. "B-run" fish are larger, reside longer in the ocean, and occupy a distinct range. The differences in the two fish stocks represent an important component of phenotypic and genotypic diversity of the Snake River Basin steelhead ESU.

The long-term population growth rate, λ , was used by McClure *et al.* (2003) to indicate whether listed populations are increasing in numbers ($\lambda > 1$) or decreasing ($\lambda < 1$). From the years 1965-2000, the estimated growth rate for the Snake River steelhead ESU as a whole is 0.96, assuming no reproduction by hatchery fish (McClure *et al.* 2003). A population with a growth rate of 0.96 would shrink by 50% in 17 years. The growth rate for Snake River "A-run" steelhead is 0.97, and 0.93 for "B-run" steelhead. A four percent increase in the growth rate for the Snake River steelhead ESU as a whole is needed to prevent extinction; however, an increase in the population growth rate of seven percent is needed to sustain "B-run" steelhead (McClure *et al.* 2003).

2.1.1.3. Status of Critical Habitat

NMFS reviews the status of designated critical habitat affected by the proposed action by examining the condition and trends of primary constituent elements (PCEs) throughout the action area. The PCEs consist of the physical and biological features identified as essential to the conservation of the listed species in the documents that designate critical habitat (Table 3). The listed species considered in this Opinion resides in or migrates through the action area. Thus, for this action area, the PCEs of steelhead are the habitat characteristics that support successful completion of spawning, rearing, and freshwater migration.

Table 3. Types of sites and essential physical and biological features designated as PCEs, and the species life stage each PCE supports.

Site	Essential Physical and Biological Features	ESA-listed Species Life Stage
Snake River Steelhead^a		
Freshwater spawning	Water quality, water quantity, and substrate	Spawning, incubation, and larval development
Freshwater rearing	Water quantity & floodplain connectivity to form and maintain physical habitat conditions	Juvenile growth and mobility
	Water quality and forage ^b	Juvenile development
	Natural cover ^c	Juvenile mobility and survival
Freshwater migration	Free of artificial obstructions, water quality and quantity, and natural cover ^c	Juvenile and adult mobility and survival

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

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

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

In general, the environment for listed species in the Columbia River Basin (CRB), including those that migrate past or spawn upstream from the action area, has been dramatically affected by the development and operation of the Federal Columbia River Power System. Storage dams have eliminated mainstem spawning and rearing habitat, and have altered the natural flow regime of the Snake and Columbia Rivers, decreasing spring and summer flows, increasing fall and winter flow, and altering natural thermal patterns. Power operations cause fluctuations in flow levels and river elevations, affecting fish movement through reservoirs, disturbing riparian areas, and possibly stranding fish in shallow areas as flows recede. The eight dams in the migration corridor of the Snake and Columbia Rivers kill or injure a portion of the smolts passing through the area. The low velocity movement of water through the reservoirs behind the dams slows the smolts' journey to the ocean and enhances the survival of predatory fish (Independent Scientific Group 1996; NRC 1996). Formerly complex mainstem habitats in the Columbia and Snake Rivers have been reduced, for the most part, to single channels, with floodplains reduced in size, and off-channel habitats eliminated or disconnected from the main channel (Sedell and Froggatt 1984; Independent Scientific Group 1996; and Coutant 1999). The amount of large woody debris in these rivers has declined, reducing habitat complexity and altering the rivers' food webs (Maser and Sedell 1994).

Other human activities that have degraded aquatic habitats or affected native fish populations in the CRB include stream channelization, elimination of wetlands, construction of flood control dams and levees, construction of roads (many with impassable culverts), timber harvest, splash

dams, mining, water withdrawals, unscreened water diversions, agriculture, livestock grazing, urbanization, outdoor recreation, fire exclusion/suppression, artificial fish propagation, fish harvest, and introduction of non-native species (Henjum *et al.* 1994; Rhodes *et al.* 1994; NRC 1996; Spence *et al.* 1996; and Lee *et al.* 1997). In many watersheds, land management and development activities have: (1) Reduced connectivity (i.e., the flow of energy, organisms, and materials) between streams, riparian areas, floodplains, and uplands; (2) elevated fine sediment yields, degrading spawning and rearing habitat; (3) reduced large woody material that traps sediment, stabilizes streambanks, and helps form pools; (4) reduced vegetative canopy that minimizes solar heating of streams; (5) caused streams to become straighter, wider, and shallower, thereby reducing rearing habitat and increasing water temperature fluctuations; (6) altered peak flow volume and timing, leading to channel changes and potentially altering fish migration behavior; and (7) altered floodplain function, water tables and base flows (Henjum *et al.* 1994; McIntosh *et al.* 1994; Rhodes *et al.* 1994; Wissmar *et al.* 1994; NRC 1996; Spence *et al.* 1996; and Lee *et al.* 1997).

Habitat conditions in Lolo Creek tributary watersheds vary from high to low quality, with highest quality generally on Federal lands with low road densities, and lowest quality on private lands at lower elevations where the lands are developed for numerous human uses. Stream conditions in Lolo Creek have been altered by farming, grazing, logging, and road building (USFS 1997). The CNF cited a survey of Browns Creek, a tributary of Musselshell Creek located mostly on private lands that showed the entire watershed had been either heavily grazed by cattle or logged intensively. Farming impacts occur on private lands in lower portions of the drainage, and logging, grazing, and roads are the dominant impacts in the upper portions of the drainage. Road densities range from 0.0 to 9.8 miles per square mile and average 4.8 miles per square mile on CNF lands in the Lolo Creek drainage. Timber harvest and road building have led to a modeled seven percent increase in peak runoff in the Lolo Creek watershed (Jones 1999).

As stated in the BA, the matrix indicators in the Lolo Creek drainage for water temperature, fish passage, road density, cobble embeddedness, percent fines, large woody debris, and pool quality were rated as "not properly functioning," and sediment yield, stream bank stability, pool frequency, off-channel habitat, and habitat refugia were rated as "functioning at risk." Fuller *et al.* (1984) report that problems in the lower reaches of Lolo Creek include annual stream flow variations, high summer stream temperatures, high levels of siltation, and the lack of instream cover. High sediment levels in the Lolo Creek drainage were attributed to roads, past timber harvest, and mining. Moderate to high levels of cobble embeddedness indicate reduced quality and quantity of summer and winter rearing habitat, and may be a limiting factor to fish production. Low levels of woody debris and sub-optimal levels of instream cover are also limiting factors in a number of stream reaches (USFS 1997).

2.1.2 Environmental Baseline in the Action Area

The environmental baseline is defined as: "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 undergone section 7 consultation and the impacts of state, and private actions that are contemporaneous with the consultation in progress" (50 CFR 402.02). An environmental baseline that does not meet the biological requirements of a listed species may increase the likelihood that adverse effects of the proposed action will result in jeopardy to a listed species or in destruction or adverse modification of a designated critical habitat.

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

The BA for the proposed action states that the Lolo Creek steelhead population is a combination of natural and hatchery-influenced fish, and it produces very few steelhead due to poor adult returns and degraded habitat conditions from historic stream channel alterations. Steelhead spawning occurs in the mainstem of Lolo Creek, from Musselshell Creek to Yoosa Creek, and also in tributaries in the upper Lolo Creek and Yoosa Creek drainages. Limited spawning may also occur in the Musselshell Creek and Eldorado Creek drainages, based on observations of juvenile steelhead in those areas. Juvenile steelhead rearing and spawning have also been documented in the upper mainstem of Lolo Creek, although the number of redds observed has been relatively low. Clearwater BioStudies, Inc. (1988) reported 88 steelhead redds in Lolo Creek during their July 1988 stream survey. The report noted that most redds (57) were found upstream of Musselshell Creek and downstream of Yoosa Creek, where dredging is proposed. Most redds were associated with log drop structures or side channels. Of the 57 identified redds, 44 were reported above White Creek Bridge and Yoosa Creek and 13 were reported between White Creek Bridge and Musselshell Creek.

The BA reports an observation of Lolo Creek steelhead spawning in June of 1960. Sherman Sprague (Tribe, pers. comm.) reported that his field notes indicate seeing steelhead spawning on May 5, 2003, and observing two adults in a pool on May 20, 2003.

Juvenile steelhead snorkel data indicate that fish were observed 94% of the time at 551 snorkel stations from 1985 to 2003 (BA). Average densities of steelhead (age 1+) documented by the CNF between 1988 and 1995 ranged between 6.7 and 0.8 fish/100 m². In the years 1996 and 1998, Clearwater BioStudies reported very low densities of 0.51 and 0.33 fish/100 m². Steelhead densities reported in 2000 through 2004 varied between 0.3 and 2.1 fish/100 m². In 2004, population densities of 1+ juveniles were observed to be 0.4 fish/100 m². Over the last 10-year period, juvenile production has been very low.

Habitat conditions for mainstem Lolo Creek in the project area was determined using 1998 habitat survey data provided by Clearwater BioStudies, Inc. (1999). These stream reaches extend from Musselshell Creek to the confluence of Yoosa Creek, the area proposed for dredging. The best spawning and rearing habitat identified are Rosgen stream classifications B1c, B2, B2c, B3, and B3c channel types with an average gradient of 1.0% and a dominant substrate of small rubble.

In 1998, fish habitat within 23 Lolo Creek reaches surveyed were generally similar to conditions documented during a 1993 survey. Slight changes in overall substrate conditions were observed in individual reaches. The average cobble embeddedness levels measured during the 1993 and 1998 surveys increased slightly from 44% to 46%. A 1988 survey (Clearwater BioStudies, Inc. 1988) measured cobble embeddedness as 51.4%. The stream substrate conditions do not meet the CNF Forest Plan standard of 30 to 35% for B and C channel types. Other changes in stream conditions between 1998 and 1993 were slight decreases in woody debris levels and bank stability ratings. Moderate increases in pool habitat (quantity and quality) were observed.

The matrix of habitat indicators provided for Lolo Creek in the BA listed water temperature, fish passage, road density, cobble embeddedness, percent fines, large woody debris, and pool quality as "not properly functioning". It also listed sediment yield, stream bank stability, pool frequency, off-channel habitat, and habitat refugia as "functioning at risk". Although improvements to Lolo Creek steelhead habitat have been made over the last 20 years, the matrix ratings indicate that many aspects of its spawning and rearing habitat need improvement.

2.1.3. Effects of the Action

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

The proposed action potentially affects individual steelhead and their habitat through potential effects to water quality (turbidity and increased risk of petroleum chemical contamination), potential effects to habitat (sediment deposition, stream bottom alteration, and riparian disturbance), and direct effects to fish related to suction dredging (sucking alevins through the dredge, piling dredge spoils on top of alevins in the gravel, stepping on alevins while walking in the stream coincidental to the dredging operation, and creating stream disturbances that affect primary feeding times and locations of juveniles). These potential effects are minimized or avoided under the proposed action through mitigation measures imposed on the operators by the CNF (see proposed action). Required mitigation includes provisions that limit the size of

dredging areas and the duration of dredging activity per day and per season; designated locations of dredge activities to reduce exposure of redds to sediment, crushing or excavation; and timing of activities to avoid some of the critical egg/alevin gravel incubation period.

2.1.3.1. Effects on Listed Species

The proposed action potentially affects individual steelhead through increased turbidity, physical alteration of the stream bed, suction of fish or eggs into the dredge, crushing eggs or fish while walking in the stream, and disruption of feeding or movement by juvenile steelhead. This section describes the effects of the dredging activities on individual fish, determines the amount of take likely to occur from the action, and evaluates the consequences of those effects on the viability of steelhead at the population and DPS scales.

The intent of the proposed action as described in the DEIS and 2006 BA is to keep dredge mining impacts out of Lolo Creek until after steelhead adults have completed their spawning activity and the majority of steelhead alevins have emerged from their redds as free-swimming fry. The action also seeks to minimize the likelihood of interactions between dredge operators and steelhead by confining dredging operations to specific stream areas outside of known or potential spawning sites. While these measures reduce the likelihood and severity of adverse effects, they do not eliminate the potential for dredging activities to harm or kill steelhead. Steelhead are most vulnerable to adverse effects of dredging while the embryos and alevins are buried in redds, and for several weeks after juveniles have emerged from the redds, but have not yet developed strong swimming capabilities. The precise timing of steelhead spawning and emergence of juveniles from redds is not documented in the action area, but available information summarized in Appendix A suggests that the proposed dredging is likely to begin before steelhead have emerged from the gravels in many years.

Stepping on redds or excavating a redd with a suction dredge could directly kill eggs and alevins if dredging is allowed before fish have emerged from the redds and if the dredge is operated in areas where redds are located. Trampling effects are most severe during the latter stages of alevin incubation when they are closest to the stream surface. One study showed that a single step by a human wearing rubber waders resulted in mortality (19.1%) to rainbow trout alevins and multiple steps resulted in up to 96% mortality (Roberts 1998). The areas susceptible to trampling or excavation are limited to work zones approved by field review prior to the operating season (Minimization measures # 3, 5, and 22). Designation of work zones eliminates the possibility of trampling or excavating redds within the work zones, unless a redd is located in an area not recognized by biologists as a potential spawning site. In two previous years of dredge operations in Lolo Creek under similar procedures and a similar amount of dredging activity, post-season monitoring found one occasion where an operator excavated a gravel bar that contained gravels that were of marginal size for steelhead spawning, but the gravel bar was not

likely large enough for a steelhead redd. Despite efforts to avoid redds, this past experience indicates that an occasional redd could be overlooked in the pre-season field review, but in most years, redds are not likely to be encountered by dredge operators.

The 2006 BA (page 16) states “egg incubations and fry emergence are expected to be completed by July 1 in the mainstem Lolo Creek. The deferment of instream activities until after July 1, would avoid incidental take of juvenile steelhead trout in potential redds at and downstream of the dredge sites”. These dates were developed to allow steelhead alevins to swim out of their gravel redds (emerge) before mining begins. However, based on the best information available to NMFS concerning probable spawning times (see Appendix A), there could still be alevins in the redds on July 1. Therefore, human trampling of alevins by dredge operators could result in take of listed steelhead. Based on egg to alevin survival assumptions and assumptions of percent alevins stepped on by dredge operators (Appendix B), it is estimated that there could be 258 alevin mortalities each year as a result of the proposed project. This is approximately 0.8% of the expected total from 57 steelhead redds ($57 \times 550 = 31,350$) produced annually in Lolo Creek. Even if all of the alevins exposed to trampling were killed, it is unlikely that this number would have an effect on the population in Lolo Creek since natural mortality rates in the first year are 70 to 90% (McFadden 1969; Mitro and Zale 2002; and Milner et al 2003).

Juvenile steelhead are likely to disperse throughout areas where dredging will occur, and exposure to dredging effects cannot be avoided. Dredge operations are likely to disrupt normal feeding activities of juvenile steelhead where they are exposed to operators working in the water, fuel leaks, engine noise, or turbidity. Turbidity itself can cause a range of adverse effects, ranging from displacement to other behavioral effects to injury or death, depending on the length of exposure (Newcombe 1991). The effects of the disruption in feeding are likely to vary among individual fish, as some individuals are likely to take advantage of feeding on the large numbers of invertebrates typically dislodged by dredging, and other fish moving to areas where feeding opportunities may be diminished. Smaller fish, particularly young of the year juveniles, are more likely to be adversely affected by the dredging than larger fish. Newly emerged steelhead have limited ability to move away from a dredge to avoid turbidity or other adverse effects. Juvenile steelhead generally acquire the ability to swim against water current several weeks after emergence, and swimming skills continue to improve as fish increase in size.

Where juvenile steelhead are exposed to effects of dredging, they are likely to alter their behavior, with widely varied responses. Some steelhead may take advantage of a windfall in food dislodged by dredging (e.g. Thomas 1985), but the depth and velocity of water in the outfall plume likely restricts the opportunity to fish of a certain size range. Other fish may be alarmed by the dredging activity and hide or flee. These fish may be more susceptible to predation or exposed to unfavorable conditions for growth or survival. The most common effect of exposure to dredging is likely to be on feeding behavior. Once juvenile steelhead are large enough to swim against the current, they establish territories while feeding, and tend to shift from feeding in open daylight toward areas with shade and cover, with primary feeding times at twilight occurring in the late evening and early morning. This is when the natural aquatic drift of aquatic

insects, a food source for salmonids, in streams peaks (Hynes 1970, Waters 1962, and Everest 1969). The DEIS mitigation measures allow dredging activity only during daylight. However, this does not fully encompass the time period when most juvenile feeding occurs.

The disturbance of juvenile steelhead is not expected to directly kill fish exposed to dredging effects, but is likely to harm a portion of the fish exposed to dredge mining, and possibly result in indirect mortality. In response to dredging, steelhead may stop feeding activity to seek cover, move to a less favorable feeding location, or intermittently suspend feeding due to repeated disruptions. Such behavioral changes could cause reduced rates of growth. Poor growth conditions in freshwater affects salmonids in a variety of ways. Smaller fish experience high rates of winter mortality (Biro et al. 2003), under-sized smolts have lower rates of survival to the adult stage, in comparison to larger fish (Beamish and Mahnken 2001; Sogard 1997), and slow-growing salmonids may require an additional year or more of residence time to reach the minimum size before out-migrating as smolts (Zabel and Williams 2002). Although the noise and movement activities could have some negative effects on the feeding behavior of juvenile steelhead, observations made by the miners, CNF personnel, and NMFS personnel during the field reviews showed fish feeding within a few feet of the activity, and often in the plume itself.

The proposed dredging activities are expected to have little impact on adult steelhead or the suitability of spawning gravels, since spawning occurs 5-6 months later during spring flows that naturally redistribute substrate. Movements of juvenile steelhead through the dredge areas could be delayed by several hours until instream activities cease, particularly on occasions when multiple dredges are operating nearby at the same time. Juvenile steelhead rearing in the immediate vicinity of the suction dredging would likely be displaced while dredges are operating.

The potential adverse effects to juvenile steelhead are likely to be inconsequential if the exposure time is short rather than continuous exposure. It is not possible to determine the exposure to an individual fish so the number of "fish days" of exposure was calculated based on the duration of allowed operations and estimated fish densities. Appendix C estimates the total number of juvenile fish exposed to dredging would range from 35 to 753. A subset of these fish would be exposed to multiple days of operations. It appears that potential negative effects on the feeding behavior and growth rates of juvenile steelhead would be minimal.

2.1.3.2. Effects on Critical Habitat

The CNF BA provides an analysis of the effects of the proposed action on Snake River steelhead and their habitat. The analysis in this Opinion uses the matrix of pathways and indicators and procedures in NMFS (1996), the information in the BA, and the best scientific and commercial data available to evaluate elements of the proposed action that have the potential to affect the listed fish or their habitat.

The intent of the minimization measures (#s 3, 5, and 13) contained within the proposed action is to identify potential spawning areas and to keep dredge mining and its impacts out of those areas. Although there is a total of approximately 9.5 miles of stream length within the action area, the area proposed for dredging is about 0.9 miles and that entire stretch will be surveyed by CNF biologists prior to dredging to determine potential spawning areas, and then work is to be allowed only in flagged areas. Also, to keep other habitat impacts to a minimum, miners are required to attend a preseason review with the CNF who will identify the types of key habitat channel features, such as large rocks (over 12 inches) and woody debris adjacent to streambanks, that are to be left intact to prevent undercutting and bank destabilization (#s 10, 14, 16, 17, and 18). Also, most redds found within Lolo Creek were associated with log drop structures or side channels artificially created by the CNF. The CNF minimization measures will preclude mining operations near any log drop structure at these locations.

Suction dredging may affect salmonid food availability. Localized reductions in invertebrate populations were observed by Harvey *et al.* (1982) in comparisons of control and dredge areas; however, the differences did not occur at all locations. One year after dredging, Harvey *et al.* (1982) reported there was virtually no evidence that dredging had occurred at one study site, and substrate changes were eliminated at the other site. Somer and Hassler (1992) monitored density and composition of benthic invertebrates, and physical stream characteristics, above and below dredge sites in a northern California stream. They found qualitative differences in invertebrate species above and below the dredging, but no significant differences in numbers of invertebrates or diversity indices. Given the very small percentage of the stream bottom affected by dredging in the action area and that almost all food of juvenile steelhead is related to water column drift, it is unlikely that the amount or availability of steelhead food would change as a result of dredging.

Suction dredging may affect salmonid spawning areas by loosening fine particles that could become deposited in redds, or by creating unstable gravel deposits that attract adult salmonids to construct redds in areas more likely than natural substrate to wash out at high flows. Harvey and Lisle (1999) compared scour of Chinook salmon redds before and after high winter flows in natural substrates and on dredge tailings, and found that redds located in tailings were subject to a higher rate of scouring than redds located in undisturbed areas. Steelhead redds could be affected similarly; however, steelhead redds located in dredge tailings would be less likely to scour since steelhead typically spawn after several high-flow events and scouring has already occurred. Another mitigating factor is the amount of area affected by dredging. The total surface area disturbed by the proposed mining is small, in comparison to the available spawning areas in the vicinity of the dredge operations.

There is a potential that steelhead and Chinook salmon could select dredge tailings for a redd site. Steelhead in Lolo Creek spawn in the spring after high water levels have already redistributed sand and silt carried in bedload material. In Lolo Creek, miners are required under the IDWR permit to avoid operating in natural spawning areas such as gravel bar areas at pool tailouts. The CNF will identify such areas, and make them known to the operators during the preseason field review. In addition, miners must disperse dredge tailings and refill holes so as to

not create artificial spawning areas. In the study by Harvey and Lisle (1999), the greatest amount of scour occurred at a site where the dredge hole was around 2 feet below the surface elevation, and the spoils were piled around 2 feet above the surface elevation. The site with the least amount of scour had no discernable hole or pile left from the dredge operation. This observation indicates that refilling dredge holes might reduce the likelihood of scour. Since steelhead spawn after high water has redistributed the gravels at the dredge area, the gravels are already in a stable state. Also, given the small area disturbed by dredging and the requirement to fill the dredge holes, the likelihood that scour of steelhead redds would be induced by suction dredging is greatly reduced.

The CNF expects both turbidity and suspended sediment to increase during suction dredge operations, but such increases are expected to be virtually undetectable 25 feet downstream, based on their observations of past dredge operations under the existing guidelines. Increased turbidity is expected to be brief (only while the dredge engine is operating). The Idaho Department of Environmental Quality (IDEQ) measured turbidity downstream of same-sized recreational dredges operating in a similar stream channel as the motor was running, and found that even when measured immediately behind the sluice outlet, turbidity did not exceed the state acute standard of 50 NTUs (Nephelometric Turbidity Units) (D. Stewart, IDEQ, pers. comm.). According to Waters (1995), brief low levels of elevated turbidity comparable to the IDEQ data is likely to have little or no measurable effect on primary production. A small number of invertebrates and fish could be displaced.

Sediment can become excessive if a suction dredge is operated in silt deposits. However, this is not allowed under the proposed action. Suction dredges are usually operated in areas with cobble substrate or bedrock seams, where high density, ore-bearing deposits are typically found. Consequently, particles typically suspended by suction dredges tend to settle rapidly, and sediment plumes typically do not extend much beyond the sluice outlet. Somer and Hassler (1992) observed increased deposition of sediment and organic material in sediment traps downstream from dredge activities 125 and 350 feet below dredge sites, 4-6 weeks after dredging occurred. Thomas (1985) found that suspended sediment concentration returned to background levels 35 feet downstream from the dredge, and Harvey *et al.* (1982) reported a similar finding; IDEQ observations were also comparable (D. Stewart, pers. comm.).

Harvey and Lisle (1998) reviewed dredging literature and stated that most effects on stream ecosystems are not well understood, but concluded that the effects of habitat alteration could be minor, localized, and brief, or may go as far as to harm population viability, depending on each particular stream system. Excavation and deposition of dredge materials can result in localized changes in stream depth, size composition of surface materials, movement or redistribution of large particles or woody material, and destruction of streambanks. Subsurface cover in pools from protruding wood and boulders may be temporarily increased or decreased at a dredge site, depending on local circumstances. Changes in cover, however, typically persist only until the

next high flow event fills dredge holes and redistributes dredge deposits. Somer and Hassler (1992) monitored dredge holes and sediment deposition from suction dredging and found that high flows redistributed bedload, filled dredge holes, and flushed sediment from the dredge sites.

However, in a study of suction dredging in a California stream, Harvey (1986) found that trout are apparently unaffected by small suction dredges unless a major change in their habitat occurs. Harvey attributed the apparent lack of effects on trout to the fact that the study area lacked desirable pools and water depth sought by rainbow trout; therefore, habitat alterations had little effect. The proposed action for Lolo Creek includes numerous restrictions to ensure that major habitat changes do not occur, including avoiding likely steelhead spawning areas and avoiding mining around key habitat channel features such as boulders and logs. Because dredging effects vary depending on the channel environment and dredging procedures, Harvey and Lisle (1998) recommended that managers carefully analyze the watershed where mining is proposed and tailor mining regulations to the particular issues and effects in the watershed. Based on observations made by the North Idaho Level 1 Team during several post-season reviews of suction dredging effects at Lolo Creek (unpublished data, CNF), there were only minor physical effects (generally only small depressions and mounds) from recreational dredging when miners were prohibited from disturbing the streambank, large rocks, or logs. Such disturbances are prohibited not only by the CNF mining restrictions, but also by the conditions listed within the IDWR permits on CNF lands, and therefore, are not expected to occur. At the Lolo Creek suction dredging sites, past CNF monitoring has not shown these potential impacts to be significant effects.

Harvey and Lisle (1998) also stated that examination of dredging impacts should include other activities, such as camping. Dredge operators often camp in riparian areas, and sites are often utilized for extended time periods, with the resulting potential for waste disposal problems, loss of riparian vegetation, and other site damage. Based on observations from past years, the CNF has noted some disturbances, but they appear to be minor and localized. Risks of these impacts are reduced to an insignificant level through CNF site monitoring and vegetation replanting stipulations now included as permit conditions.

2.1.3.3 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 the listed species or in destruction or adverse modification of a designated critical habitat.

The action area is mostly managed by the CNF, except for the non-Federally maintained road system in the project vicinity. Private and state lands outside but adjacent to the project area are expected to be managed in similar ways as previous years. Therefore, cumulative effects are not expected to affect the environmental baseline during 2006 and 2007.

2.1.4. Conclusions

After reviewing the status of the Snake River steelhead and its designated critical habitat, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects, NMFS concludes that the 2006 and 2007 dredging actions, as proposed, are not likely to jeopardize the continued existence of Snake River steelhead and are not likely to destroy or adversely modify designated critical habitat. These conclusions are based on the following considerations:

Critical Habitat

- 1 Rearrangement of gravels by the dredging is not likely to alter physical channel features to the extent that the use or suitability of the dredged areas for rearing is appreciably altered. Monitoring of previous mining activity in Lolo Creek and cited literature indicates that dredged areas are unrecognizable the following year due to rejuvenation by natural processes.
2. There will be no appreciable change in the amount and quality of rearing habitat in the action area.
3. Boulders, logs, and overhanging banks that create cover for juvenile steelhead would not be affected by the dredge activities since the proposed action prohibits disturbance of these habitat elements.
4. The PCE for adult migration and smolt migration are not affected by the mining since there is little physical alteration of the stream channel that would affect migration.
5. Stream alterations will have little to no effect on the movement of juvenile steelhead since it will not create impediments to fish movement.
- 6 Juvenile movements through the action area may be disrupted while dredges are operating in the stream, but fish would be free to move without disruption except those limited areas under dredging activities at any given time (18 operators in each 50 foot stream section. Fish movement would not be disrupted during those times when dredges are not operating.

7. Spawning habitat is unlikely to be altered by the proposed action due to the mitigation measures designed to avoid or reduce the possibility of impacting redds by crushing, excavating, or sediment impacts.

Snake River Basin Steelhead

The proposed action is unlikely to cause direct mortality of steelhead, with the exception of potential crushing or excavation of redds not detected in the pre-season review. Based on two previous years of operation, redd disturbance appears unlikely to occur, but is not discountable.

2. The anticipated number of alevins likely to be exposed to trampling effects is 258 alevins, which is 0.8% of the total production for this section of Lolo Creek. However, the mitigation measures in the proposed action are expected to reduce or eliminate effects from trampling. Also, annual outmigration of Snake River steelhead has been over one million smolts since 2002. The loss of 258 alevins, which they themselves would incur natural mortality before becoming smolt, would not jeopardize the Snake River Basin steelhead, even if all 258 alevins were killed.
3. The proposed action through noise and other dredging activities could have some effects on the feeding behavior of juvenile steelhead, but these impacts are expected to be minimal.
4. The proposed action is not likely to harm or kill adults or smolts, since neither life stage is present during the mining activities.

While the action involves riparian and instream activities, NMFS expects project mitigation measures to be effective in avoiding or minimizing many adverse effects to steelhead. The key measures to protect steelhead are the work window, CNF monitoring of the suction dredge activities, surveys of all project sites for locations of steelhead redds, fuel containment and storage controls, inspections of equipment for leaks, erosion control measures to minimize sediment and turbidity, a fisheries biologist to oversee critical portions of project implementation and mitigation measures, and the small numbers of alevins and steelhead juveniles projected to be harmed or killed during 2006 and 2007.

2.1.5. Conservation Recommendations

Conservation recommendations are defined as "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). Section 7 (a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation

programs for the benefit of the threatened and endangered species. The conservation recommendations listed below are consistent with these obligations, and therefore should be implemented by the CNF.

The CNF should monitor stream temperatures for Lolo Creek between April 1 and June 30 of each year to predict steelhead alevin emergence times from redds, and adjust the dredging window to ensure that mining occurs after emergence.

- 2 The CNF should ensure that dredge operators camp in established developed or undeveloped campgrounds and that new camping areas are not established in riparian areas.

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

2.1.6. Reinitiation of Consultation

Reinitiation of formal consultation is required and shall be requested by the CNF or NMFS where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) The amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; (b) new information reveals effects of the action may affect listed species in a way not previously considered; (c) the action is modified in a way that causes an effect on listed species that was not previously considered; or (d) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16). In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease, pending conclusion of the reinitiated consultation. If any of the stipulations or monitoring for the proposed action changes (as identified in the DEIS, pages 2-2, 2-5, 2-6, 2-7 and Section 1.2 of this document), except as a result of conditions specified in the Incidental Take Statement of this document, then reinitiation of consultation is required.

2.2. Incidental Take Statement

Section 9 (16 U.S.C. 1538) of the ESA prohibits take of endangered species without a specific permit or exemption. Protective regulations adopted pursuant to section 4(d) extend the prohibition to threatened species. Among other things, an action that harasses, wounds, or kills an individual of a listed species or harms a species by altering habitat in a way that significantly impairs its essential behavioral patterns is a taking (50 CFR 402.02). Incidental take refers to takings that result from, but not the purpose of, carrying out an otherwise lawful activity

conducted by the Federal agency or applicant (50 CFR 402.02). Section 7 (o)(2) exempts any taking that meets the terms and conditions of a written incidental take statement from the taking prohibition.

2.2.1. Amount or Extent of Take

The proposed action is reasonably certain to result in incidental take of the listed species. NMFS is reasonably certain the incidental take described here will occur, because Snake River steelhead eggs, alevins, fry and juvenile fish from 1 to 2 years of age are known to occur in the action area at the time dredging would occur, and the proposed action may harm or kill steelhead through crushing or excavating redds within the designated work zones, displacement of fish, and disruption of normal behavior such as feeding.

The number of steelhead harmed, harassed, or killed by the proposed dredging activities cannot be reasonably monitored or measured since eggs and alevins are anticipated to be killed in redds only when the redds are not detected, and there is no practical way of counting the number of juvenile fish that are exposed to or harmed by dredging. Consequently, surrogate measures of take are necessary to establish a limit to the take exempted by this take statement.

Estimates of take and fish exposure in Appendices A through C are based on the amount of stream area disturbed by dredging and the number of days that dredging would occur at each site, as described in the proposed action (Table 1). Consequently, the size of the disturbed area and the numbers of operating days at each site are surrogates for the amount and extent of take associated with this action. The incidental take described in this take statement would be exceeded if:

1. An individual miner exceeds the specifications for their permit as found within Table 1
or
2. Dredging exceeds the total linear distance of stream disturbance as described in Table 1;
or
3. Dredging exceeds the total number of operating days described in Table 1.

If the proposed action reaches or exceeds the maximum allowable take, then CNF must suspend the mining activities and reinitiate consultation.

2.2.2. Reasonable and Prudent Measures

The RPMs are non-discretionary measures to avoid or minimize take that must be carried out by cooperators for the exemption in section 7(o) (2) to apply. The CNF has the continuing duty to

regulate the activities covered in this incidental take statement where discretionary Federal involvement or control over the action has been retained or is authorized by law. The protective coverage of section 7(o)(2) will lapse if the CNF fails to exercise its discretion to require adherence to terms and conditions of the incidental take statement, or to exercise that discretion as necessary to retain the oversight to ensure compliance with these terms and conditions. Similarly, if any applicant fails to act in accordance with the terms and conditions of the incidental take statement, protective coverage will lapse.

NMFS believes that the following RPMs are necessary and appropriate to avoid or minimize the likelihood of incidental take to steelhead.

The CNF shall comply with the following RPMs

1. The CNF must actively monitor, plan, and efficiently report all project related activities.
2. The CNF must ensure that any take of steelhead eggs, alevins, juveniles, and adults is properly and promptly reported to NMFS.
3. All project related actions must be limited to avoid impact to alevins.
4. Dredging-related actions must be limited by time of day.

2.2.3. Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the CNF and its cooperators, including the applicant, if any, must fully comply with conservation measures described as part of the proposed action and following terms and conditions that implement the RPMs described above. Partial compliance with these terms and conditions may invalidate this take exemption, result in more take than anticipated, and lead NMFS to different conclusion regarding whether the proposed action will result in jeopardy or the destruction or adverse modification of designated critical habitats.

NMFS believes that the following terms and conditions are necessary and appropriate to avoid or minimize take of Snake River steelhead resulting from implementation of the action.

- 1 To implement RPM 1 the CNF shall:
 - a. Provide NMFS with an annual monitoring report describing operator compliance with suction dredging rules, the amount of stream area mined at each site, pre- and post-dredging photos of the entire mined area, and details about streambank vegetation disturbance and revegetation (if any). Submit the annual monitoring report by November 30, 2006 and 2007, to: NMFS, 102 N. College, Grangeville, Idaho 83530.

- b. Obtain a plan of operation from the suction dredge operators before dredge mining begins. The plan must specify the location, approximate amount of surface area to be dredged, and projected dates of operation. The operating plan would be used to establish channel monitoring sites to ensure that all dredge operations avoid areas likely to be used by steelhead for spawning (see term and condition 3).
 - c. Obtain from the suction dredge operators, at the end of the season, a description of the actual location(s), surface areas dredged, and number of days of operation.
2. To implement RPM 2, the CNF shall
 - a. Require operators to immediately cease operations if: (1) eggs are excavated or if dead or injured steelhead are observed, (2) CNF or the Tribe observes that operators are not following term and condition 3 and 4 below. The CNF shall contact NMFS immediately.
 - b. Require all Terms and Conditions be included in any permit, grant, or contract issued for the implementation of the action described in this Opinion.
 - c. Require that if a sick, injured, or dead specimen of a threatened or endangered species is found as a result of the proposed action, the finder must notify the Idaho Field Office of NMFS Law Enforcement at (208) 321-2956. The finder must take care in handling sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.
 3. To implement RPM 3 the CNF shall
 - a. Prior to dredge operations, establish boundaries of the upstream and downstream extents of the work zones where dredging may occur by marking off areas suitable for dredge mining. Suitable work zones are those locations where redds are unlikely to occur and where dredging will not result in long-term alteration of channel morphology or stream flow.
 - b. Limit all instream activities associated with dredge mining to the suitable established work zones. If an operator exceeds the limits of their designated work zone, the CNF shall notify NMFS within 24 hours of the observed violation to determine if reinitiation of consultation is required.

- c. Require that all dredging operations before July 26, 2006 and 2007, be at least 50 feet from any known steelhead redd.
4. To implement RPM 4 the CNF shall
- a. Require that all instream activities associated with the actual dredging and sorting of gravels for gold shall only occur between 8 am and 7 pm every day. This time frame will permit juvenile steelhead to reestablish territories in streams and feed at peak aquatic drift cycles each day.

3. MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT

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

The Pacific Fishery Management Council (PFMC) designated EFH for groundfish (PFMC 1998a), coastal pelagic species (PFMC 1998b), and Chinook salmon, coho salmon, and Puget Sound pink salmon (PFMC 1999). The proposed action and action area for this consultation are described in the Introduction of this document. The action area includes areas designated as EFH for various life-history stages of Chinook salmon and coho salmon. Coho salmon adults are not expected to spawn in the action area in 2006 or 2007. Coho juveniles are released into portions of the Lolo Creek action area after dredging operations are completed. These juvenile fish will out migrate as smolts the following spring. We therefore believe the proposed action will not affect coho salmon in 2006 and 2007.

Based on information provided in the BA and the analysis of effects presented in the ESA portion of this document, NMFS concludes that the proposed action could result in unstable hydrologic gravels being deposited along the stream bottom. These clean gravels could be attractive to spawning Chinook salmon for redd sites. Redds located in unstable gravels are expected to have lower than normal egg to fry survival.

3.1. EFH Conservation Recommendations

Observe whether Chinook salmon use dredging sites to construct redds. If redds are constructed in dredged gravels, identify if these gravels persisted to the following spring. Report findings to NMFS by June 15, 2007 and 2008.

3.2. Statutory Response Requirement

Federal agencies are required to provide a written response to NMFS' EFH conservation recommendations within 30 days of receipt of the recommendations [50 CFR 600.920(j)(1)]. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse effects of the activity on EFH. If the response is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations. The reasons must include the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

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

3.3. Supplemental Consultation

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

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

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

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

This ESA consultation concludes that the proposed small-scale suction dredging action in Lolo Creek will not jeopardize the Snake River steelhead. Therefore, the CNF can authorize this action in accordance with its authority under the Federal Land Policy and Management Act of 1976 and The Forest Service Surface use Regulations. The intended users are 18 permittees.

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

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

Objectivity:

Information Product Category: Natural Resource Plan.

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

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

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

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APPENDIX A.

Predicting Lolo Creek Emergence Times of Steelhead Alevins from Redds

To determine probable spawning times of Lolo Creek steelhead, NMFS gathered as much site observation data as available on Lolo Creek steelhead, other known observations on naturally spawning Snake River steelhead, hatchery steelhead/rainbow trout development data, flow data from Lolo Creek, and temperature data from Lolo Creek. By combining these sources of information, the conclusion is that Lolo Creek steelhead will spawn over a wide range of time and temperatures within a given year. Steelhead are thought to spawn just before, during, and after spring high flow events. In Lolo Creek, highest flows typically occur between mid-April and mid-May in most years. Steelhead eggs are known to mature very slowly at temperatures below 7.2 °C. Based on two observations of spawning steelhead (May 5, 2003 and June, 1960 (no day provided)), it seems probable that Lolo Creek steelhead typically spawn between mid-April and June 1. In typical spring temperature years of 2001, 2003, and 2005, the optimal egg development temperature of 7.2 °C occurred on May 22, May 23, and May 12. This is within the range of assumed spawning time for Lolo Creek steelhead.

The amount of Centigrade temperature units (CTUs) needed by rainbow trout/steelhead to hatch and emerge from redds varies considerably at different water temperatures. Table 1 below derived from Leitritz and Lewis (1976) illustrates this. A CTU equals the sum of mean daily temperatures above 0 °C.

TABLE 1. Number of days and CTUs required for steelhead eggs to hatch

Water °C	Days to Hatch	CTUs Required
4.4	88	356
7.2	48	346

As this table illustrates, not only does the days to hatch decrease dramatically with increasing temperature of 7.2 °C and above, but the number of required CTUs also drops. The combination of these two has the effect of bringing the hatching time of eggs spawned over a 3 to 4 week period of cold temperatures in the spring very close together.

NMFS used data on CTUs for first emergence from gravel of rainbow trout at an average water temperature of 7.5 °C (84 days and 632 CTUs) (Roberts 1988), and data on CTUs for first emergence from a naturally spawned redd in Gumboot Creek, Imnaha River (Stack and Bronec 1998) with an average water temperature of 10.8 °C (41 days and 442 CTUs). Using these CTUs as representative of emergence times based on their water temperatures, NMFS interpolated first

emergence dates using Lolo Creek average water temperature data for the years 1992, 1993, 2001, 2002, 2003, and 2005. May 10 and June 1 were the assumed spawning dates for this analysis. The results are shown in Table 2.

TABLE 2. Estimated Fry Emergence Dates

Year	Spawned May 10 Start Emerge	Spawned June 1 Start Emerge		Spawned May 10 80% Emerge	Spawned June 1 80% Emerge
1992*	6/11*	6/20-21		6/21	6/30
1993	7/9	7/13		7/19	7/21
2001	7/5-6	7/7-8		7/15	7/17
2002	7/16	7/16		7/26	7/26
2003	7/4-5	7/5-6		7/14	7/15
2005	7/1-2	7/5		7/11	7/15

(*The start date for 1992 was May 19 because no temperature data were available before that date.)

Thurrow's 1987 steelhead study on the South Fork Salmon River showed that 98% of alevins emerge within 14 days. This data indicates that typically about 80% emergence occurs within 7 days. His data also shows that (based on 5 redds each of 2 years) alevins from the different redds began emerging within 3 days of each other. Within 10 days of the first emergence, 80% of alevins had emerged as fry in all 5 redds. This was consistent in 1984 (considered a cold year) and 1985 (considered a typical year). Apparently, at the time of emergence in both years, the South Fork Salmon River was close to the same temperature. Table 2 illustrates this additive factor as 80% emerge. Based on these dates, the following range of emergence times for Lolo Creek steelhead fry can be assumed. In very warm springs (1992), steelhead will start emerging in early June and finish by about June 15. In very cold springs (1993 and 2002), steelhead will start emerging between July 9 -16 and finish about July 26. In what is considered typical spring water temperature years (2001, 2003, & 2005), Lolo Creek steelhead will start emerging between July 1 and 6 and finish emerging by July 17.

These data findings are consistent with the 2-year study of Thurrow (1987) for steelhead incubating in Poverty Flat of the South Fork Salmon River. In Thurrow 1984, a cold year, steelhead began emerging on July 13 and completed 80% emergence by July 23. In 1985, a typical year, steelhead began emerging on July 3 and completed 80% emergence by July 13. The consistency in the start date of steelhead emergence from five different redds each year is significant because these redds were randomly selected and could have been created over a wide period of time. These data are also consistent with NMFS' approximation of emergence dates based on knowing average stream CTUs and then interpolating between known emergence dates from gravel redds. These results indicate that redds created weeks apart in water having a consistently warming trend will tend to hatch within a narrow time range.

Appendix B:

Alevin Mortality Estimate

Total length of stream disturbed was calculated by adding maximum length of disturbance data in Table 1 of the Opinion. We assumed that all 18 dredgers began on July 1 and continued through July 26 each year. The total length of stream disturbed was 2857 feet.

There are 9.49 miles of stream in the action area. We assumed 57 redds per year in the action area. Assuming an even distribution within the action area, there would be 6.01 redds per mile and 3.29 redds within the 2857 feet of stream disturbed by dredgers.

Based on South Fork Salmon River steelhead fecundity assumptions of Thurow (1987), we assumed that average egg production would equal 5500 eggs per female. Since Lolo Creek has stream sediment problems similar to the South Fork Salmon River, we used Thurow (1987) to estimate egg to fry survival. The highest average of the 2 years studied was 10%. We assumed each redd could produce 550 alevins.

Another assumption made was that 25% of the redd area within a disturbed stream reach would get stepped on. Finally, we assumed that half of the redd area impacted was stepped on only once (19% mortality) and the other half was stepped on multiple times (96% mortality) (Roberts 1988). This averaged 57.5% mortality.

Based on the best information available to NMFS concerning probable spawning times and temperature units that have occurred in previous years, from 0 to 100% of steelhead alevins could still be in the project area on July 1 of 2006 and 2007. Of the 6 years evaluated for this Opinion, alevins were predicted to be completely out of redds by July 1 in only one year (1992). This year had very early and very warm spring temperatures. In all other years, alevins were predicted to leave redds after July 1. Therefore, human trampling of alevins by dredge operators could result in take of listed steelhead in most years. Based on egg to alevin survival assumptions and assumptions of percent alevins stepped on by dredge operators (Appendix B), it is estimated that there could be 258 alevin mortalities each year as a result of the proposed project. This is approximately 0.8% of the expected total from 57 steelhead redds ($57 \times 550 = 31,350$) produced annually in Lolo Creek.

NMFS believes this is a high estimate because: (1) steelhead will construct multiple redds (fewer alevins per redd), (2) the total area stepped on will be a small fraction of the total square feet encompassed within the stream length, (3) during July 1 to July 26 a high percentage of alevins will be leaving the redd and therefore, not subjected to trampling, (4) only part of the 18 dredgers will be dredging before July 26, and (5) the mitigation measures in the proposed action restrict dredging activities to areas of lower quality spawning habitat.

However, this estimate could be low because: (1) steelhead redds are hard to locate and enumerate, so the 57 redds assumed could be low; (2) operators may have more of a tendency to walk on spawning gravels than expected, (3) a cold spring could postpone spawning and

development of eggs into alevins and fry, prolonging dredge related impacts, and (4) there could be more of a tendency for dredgers and redds to be located within the same stream reach than expected.

APPENDIX C:

Number of Juveniles Exposed to Dredging Effects

Area Affected

The total linear stream distance proposed annually for dredging is 4587 feet and the total stream distance of the project area is 50,495 feet (2006 BA, Table 2). Therefore, no more than 9.1% of the stream length within the action area would be disturbed annually.

Individual Operators do not operate for the full season. Time limitations are identified in Table 1 of the Opinion as follows: Eleven operators are allowed to operate 15 days or less, one operator is allowed to operate 30 days or less and six operators are allowed to operate 46 days or less. It is assumed that each dredging operation may displace juvenile fish from 25 feet above and 25 feet below the location of the dredge.

Juvenile Fish Density in the Area Affected

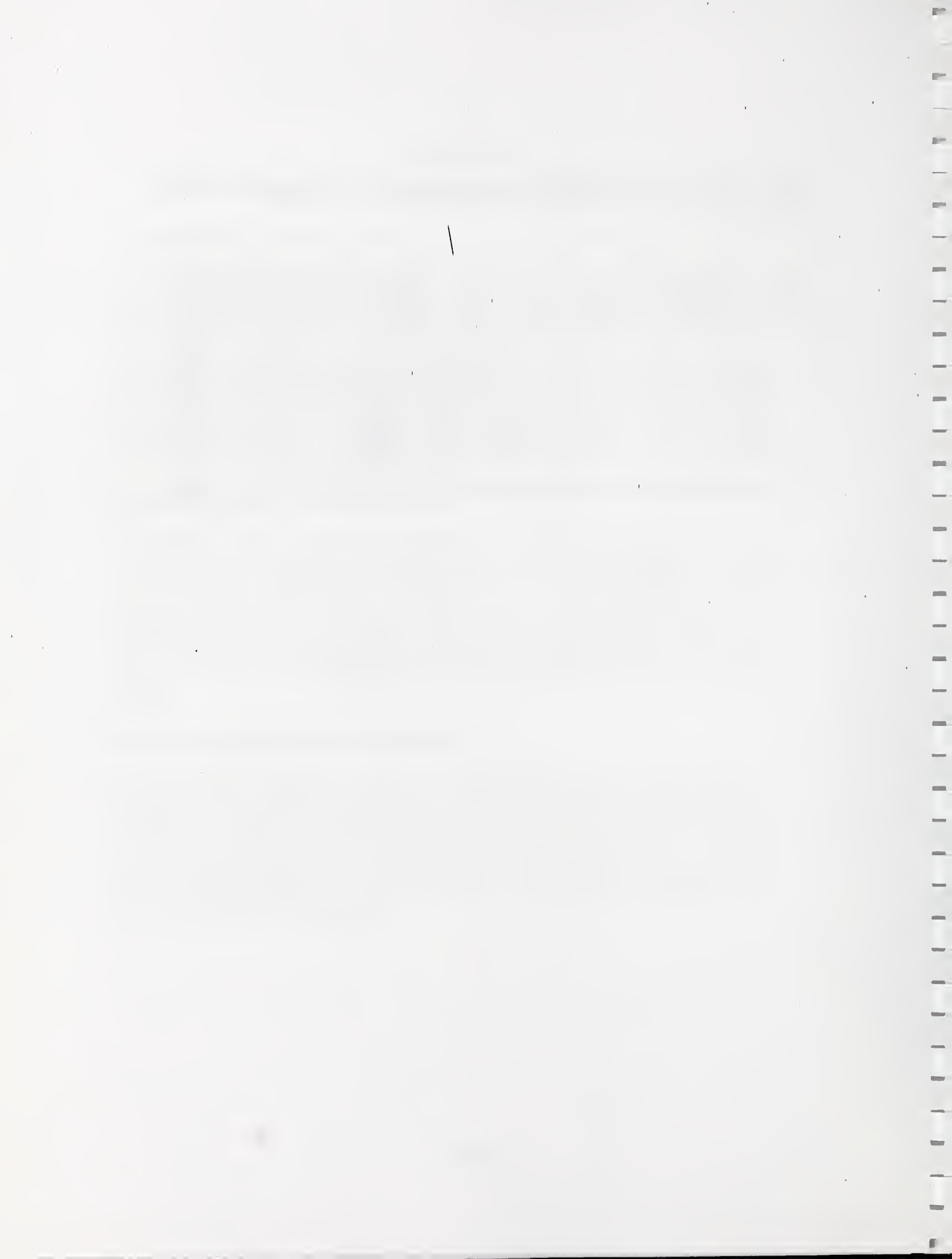
The smallest 1+ year class of juvenile steelhead was in 2000 and averaged .3 fish per 100 square meters. The largest 1+ year class of juvenile steelhead was in 1988 and averaged 6.7 fish per 100 square meters. The 2000 to 2004 1+ year classes of juvenile steelhead ranged between 0.3 and 2.1 fish per 100 square meters. Based on data since 1988, it is anticipated between 508 and 11,343 juvenile steelhead would be present within the action area, with most recent years towards the lower end of the range (50495 feet x .067 ft/m = 15,391 meters x 11 wide = 169,300 square meters x .003 fish per meter or .067 fish per meter).

Number of Juvenile Fish Exposed to Dredging

It is not possible to determine in advance which days operators will work during the season. The following table was prepared to demonstrate the total number of days that fish might potentially be exposed to dredging. Based on the maximum number of days provided each operator the following would be the maximum number of fish exposure days during the season. Based on fish response at each site and the operators potential daily movements within the site it is not possible to determine the actual exposure of any individual fish within the population.

Table 1. Total number of potential fish exposure days for the Lolo Creek suction dredging operations per year.

Total Days of Operation	Remaining Number of Operators	Linear ft/site	Total Feet	Total Meters	Total Square Meters	Number of Fish at 0.3 fish/100m ²	Number of Fish at 6.7 fish/100m ²
7	18	50	900	274.32	3017.5	9	202
10	17	50	850	259.08	2849.9	9	191
14	11	50	550	167.68	1844.5	6	124
15	8	50	400	121.95	1341.5	4	90
30	7	50	350	106.7	1173.8	4	79
46	6	50	300	91.44	1005.8	3	67
Potential total number of fish days of exposure						35	753



ATTACHMENT 5



United States Department of the Interior
FISH AND WILDLIFE SERVICE

Snake River Fish and Wildlife Office
1387 S Vinnell Way, Suite 368
Boise, Idaho 83709



MAR - 7 2006

Thomas K. Reilly
Forest Supervisor
Clearwater National Forest
12730 Highway 12
Orofino, Idaho 83544

Subject: Recreational Class Suction Dredging on USFS Lands in the Moose Creek
Drainage, 2006-2007, Clearwater County, Idaho--Biological Opinion
File #104.0000 F-06-335

Dear Mr. Reilly:

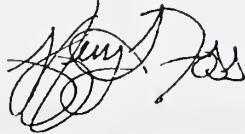
This letter transmits the Fish and Wildlife Service's (Service) Biological Opinion (Opinion) on the effects of the proposed suction dredge operations during 2006 and 2007 in the Moose Creek drainage, Clearwater County, Idaho on the threatened bull trout (*Salvelinus confluentus*). In a letter dated January 19, 2006 and received by the Service on January 24, 2006, the Clearwater National Forest (Forest) requested formal consultation on the determination under section 7 of the Endangered Species Act (Act) of 1973, as amended, that the proposed action is likely to adversely affect bull trout.

You also determined that the proposed action will have no effect on the bald eagle (*Haliaeetus leucocephalus*) and the Canada lynx (*Lynx canadensis*), and will not jeopardize the continued existence of the gray wolf (*Canis lupus*). The Service acknowledges these determinations.

The enclosed Opinion is based primarily on our review of the proposed action as described in your January 19, 2006 Biological Assessment (Assessment) regarding the effects of the proposed action on the bull trout and was prepared in accordance with section 7 of the Act. A complete administrative record of this consultation is on file at this office.

Thank you for your continued interest in the conservation of threatened and endangered species.
Please contact Clay Fletcher at (208) 378-5256 if you have questions concerning this Opinion.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffery L. Foss". The signature is stylized with large, overlapping loops and a long, sweeping tail.

Jeffery L. Foss, Field Supervisor
Snake River Fish and Wildlife Office

Enclosure

cc: FWS, Portland (Salata)
IDFG, Region II, Lewiston (Hennekey)
NOAA Fisheries, Grangeville (Brege)
NPT, Lapwai (Jones)

**BIOLOGICAL OPINION
FOR THE
PROPOSED SUCTION DREDGING IN THE MOOSE CREEK DRAINAGE
2006-2007
NORTH FORK RANGER DISTRICT
CLEARWATER NATIONAL FOREST**

**MARCH 2006
FISH AND WILDLIFE SERVICE
SNAKE RIVER FISH AND WILDLIFE OFFICE
BOISE, IDAHO**

Table of Contents

INTRODUCTION 1

CONSULTATION HISTORY 1

BIOLOGICAL OPINION..... 1

I. DESCRIPTION OF PROPOSED ACTION..... 1

 A. Action Area..... 1

 B. Proposed Action 2

II. STATUS OF THE SPECIES 3

 A. Species Description..... 3

 B. Listing History..... 3

 C. Reasons for Listing..... 3

 D. Life History 4

 E. Population Dynamics..... 5

 F. Status and Distribution 6

 1. Columbia River Distinct Population Segment (DPS)..... 6

 2. Clearwater River Management Unit 7

 3. North Fork Clearwater River Core Area..... 8

 G. Consulted-on Effects within the DPS 9

 H. Conservation Needs 9

 I. Critical Habitat 9

III. ENVIRONMENTAL BASELINE..... 10

 A. Status of the Species in the Action Area..... 10

 B. Factors Affecting the Species in the Action Area 11

IV. EFFECTS OF THE ACTION ON BULL TROUT 12

 A. Direct and Indirect Effects 12

1. Entrainment.....	12
2. Sediment and Turbidity.....	14
3. Chemical Contamination	16
4. Habitat Access	17
5. Stream Substrates and Channel Morphology.....	17
6. Large Woody Debris and Boulders.....	18
B. Effects of Interrelated or Interdependent Actions	18
V. CUMULATIVE EFFECTS	19
VI. CONCLUSION.....	20
VII. INCIDENTAL TAKE STATEMENT	21
A. Amount or Extent of Take	22
B. Effect of the Take.....	22
C. Reasonable and Prudent Measures.....	23
D. Terms and Conditions	23
E. Monitoring/Reporting.....	24
VIII. CONSERVATION RECOMMENDATIONS.....	24
IX. REINITIATION NOTICE.....	25
LITERATURE CITED	26
APPENDIX A. Protection measures (PM) to be included with Plan of Operations. Claimants must comply with these.	33
APPENDIX B. Specific monitoring and reporting requirements for the Forest included in the proposed action.	36

TABLES

Table 1. Potential direct and indirect adverse effects to bull trout associated with recreational suction dredging. Protection measures, PMs, that may reduce the level of effects to bull trout are also indicated. Claimants must agree to and attach these PMs to their Plans of Operations (PO). Numbers in parentheses indicate particular PM that applies (see Appendix A). Also shown are protection measures provided in the Assessment such as implementation and effectiveness monitoring and bull trout surveys. 13

Table 2. Effects and Protection Measures for long-term camping. 19

INTRODUCTION

The Fish and Wildlife Service (Service) has prepared the following Biological Opinion (Opinion) in response to the Clearwater National Forest's (Forest) request for formal consultation on the effects to bull trout (*Salvelinus confluentus*) from recreational class suction dredging in the Moose Creek drainage during 2006 and 2007.

The Forest determined that recreational suction dredging in Moose Creek is likely to adversely affect bull trout. Based on the analysis presented in the Biological Assessment (Assessment) for this action, the Service concludes that the survival and recovery of bull trout populations will not be jeopardized by suction dredging activities in the Moose Creek drainage.

CONSULTATION HISTORY

The Forest and the Service have had the following meetings and correspondence concerning the proposed action for the 2006 to 2007 field seasons. For a full consultation history covering 2000 to 2005 refer to the Assessment for this proposed action and the Service's 2003 and 2004 Opinions for suction dredging in the Moose Creek drainage.

- | | |
|------------------|---|
| December 5, 2005 | The Service received an electronic mail request from the Forest to re-consult on suction dredging in Moose Creek, as the previous consultation was only valid through 2005. |
| January 3, 2006 | The Service received an electronic mail request from the Forest for our review of the draft Assessment. |
| January 18, 2006 | The Service and Forest discussed suggested minor edits to the Moose Creek suction dredging Assessment at the Level 1 Streamlining Meeting. Agreement was reached on the contents of final Assessment and the effect determination for bull trout. |
| January 24, 2006 | The Service received the final Assessment and request for formal consultation. |

BIOLOGICAL OPINION

I. DESCRIPTION OF PROPOSED ACTION

A. Action Area

The action area encompasses all dredge mining sites in the Moose Creek drainage as well as the downstream extent of stream reaches affected by sediment and/or turbidity created by dredge operations. Potential and current mining areas are located in the mainstem Moose Creek, Deadwood Creek, and Independence Creek drainages, all located within the Upper North Fork Clearwater Subbasin (HUC #17060307), Clearwater County, Idaho. The total linear stream distance proposed for dredging in 2006-2007 is approximately 2,300 linear feet (1,653 feet in

Moose Creek, 499 feet in Independence Creek and 150 feet in Deadwood Creek). The total stream area (considering stream length and width) proposed for dredging during the 2006 and 2007 seasons is estimated to be 15,980 square feet.

B. Proposed Action

The Forest proposes to approve submitted Plans of Operations for suction dredging in specified reaches of the Moose Creek drainage if mining applicants agree to specified resource protection measures (PMs), attached as Appendix A of this Opinion. Additionally, under the proposed action, the Forest must complete required monitoring and reporting requirements detailed in Appendix B.

In 2006 and 2007, 15 operators involving 11 claims (one suction dredge per claim) are planning to work their claims in the Moose Creek drainage. A maximum of 38 claimants could be approved in any one year. Mining claim names and locations in the Moose Creek drainage are displayed in Appendix C of the Assessment. The specific elements regarding the proposed suction dredge mining for the 2006 to 2007 field seasons are summarized in Appendix D of the Assessment.

The proposed mining operations involve instream processing of sand, gravel, and cobble from the streambed with recreational class suction dredges. Recreational class suction dredges have a nozzle diameter of five inches or less and are powered by gasoline engines with a rating of 15 horsepower (hp) or less. Recreational class suction dredges selected for operation in the Moose Creek drainage tend to be of smaller capacity and are powered with five hp or eight hp engines. These smaller dredges have nozzle diameters of 2.5 to 5 inches, with 4 inches being the most common. Recreational class suction dredge miners generally work three to five hours per day, four days per week (based on 1998 data). Plans of Operation filed for the 2002 season showed the estimated maximum number of days miners would work their claims ranged from 10 to 46 days with an average of 30 days; these estimates are expected to apply to the 2006 and 2007 seasons as well.

Suction dredges are used to excavate stream bed materials down to bedrock, where gold (more dense than most other particles) may be deposited. Excavated materials are sucked into the dredge nozzle, passed through a sluice attached to the back of the dredge that separates gold from other material, and then redeposited in the stream. In addition to suction dredges, a few miners use gold pans and small sluice boxes to process gravel.

To mine in the Moose Creek drainage, miners are required to obtain an Idaho Department of Water Resources Stream Channel Alteration Permit. Operators must follow all regulations associated with this permit, as well as all Forest Service regulations associated with the required filing of a Plan of Operation as specified in Appendix A.

II. STATUS OF THE SPECIES

A. Species Description

Bull trout (*Salvelinus confluentus*), member of the family Salmonidae, are char native to the Pacific Northwest and western Canada. The bull trout and the closely related Dolly Varden (*Salvelinus malma*) were not officially recognized as separate species until 1980 (Robins et al. 1980). Bull trout historically occurred in major river drainages in the Pacific Northwest from the southern limits in the McCloud River in northern California and the Jarbidge River in Nevada to the headwaters of the Yukon River in the Northwest Territories, Canada (Cavender 1978; Bond 1992). To the west, bull trout range includes Puget Sound, coastal rivers of British Columbia, Canada, and southeast Alaska (Bond 1992). Bull trout are wide-spread throughout the Columbia River basin, including its headwaters in Montana and Canada and in the Klamath River basin of south central Oregon. East of the Continental Divide, bull trout are found in the headwaters of the Saskatchewan River in Alberta and the MacKenzie River system in Alberta and British Columbia (Cavender 1978; Brewin and Brewin 1997).

B. Listing History

On June 10, 1998, the Service issued a final rule listing the Columbia River and Klamath River populations of bull trout as threatened (63 FR 31647) under the authority of the Act. With the listing as threatened of the Jarbidge River population (64 FR 17110, November 1, 1999) and the Coastal-Puget Sound and St. Mary-Belly River populations (64 FR 58910, November 1, 1999), all bull trout in the coterminous United States received full protection under the Act. These five populations listed in the final rule are identified as Distinct Population Segments (DPS). As specified in the joint Policy Regarding the Recognition of Distinct Vertebrate Population (61 FR 4721-4725, February 7, 1996), the Services consider discreteness, significance, and conservation status when assessing whether or not to designate a population as a DPS.

Although the final rule consolidates the five bull trout DPSs into one listed taxon, based on conformance with the DPS policy for purposes of consultation under section 7 of the Act, the Service retains recognition of each DPS in light of available scientific information relating to their uniqueness and significance. The DPSs are therefore treated as interim recovery units with respect to application of the jeopardy standard until a recovery plan (currently available in draft form) is finalized (64 FR 58930, November 1, 1999). This Opinion addresses the risk of Project implementation jeopardizing the Columbia River DPS.

C. Reasons for Listing

Though wide-ranging in parts of Oregon, Washington, Idaho, and Montana, bull trout in the interior Columbia River basin presently occur in only about 45 percent of the historical range (Quigley and Arbelbide 1997; Rieman et al. 1997). Declining trends and associated habitat loss and fragmentation have been documented rangewide (Bond 1992; Schill 1992; Thomas 1992; Ziller 1992; Rieman and McIntyre 1993; Newton and Pribyl 1994; Idaho Department of Fish and Game in litt. 1995). Several local extirpations have been reported, beginning in the 1950s (Rode

1990; Ratliff and Howell 1992; Donald and Alger 1993; Goetz 1994; Newton and Pribyl 1994; Berg and Priest 1995; Light et al. 1996; Buchanan and Gregory 1997; Washington Department of Fish and Wildlife 1997).

The combined effects of habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, angler harvest and poaching, entrainment into diversion channels and dams, and introduced nonnative species (e.g., brook trout, *Salvelinus fontinalis*) have resulted in declines in bull trout distribution and abundance. Land and water management activities such as dams and other diversion structures, forest management practices, livestock grazing, agriculture, road construction and maintenance, mining, and urban and rural development continue to degrade bull trout habitat and depress bull trout populations (Service 2002).

D. Life History

Bull trout exhibit resident and migratory life-history strategies throughout much of the current range (Rieman and McIntyre 1993). Resident bull trout complete their entire life cycle in the streams where they spawn and rear. Migratory bull trout spawn and rear in streams for one to four years before migrating to either a lake (adfluvial), river (fluvial), or in certain coastal areas, to saltwater (anadromous), where they reach maturity (Fraley and Shepard 1989; Goetz 1989). Resident and migratory forms often occur together and it is suspected that individual bull trout may give rise to offspring exhibiting both resident and migratory behavior (Rieman and McIntyre 1993).

Bull trout have more specific habitat requirements than other salmonids (Rieman and McIntyre 1993). Watson and Hillman (1997) concluded that watersheds must have specific physical characteristics to provide habitat requirements for bull trout to successfully spawn and rear, and that the characteristics are not necessarily ubiquitous throughout these watersheds resulting in patchy distributions even in pristine habitats.

Bull trout are found primarily in colder streams, although individual fish are migratory in larger, warmer river systems throughout the Columbia River basin (Fraley and Shepard 1989; Rieman and McIntyre 1993, 1995; Buchanan and Gregory 1997; Rieman et al. 1997). Water temperature above 15°C (59°F) is believed to limit bull trout distribution, which may partially explain the patchy distribution within a watershed (Fraley and Shepard 1989; Rieman and McIntyre 1995). Spawning areas are often associated with cold-water springs, groundwater infiltration, and the coldest streams in a given watershed (Pratt 1992; Rieman and McIntyre 1993; Rieman et al. 1997). Goetz (1989) suggested optimum water temperatures for rearing of about 7 to 8°C (44 to 46°F) and optimum water temperatures for egg incubation of 2 to 4°C (35 to 39°F).

All life history stages of bull trout are associated with complex forms of cover, including large woody debris, undercut banks, boulders, and pools (Oliver 1979; Fraley and Shepard 1989; Goetz 1989; Hoelscher and Bjornn 1989; Sedell and Everest 1991; Pratt 1992; Thomas 1992; Rich 1996; Sexauer and James 1997; Watson and Hillman 1997). Jakober (1995) observed bull trout overwintering in deep beaver ponds or pools containing large woody debris in the Bitterroot River drainage, Montana, and suggested that suitable winter habitat may be more restrictive than

summer habitat. Bull trout prefer relatively stable channel and water flow conditions (Rieman and McIntyre 1993). Juvenile and adult bull trout frequently inhabit side channels, stream margins, and pools with suitable cover (Sexauer and James 1997).

The size and age of bull trout at maturity depend upon life-history strategy. Growth of resident fish is generally slower than migratory fish; resident fish tend to be smaller at maturity and less fecund (Fraley and Shepard 1989; Goetz 1989). Bull trout normally reach sexual maturity in 4 to 7 years and live as long as 12 years. Repeat and alternate year spawning has been reported, although repeat spawning frequency and post-spawning mortality are not well known (Leathe and Graham 1982; Fraley and Shepard 1989; Pratt 1992; Rieman and McIntyre 1996).

Bull trout typically spawn from August to November during periods of decreasing water temperatures. Migratory bull trout frequently begin spawning migrations as early as April, and have been known to move upstream as far as 250 kilometers (km) (155 miles (mi)) to spawning grounds (Fraley and Shepard 1989). Depending on water temperature, incubation is normally 100 to 145 days (Pratt 1992), and after hatching, juveniles remain in the substrate. Time from egg deposition to emergence may exceed 200 days. Fry normally emerge from early April through May depending upon water temperatures and increasing stream flows (Pratt 1992; Ratliff and Howell 1992).

Bull trout are opportunistic feeders with food habits primarily a function of size and life-history strategy. Resident and juvenile migratory bull trout prey on terrestrial and aquatic insects, macro-zooplankton and small fish (Boag 1987; Goetz 1989; Donald and Alger 1993). Adult migratory bull trout are primarily piscivores, known to feed on various fish species (Fraley and Shepard 1989; Donald and Alger 1993).

E. Population Dynamics

The draft bull trout Recovery Plan (Service 2002) defined core areas as groups of partially isolated local populations of bull trout with some degree of gene flow occurring between them. Based on this definition, core areas can be considered metapopulations. A metapopulation is an interacting network of local populations with varying frequencies of migration and gene flow among them (Meefe and Carroll 1994). In theory, bull trout metapopulations (core areas) can be composed of two or more local populations, but Rieman and Allendorf (2001) suggest that for a bull trout metapopulation to function effectively, a minimum of between five and 10 local populations are required. Bull trout core areas with fewer than five local populations are at increased risk of local extirpation, core areas with between five and 10 local populations are at intermediate risk, and core areas with more than 10 local interconnected local populations are at diminished risk (Service 2002).

The presence of a sufficient number of adult spawners is necessary to ensure persistence of bull trout populations. In order to avoid inbreeding depression, it is estimated that a minimum of 100 spawners is required. Inbreeding can result in increased homozygosity of deleterious recessive alleles which can in turn reduce individual fitness and population viability (Whitesel et al. 2004). For persistence in the longer term, adult spawning fish are required in sufficient numbers to

reduce the deleterious effects of genetic drift and maintain genetic variation. For bull trout, Rieman and Allendorf (2001) estimate that approximately 1,000 spawning adults are necessary for maintaining genetic variation. Many local bull trout populations individually do not support 1,000 spawners, but this threshold may be met by the presence of smaller interconnected local populations within a core area

For bull trout populations to remain viable (and recover) natural productivity should be sufficient for the populations to replace themselves from generation to generation. A population that consistently fails to replace itself is at an increased risk of extinction. Since estimates of population size are rarely available, the productivity or population growth rate is usually estimated from temporal trends in indices of abundance at a particular life stage. For example, redd counts are often used as an indicator of a spawning adult population. The direction and magnitude of a trend in an index can be used as a surrogate for growth rate.

Long-term survival of bull trout is also dependent upon connectivity among local populations. Although bull trout are widely distributed over a large geographic area, they exhibit a patchy distribution even in pristine habitats (Rieman and McIntyre 1993). Increased habitat fragmentation reduces the amount of available habitat and increases isolation from other populations of the same species (Saunders et al. 1991). Burkey (1989) concluded that when species are isolated by fragmented habitats, low rates of population growth are typical in local populations and their probability of extinction is directly related to the degree of isolation and fragmentation. Without sufficient immigration, growth of local populations may be low and probability of extinction high. Migrations also facilitate gene flow among local populations because individuals from different local populations interbreed when some stray and return to non-natal streams. Local populations that are extirpated by catastrophic events may also become reestablished in this manner.

In summary, based on the works of Rieman and McIntyre (1993) and Rieman and Allendorf (2001), the draft bull trout Recovery Plan identified four elements to consider when assessing viability (extinction risk) of bull trout populations: 1) number of local populations, 2) adult abundance (defined as the number of spawning fish present in a core area in a given year); 3) productivity, or the reproductive rate of the population; and 4) connectivity (as represented by the migratory life history form).

F. Status and Distribution

1. Columbia River Distinct Population Segment (DPS)

The Columbia River DPS includes bull trout residing in portions of Oregon, Washington, Idaho, and Montana. Bull trout are estimated to have occupied about 60 percent of the Columbia River Basin, and presently occur in 45 percent of the estimated historical range (Quigley and Arbelbide 1997). The Columbia River DPS has declined in overall range and numbers of fish (63 FR 31647). Although some strongholds still exist with migratory fish present, bull trout generally

occur as isolated local populations in headwater lakes or tributaries where the migratory life history form has been lost. Though still widespread, there have been numerous local extirpations reported throughout the Columbia River basin. In Idaho, for example, bull trout have been extirpated from 119 reaches in 28 streams (Idaho Department of Fish and Game in litt. 1995).

Recent literature (Spruell et al. 2003) provides updated information on the genetic population structure of bull trout across the northwestern United States and indicates a need to further evaluate the distinct population structure of bull trout. Based on analysis of four microsatellite loci, Spruell et al. (2003) suggested that there are three major genetically differentiated groups (lineages) of bull trout represented in the Columbia River DPS. They described these as Coastal, Snake River, and Upper Columbia populations. Whitesel et al. (2004) used this and other information to describe four Conservation Units (Upper Columbia, Snake River, Klamath River, and Coastal-Puget Sound) that are thought to represent the best estimate for delineation of areas that are necessary to ensure evolutionary persistence of bull trout.

2. Clearwater River Management Unit

The draft bull trout Recovery Plan (Service 2002) identified 22 recovery units within the Columbia River DPS. These units are now referred to as management units (Service 2004). Management units are groupings of bull trout with historical or current gene flow within them and were designated to place the scope of bull trout recovery on smaller spatial scales than the larger DPS.

Achieving recovery goals within each management unit is critical to recovering the Columbia River DPS. Recovering bull trout in each management unit will maintain the overall distribution of bull trout in their native range. Individual core areas are the foundation of management units and conserving core areas and their habitats within management units preserves the genotypic and phenotypic diversity that will allow bull trout access to diverse habitats and reduce the risk of extinction from stochastic events. The continued survival and recovery of each individual core area is critical to the persistence of management units and their role in the recovery of a DPS (Service 2002).

Bull trout are distributed throughout most of the large rivers and associated tributary systems within the Clearwater River management unit (Clearwater Subbasin Summary 2001) and exhibit adfluvial, fluvial, and resident life history patterns. There are two naturally occurring adfluvial bull trout populations within the Clearwater River management unit; one is associated with Fish Lake in the upper North Fork Clearwater River drainage, and the other is associated with Fish Lake in the Lochsa River drainage (CBBTTAT 1998a, CBBTTAT 1998b). The Bull Trout Recovery Team has identified five core areas and 36 local bull trout populations within the Clearwater management unit (Service 2002, 2004). The core areas include the North Fork Clearwater River, Lochsa River, South Fork Clearwater River, Selway River, and Lower and Middle Fork Clearwater Rivers.

3. North Fork Clearwater River Core Area

Core areas are the building blocks for conserving the bull trout's evolutionary legacy, and are appropriate units of analysis by which threats to bull trout and recovery standards should be measured (Fish and Wildlife Service, Final Rule Designating Critical Habitat, 70 FR 56258, September 26, 2005). As discussed above, four factors are used to examine the risk of extinction for a core area: number of local populations, adult abundance, productivity, and connectivity.

Historically, adult bull trout routinely used the North Fork Clearwater in the winter and early spring prior to ascending the river to spawning tributaries in the summer and fall. Dworshak Dam, constructed in 1971, isolated North Fork bull trout populations from other populations in the Clearwater recovery unit. Adult bull trout are now known to overwinter in Dworshak Reservoir and migrate upstream to spawning areas during the summer (Idaho Department of Fish and Game 2003); a once-fluvial population is now adfluvial. Compared to historic numbers, bull trout populations in the North Fork core area are now considered depressed (Forest Service 2005).

Bull trout are currently known to use spawning and rearing habitat in at least 11 streams or stream complexes (i.e., local populations) in the North Fork Clearwater core area. These 11 local populations include Kelly Creek Complex, Cayuse Creek Complex, Moose Creek Complex, Upper North Fork Clearwater River Complex, Wietas Creek Complex, Quartz Creek, Skull Creek, Isabella Creek, Little North Fork Clearwater River Complex, Floodwood Creek, Fourth of July Creek, and Fish Lake (Service 2004). Dworshak Dam, near the confluence of the North Fork and the main Clearwater River, has isolated bull trout from the mainstem Clearwater River since the dam was completed in 1971. Bull trout are currently considered depressed compared to their historic distribution and abundance in most of the tributaries of the North Fork Clearwater drainage (Forest Service - Clearwater National Forest 2000, Clearwater Subbasin Summary 2001).

Risks to long-term viability of this core area are considered reduced because of the presence of more than 10 local populations, presence of the migratory life history form, and presence of connectivity between local populations within the core area. However, factors increasing the risk to viability include a potentially low number of adult spawning bull trout, and the presence of a migration barrier created by Dworshak dam.

Threats to the North Fork core area include sedimentation due to roads from forestry and mining, isolation from Dworshak dam, limited livestock grazing, brook trout, and angling pressure. Dworshak dam has likely inhibited bull trout migration from the North Fork Clearwater to the South Fork Clearwater, Lower/Middle Fork Clearwater, and Selway rivers. Sedimentation, decreased stream shading and decreased habitat heterogeneity have historically and continue to affect bull trout habitat in the North Fork core area. The highest road densities occur in areas managed for timber production and these areas occur in the lower third of the core area. Fish Lake receives high use by off-highway vehicles resulting in trampled riparian vegetation, and increased sport fishing and associated angling mortality. Livestock grazing in the North Fork core area is mostly limited to the tributaries of Dworshak reservoir with impacts varying from

low to high. Brook trout are distributed across much of the North Fork core area and threaten bull trout through competition, hybridization, and predation. Incidental angling pressure and illegal harvests are possible threats in this area. At least 14 fish barrier culverts have been identified for removal in the North Fork Clearwater core area to restore connectivity.

G. Consulted-on Effects within the DPS

Consulted-on effects are those effects that have been analyzed through section 7 consultation as reported in a biological opinion. These effects are an important component of objectively characterizing the current condition of the species. To assess consulted-on effects to bull trout, we analyzed all of the biological opinions received by the Region 1 and Region 6 Offices, from the time of listing until August 2003; this summed to 137 biological opinions. Of these, 124 biological opinions (91 percent) applied to activities affecting bull trout in the Columbia Basin DPS. The geographic scale of these consultations varied from individual actions (e.g., construction of a bridge or pipeline) within one basin to multiple-project actions occurring across several basins.

Our analysis showed that we consulted on a wide array of actions that had varying level of effects. Many of the actions resulted in only short-term adverse effects – some with long-term beneficial effects. Some of the actions resulted in long-term adverse effects. No actions that have undergone consultation were found to appreciably reduce the likelihood of survival and recovery of the bull trout. Furthermore no actions that have undergone consultation were anticipated to result in the loss of local populations of bull trout.

H. Conservation Needs

Recovery for bull trout will entail reducing threats to the long-term persistence of populations and their habitats, ensuring the security of multiple interacting groups of bull trout, and providing habitat conditions and access to them that allow for the expression of various life-history forms (Service 2002). The draft Bull Trout Recovery Plan identifies the following tasks needed for achieving recovery: 1) protect, restore, and maintain suitable habitat conditions for bull trout; 2) prevent and reduce negative effects of nonnative fishes and other nonnative taxa on bull trout; 3) establish fisheries management goals and objectives compatible with bull trout recovery; 4) characterize, conserve, and monitor genetic diversity and gene flow among local populations of bull trout; 5) conduct research and monitoring to implement and evaluate bull trout recovery activities, consistent with an adaptive management approach using feedback from implemented, site-specific recovery tasks; 6) use all available conservation programs and regulations to protect and conserve bull trout and bull trout habitats; and 7) assess the implementation of bull trout recovery by management units, and revise management unit plans based on evaluations.

I. Critical Habitat

The Service issued a final rule designating critical habitat for bull trout range wide on September 26, 2005. The designation includes 4,813 miles of stream or shoreline and 143,218 acres of lake or reservoir. We designated areas as critical habitat that 1) have documented bull trout

occupancy within the last 20 years, 2) contain features essential to the conservation of the bull trout, 3) are in need of special management, and 4) were not excluded under section 4(b)(2) of the Act. The Final Rule excluded from designation those federally managed areas covered under PACFISH, INFISH, the Interior Columbia Basin Ecosystem Management Project, and the Northwest Forest Plan Aquatic Conservation Strategy. The Service determined that these strategies provide a level of conservation and adequate protection and special management for the primary constituent elements of critical habitat at least comparable to that achieved by designating critical habitat. Areas managed under these strategies do not meet the statutory definition of critical habitat (i.e., areas requiring special management considerations) and were therefore excluded. The excluded areas include much of the proposed critical habitat in Idaho; the final rule only designates 294 miles of stream/shoreline and 50,627 acres of reservoirs or lakes. There is no critical habitat in the action area.

III. ENVIRONMENTAL BASELINE

The environmental baseline is defined as the current habitat condition including the past and present impacts on bull trout 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 impacts of state or private actions that are contemporaneous with the consultation in process.

A. Status of the Species in the Action Area

Bull trout presence within the Moose Creek drainage has been documented by several sources, but bull trout observations have been very limited. The first fish population survey was recorded by Moffitt and Bjornn (1984). They did not observe any bull trout during the limited fish population surveys in Little Moose Creek and Ruby Creek, both major tributaries of Moose Creek.

Surveys conducted within the Swamp Creek drainage (tributary to Moose Creek) during 1989 did not find any bull trout at the relatively limited number of snorkeling stations (Clearwater BioStudies, Inc. 1990). Two 1-year old and one 2-year old bull trout were found in Moose Creek below the confluences with Deadwood Creek and Independence Creek during a stream survey conducted in 1990 (Clearwater BioStudies, Inc. 1991). Additional surveys conducted on China and Laundry Creeks in 1994 did not find any bull trout in those drainages (Clearwater BioStudies, Inc. 1995).

A 1994 Idaho Department of Fish and Game resurvey of the area covered by Moffitt and Bjornn (1984) in 1983, did not find any bull trout at the stations in Little Moose Creek and Ruby Creek (Idaho Department of Fish and Game 1995). The Osier Creek drainage was surveyed in 1995; no bull trout were observed (Isabella Wildlife Works 1996). The Idaho Department of Fish and Game also resurveyed the 1994 stations in 1995-1997; no bull trout were observed in Little

Moose Creek or Ruby Creek (Idaho Department of Fish and Game 1998). Small juvenile bull trout (age 1 and 2 years) were found in Ruby Creek near the confluence with Moose Creek in 1998 (Clearwater BioStudies, Inc. 1999). Other studies (CBBTTAT 1998) report adult bull trout in Osier Creek, Little Moose Creek, and lower Moose Creek.

Between 1983 and 2003, a total of 131 snorkel stations were surveyed (Table 1, Assessment). In Moose Creek, bull trout (age classes 1, 2 and 4 years) were found at seven stations. Two bull trout (age class 4 years) were found in Osier Creek. In addition, two juvenile and one adult bull trout were observed during fish population surveys conducted, via electrofishing, by the Idaho Department of Environmental Quality (IDEQ) and Nez Perce Tribe (NPT) in Little Moose Creek and Pollack Creek.

Prior to 2000, the fish population data indicated that limited bull trout spawning and rearing was occurring in the Moose Creek drainage. However, additional snorkeling surveys conducted since 2000 have found higher numbers of adult bull trout in the Moose Creek drainage. In 2001, surveys conducted by the Forest found two sub-adult and one adult bull trout in mainstem Moose Creek. Two adult bull trout were found in lower Osier Creek. Idaho Department of Fish and Game (IDFG) found two tagged bull trout (out of 72 tagged in Dworshak Reservoir) in Moose Creek. IDFG studies show a portion of the adfluvial bull trout in the North Fork Clearwater River subbasin are spawning in the Moose Creek drainage (Schiff et al. 2005). Spawning surveys conducted in 2002 and 2003 found bull trout redds in lower Osier Creek and Swamp Creek. The Assessment reports that no bull trout were observed during snorkeling surveys conducted by IDFG in 2005 at four permanent stations (three in Little Moose Creek and one in Ruby Creek).

B. Factors Affecting the Species in the Action Area

The Moose Creek drainage encompasses approximately 47,400 acres of which 29,000 acres (61 percent) are considered undeveloped (i.e., no roads or logging completed). The upper Moose Creek (upstream of Deadwood Creek – 4,400 acres), Swamp Creek (9,900 acres), Ruby Creek (2,000 acres) and Little Moose Creek (12,500 acres) drainages are either roadless or relatively undeveloped. All four drainages provide potential habitat for bull trout. Potential bull trout spawning areas have been identified in the mainstem Moose Creek between Independence Creek and Deadwood Creek and in lower Independence Creek. The CBBTTAT (1998) identified the Moose Creek sub-watershed as a spawning and early rearing area of “high importance” to bull trout; however, bull trout densities are low (less than 0.2 trout /100m²).

In 1996, the majority of the private lands, with the exception of four patented mining claims parcels, were transferred to the Forest. The patented mining claims remaining in private ownership total 294 acres (0.6 percent of the Moose Creek drainage area) and are located in the upper Osier Creek drainage (two claims - 160 acres), along 1.3 miles of Independence Creek (one claim - 98 acres) and a 0.6 mile segment along Moose Creek (one claim - 36 acres). The Independence Creek and Moose Creek patented claims have potential habitat for bull trout. The patented claims in the upper Osier Creek drainage are not located along fish-bearing streams.

Past and present factors affecting the species within the action area include extensive mining, roading, and timber harvest on Forest Service and private lands; activities which have degraded bull trout habitat. The CBBTTAT (1998) reports that mass failures have occurred in the Moose Creek sub-watershed, presumably a result of these various activities. Past logging of riparian areas has contributed to increased stream temperatures (CBBTTAT 1998). Recorded temperatures in several Moose Creek tributaries have exceeded 17 degrees C during late summer and fall (CBBTTAT 1998).

Baseline habitat indicators are summarized in the in the Matrix table, Appendix E of the Assessment. As shown in the matrix, Streamside Road Density, Stream Bank Stability, Water Temperature, Large Woody Debris, and Pool Quality are all rated as being in a low condition, or as not functioning properly, and Channel Width to Depth Ratio is rated as moderate or functioning at risk.

In summary, bull trout are present in the Moose Creek drainage in apparently low numbers. A limited amount of spawning is occurring. Although there is still connectivity with other local populations in the core area, this local population may be at increased risk of extirpation because of low numbers, limited spawning, and degraded habitat conditions.

IV. EFFECTS OF THE ACTION ON BULL TROUT

A. Direct and Indirect Effects

Direct effects are defined as those that result from the proposed action and directly or immediately impact the species or its habitat. Indirect effects are those that are caused by or will result from the proposed action and are later in time but are still reasonably certain to occur (50 CFR §402). The main effects pathways and associated PMs are shown in Table 1. PMs to address specific effects are shown in parentheses in the following sections.

1. Entrainment

Direct mortality of bull trout eggs, alevins, fry and juveniles could occur from entrainment into the dredge. Harvey and Lisle (1998) reported that entrainment of early life history stages of cutthroat trout into a suction dredge can cause significant mortality. Uneyed cutthroat trout (*Oncorhynchus clarki*) eggs were completely lost when entrained; 29 percent to 62 percent mortality occurred among eyed eggs (Harvey and Lisle 1998).

Harvey and Lisle (1998) also reported that sac fry rainbow trout (*Oncorhynchus mykiss*) experienced greater than 80 percent mortality following entrainment when compared to 9 percent mortality for a control test group of fish. Harvey et al. (1995) surmised that eggs and fry in the substrate that did survive entrainment may experience high mortality rates due to high predation rates and poor environmental conditions outside of the redd environment.

Based on this information, the Service concludes that bull trout eggs and fry would likely experience a high mortality rate if entrained in a suction dredge. Additionally, the risk of age-0 bull trout being entrained is increased because this age group in particular is associated with stream substrates (Polocek and James 2003). Studies (e.g., Polocek and James 2003) have shown that age-0 bull trout hide in interstitial spaces in the substrate or burrow into loose silt and detritus when disturbed, making them especially vulnerable to entrainment by suction dredging.

Table 1. Potential direct and indirect adverse effects to bull trout associated with recreational suction dredging. Protection measures, PMs, that may reduce the level of effects to bull trout are also indicated. Claimants must agree to and attach these PMs to their Plans of Operations (PO). Numbers in parentheses indicate particular PM that applies (see Appendix A). Also shown are protection measures provided in the Assessment such as implementation and effectiveness monitoring and bull trout surveys.

EFFECT PATHWAY	RESOURCE PROTECTION MEASURES
Entrainment	1. Implementation and effectiveness monitoring (Assessment) 2. Instream work window (1) 3. Monitoring bull trout presence (Assessment) 4. Redistribution of tailings and channel restoration to avoid creating artificial spawning areas (21, 27) 5. Avoid dredging in identified and potential spawning gravels (5,13) 6. Screening of dredge pump inlet (25)
Sediment and Turbidity	1. Monitor and cease operations when downstream extent of turbidity reaches 300 feet (15) 2. Avoid banks and "clay pockets" (10, 16) 3. Limit number of mining sites to one per 100 feet minimum (12) 4. Implementation and effectiveness monitoring (Assessment) 5. No material introduced from outside the stream channel (Assessment) 6. Restore and revegetate disturbed streambanks (4)
Chemical Contamination	1. Restrictions on fuel storage and fueling instream (20) 2. Restrictions/regulations on use, collection, and disposal of mercury (28)
Habitat Access	1. Prohibit damming of channel (11) 2. Work allowed only during daylight hours (27)
Stream Substrates and Channel Morphology	1. Instream work window (1) 2. Redistribute tailings, fill in dredge holes (21) 3. Avoid disturbance to banks; avoid clay pockets (10, 16) 4. Restore streambed (27)
Large Woody Debris and Boulders	1. No removal of boulders from streambed (17, 18) 2. No removal of large woody debris (17, 18)

The risk of entraining bull trout eggs, alevins and fry in the project area may be reduced through implementation of the PMs contained in the Plan of Operations and monitoring by the Forest. These measures require that bull trout monitoring be conducted in order to identify spawning and

early rearing areas; and, that miners redistribute gravels in order to avoid creating artificial spawning areas that may attract spawning bull trout (PM 28); and, that dredge intake pipes be screened (PM 26).

While Griffith and Andrews (1981) observed high mortality of rainbow trout eggs and fry that were intentionally passed through a suction dredge, they reported that entrained juvenile and adult rainbow and brook trout all survived. Griffith and Andrews (1981) reported no mortality of cutthroat trout fingerlings following entrainment in the dredge. Likewise, Harvey (1986) observed no immediate ill effects to entrained juvenile rainbow trout and riffle sculpins (*Cottus gulosus*).

In his investigation, Harvey (1986) suggested that adult rainbow escaped entrainment by moving away from the immediate area as had been observed in previous work where rainbow trout did not move over large distances when comparing dredged and control areas. Older juvenile and adult bull trout would be expected to behave similarly. It is most likely that in natural stream environments adult and subadult bull trout will move from the local area of the dredging to the nearest cover.

2. Sediment and Turbidity

Bull trout may be directly affected by increases in turbidity and suspended sediment levels downstream of dredging operations. Two studies showed that sediment from dredging range from 340 milligrams (mg)/liter at the outflow to 1.8 mg/liter 31 meters (m) downstream (Thomas 1985), and 244 mg/liter at outflow to 11.5 mg/liter 49 m downstream (Hassler et al. 1986).

Depending upon concentration and duration of exposure, suspended sediment may directly affect bull trout physiological condition and behavior (Newcombe and Jensen 1996, Bash et al. 2001). Newcombe and Jensen (1996) calculated that exposure of salmonid eggs and alevins to sediment concentrations of 11mg/liter for four hours (the average dredge operates for three to five hours per day) can result in moderate physiological effects. Short term reduction in feeding rate and success and minor physiological stress are expected for juvenile salmonids exposed to 20mg/liter for four hours. Newcombe and Jensen (1996) predict sublethal adverse effects (short-term reductions in feeding rates and feeding success, and minor physiological stress) are expected for juvenile and adult salmonids at suspended sediment concentrations as low as 55 mg/l at exposure times of three hours. Barret et al. (1992) found that increased turbidity reduced rainbow trout foraging reactive distances, foraging strikes and feeding behavior. These effects are more pronounced at higher concentrations or higher exposure times. At 300 mg/liter for four hours juvenile salmonids would manifest moderate physiological stress while eggs and larvae would be subjected to major habitat degradation. Compared with other salmonids, bull trout are more sensitive to sediment and require the lowest suspended sediment levels (Bash et al. 2001). The Service anticipates that bull trout present in the dredging action area may be adversely affected by exposure to suspended sediment concentrations exceeding 55 mg/l for durations of three hours or more.

Increases in suspended sediment can result in a continuum of direct effects on bull trout, from avoidance behavior to mortality, depending upon concentration and exposure duration. It is expected that juvenile and adult bull trout would move away or be displaced from areas with elevated sediment levels. Harvey (1986) reported no large-scale movements of rainbow trout, but noted local movements out of pools and riffles made uninhabitable by dredging. Adult, subadult, and some juvenile bull trout would likely seek the nearest cover in the vicinity of the dredging. However, fry and alevins are not expected to be capable of relocating so readily and may be subjected to more severe effects from exposure to suspended sediment. The required Permit to Alter a Stream Channel and Plans of Operations contain prohibitions against undercutting and disturbing streambanks during suction dredging. These prohibitions may minimize some sediment effects in the assessment area.

Deposition and transport of fine bedload (clay, silt, and fine sand) due to dredging can affect fluvial processes, insect abundance, and fish reproduction. Sand and gravel are usually deposited immediately downstream of the dredged area in contrast to fine sediment which may travel long distances before being deposited (Harvey and Lisle 1998). Changes in water quality conditions (i.e. turbidity and suspended sediment levels) also occur in localized areas during suction dredging operations. Somer and Hassler (1992) observed increased deposition of sediment and organic material in sediment traps downstream from dredge activities, at distances of 40 and 113 meters, 4-6 weeks after dredging occurred. Thomas (1985) found that suspended sediment concentration returned to background levels 11 meters downstream from the dredge.

Increases in cobble embeddedness levels are expected directly downstream of mining operations but are expected to be confined within 100 feet (dependent upon stream flows). Sediment levels resulting from suction dredging in the Moose Creek drainage may be minimized because of size restrictions (hp and nozzle size) imposed on recreational class suction dredge equipment; and by restrictions on bank disturbance. Miners are also prohibited from introducing material from outside the stream channel.

Suction dredging may indirectly affect bull trout by reducing their prey base or feeding efficiency. Harvey and Lisle (1998) reported that high concentrations of suspended sediment can affect survival, growth, and behavior of stream biota. Slight increases in embeddedness of cobble and boulder substrates are unlikely to harm benthic invertebrate assemblages. However, complete embeddedness is likely to adversely affect these communities. The effects on stream biota and the production and mobilization of the suspended sediment are site specific. Streams that have low concentrations of fine sediments will likely yield low suspended sediment levels. Where dredge operations excavate streambanks, Harvey and Lisle (1998) conclude that sediment input is likely to be substantial because this is where most fine sediment is stored. Streambank disturbance and introduction of sediment from outside the stream channel during suction dredge operation are prohibited in the Moose Creek drainage under the terms and conditions (i.e., PMs) of the Plans of Operations required to be approved each year prior to conducting suction dredge mining.

Somer and Hassler (1992) monitored density and composition of benthic invertebrates, and physical stream characteristics, above and below dredge sites in a northern California stream. They found qualitative differences in invertebrate species above and below the dredging, but no significant differences in numbers of invertebrates or diversity indices.

Thomas (1985) evaluated the impact of suction dredging on benthic invertebrates and stream bottom habitat on a third order stream in northwest Montana. The purpose of this study was to assess the impact of one small dredge operated for a relatively short period of time. Results of the study showed that suction dredging caused a significant reduction in insect abundance which was limited to the area dredged. This was a relatively short-term impact as recolonization of dredged areas was complete within one month. The quantity of insects in the downstream reach was unaffected. Habitat modifications were small and had minimal effect on the stream community.

These studies suggest that food availability for bull trout in the Moose Creek drainage may decrease in the short term but may not appreciably change over the long term as a result of suction dredging. However, as Thomas (1985) notes, the combined effect of multiple dredging operations in the same drainage may produce more significant levels of biological and ecological change; levels of change that may not be apparent from a single dredging operation. In the Moose Creek drainage, suction dredging is only permitted between July 1 and August 15. Restricting the total number of weeks of suction dredge mining may limit the long term adverse effects to food availability as well as the combined effects of multiple dredging operations.

3. Chemical Contamination

Bull trout may be directly affected by chemical contamination associated with suction dredging. Fuels spills may result in direct mortality to bull trout or in harassment which may cause fish to abandon spill areas. However, the size of the fuel container and fuel tank on the suction dredge limit the potential effects to the immediate area and for a short duration (PM 20).

Mercury is another potential contaminant that may adversely affect bull trout. In the western United States, historically (and until restricted by Federal regulations in the mid-1970s), mercury amalgamation has been used for the recovery of gold during both placer and hard-rock mining (EPA 1994). It is estimated that 10 to 30 percent of the mercury used in gold recovery was lost to the environment (May et. al 2000). In the California gold region, between the 1860s and early 1900s, 3-8 million pounds of mercury may have been lost to the environment from hydraulic placer mines; additional losses were associated with dredge mining (May et. al. 2000). Moose, Independence, and Deadwood Creeks have been extensively mined for gold with both hydraulic and dredging methods from the 1860s to the 1950s (Forest Service 2004). Because it was a widespread practice, it is assumed that mercury amalgamation was used for gold recovery in the Assessment area, and that an unknown quantity of mercury was lost to the aquatic environment. Mercury in the form of methyl mercury is a potent neurotoxin that biomagnifies in the food chain (Hunerlach et. al. 1999). Proposed recreational suction dredging may mobilize sediments

containing accumulated mercury with resulting adverse effects to bull trout. Miners are required to cease operations and report to the Forest when mercury is discovered (PM 29). This provision will reduce the risk of mercury mobilization and redistribution and potential toxic effects to bull trout. Removal of mercury from streams would result in a long-term beneficial effect.

4. Habitat Access

Suction dredging may impede access of fluvial bull trout to upstream spawning areas by either purposefully damming the stream channel with tailings or incidentally by the instream presence of the dredge and operators. Operators are prohibited from damming stream channels in the Moose Creek drainage (PM 11).

Studies indicate that fluvial bull trout migrate upstream primarily during the night (Swanberg 1997). Based on radio telemetry work, fluvial bull trout may be expected in Moose Creek drainage during the July 1 to August 14 suction dredge operating window (Cochner et al. 2001); therefore, evening dredging may adversely affect migrating bull trout by impeding access to upstream spawning areas. This potential effect will be reduced because dredge operations are permitted during daylight hours only (PM 27).

5. Stream Substrates and Channel Morphology

Suction dredging may alter stream substrates by creating unstable gravel deposits that may attract adult bull trout to construct redds in areas that are likely to wash out at high flows. Tailings found in riffle areas may be sought out because this is where most salmonids prefer to spawn. In streams lacking spawning gravels, tailings may provide spawning sites. Because of the instability of the dredged tailings during high flow events, survival and development of eggs deposited within the tailings may be greatly reduced. Bull trout may be particularly vulnerable because of the protracted egg incubation period (100 to 145 days depending on water temperature). The requirement that miners redistribute gravels in order to avoid creating artificial spawning areas is meant to minimize the risk of bull trout spawning on unstable substrates created by suction dredging in the project area (PM 21, 27).

Dredging in or near riffle areas may erode these zones causing downstream pools to fill and upstream pools to become shallower. Abundance and size of salmonids are positively correlated with pool frequency and pool depth (Harvey et al. 1995). Harvey (1986) reported a 50 percent decline in the number of rainbow trout in a pool that lost 25 percent of its volume after dredging upstream. Similar effects may be expected in the action area, because juvenile bull trout are often found in low velocity pools (Earle and McKenzie 2001). These effects may be reduced in the Moose Creek drainage because miners are prohibited from operating in gravel bars at the tails of pools (PM 13).

Also, in the reach immediately downstream, the thalweg direction may be re-directed to one side of the channel potentially causing bank erosion and scour (Harvey et al. 1995). Furthermore, piles of cobble and coarse gravel left behind following dredging can impose topographic high

points and cause similar channel effects. In order to minimize these types of effects in the Moose Creek drainage, miners are required to return substrate materials to their original locations and to fill all mining depressions with dredge materials (PM 21, 28).

Thomas (1985) concluded that it is possible for suction dredging to make very localized changes in channel morphology and alter pool/riffle configuration. The degree to which this occurs depends on the amount of material discharged from the dredge. Changes in channel morphology due to dredging can have negative effects on fish habitat and fish, particularly benthic fish (i.e. fish that are bottom-oriented) such as bull trout. Benthic oriented fish that occupy microhabitats on or beneath the substrate can be adversely affected by changes in the substrate. Harvey (1986) found reduction in densities of riffle sculpin downstream of a dredge caused, in part, by burial of cobbles by dredge tailings. It is likely that bull trout, which are stream bottom oriented fish especially during the early life stages such as alevins and juveniles, would be similarly impacted. Many of the required PMs are designed to reduce the risk to bull trout from changes in channel morphology (e.g., 10, 16, 21, and 27).

6. Large Woody Debris and Boulders

Dredge operations that remove large woody debris or boulders have the potential to alter channel characteristics by reducing channel roughness (Harvey et al. 1995). Large substrate materials provide important fish habitat by creating scour and forming pools. This material also provides channel and streambank stability and often governs stream energy during high flows, as well as location and scale of scour, riffles, deposition zones, and pools (Harvey and Lisle 1998). Further, it is well known that habitat complexity is a key feature of bull trout streams. Loss of components such as large woody debris and boulders that provide this complexity would conceivably degrade habitat for bull trout. Operators are prohibited from removing, relocating, or disturbing stable in-stream woody debris (PM 18).

B. Effects of Interrelated or Interdependent Actions

Actions interrelated and interdependent to the Forest's authorization of mining include long-term camping associated with suction dredge mining in the Moose Creek drainage. Suction dredge miners in the Moose Creek drainage camp in undeveloped areas near the creeks (Forest Service 2004). Research results indicate that camping, firewood collection, and trampling of vegetation may impact streams that are subject to recreational suction dredging (Royer et al. 1999). These activities (especially when the additive effect from multiple sites is considered) could result in the degradation of bull trout habitat and adverse effects to bull trout through increases in stream temperature (streamside tree and vegetation removal), reduction in large woody debris (firewood cutting), increased overland sediment delivery (vegetation trampling, social trails, off-road vehicles), and increased potential for chemical/nutrient contamination (and reduction in water quality) from human wastes, soaps, detergents, and refuse. Miners are required to keep all human waste at least 200 feet from streams and to pack out all refuse (PM 8); and to revegetate and restore camping areas, paths, and other disturbed sites along stream banks (PM 23). For revegetating disturbed sites it is important to use native plant species. Non-native plant species compete with native riparian vegetation and affect aquatic habitat by altering natural ecological

processes, potentially resulting in increased sedimentation and water temperature, and decreased cover and woody debris (Service 2002). Herbicide use may be required for controlling the spread of nonnative plants which may result in lethal and sublethal effects to bull trout. Finally, Forest policy limits the duration of occupancy of campsites by miners to no more than the 45 day mining season (V. Bretz, Clearwater National Forest, personal communication, February 10, 2006). Most miners occupy campsites on their claims for fewer days than the maximum allowed (Appendix D of Assessment).

Table 2. Effects and Protection Measures for long-term camping

<p>Interrelated and Interdependent Actions</p>	<ol style="list-style-type: none"> 1. Keep human wastes 200 feet from streams (PM 8) 2. Restoration of disturbed areas (23) 3. Limit duration of occupancy (Forest Rules)
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V. CUMULATIVE EFFECTS

Cumulative effects are the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

With the exception of four patented mining claims on private land, the Forest is responsible for resource management within the Moose Creek drainage. Overall mining activities in these four patented claims have been limited in past years. One suction dredge operation (4-inch dredge) has been operating within the claim along Moose Creek. No substantial mining activity has been observed in the two claims within the Osier Creek drainage during the past several years. These two claims are located within the non-fish bearing headwaters adjacent to Deception Saddle. As noted above, only two patented claims (those located along Independence Creek and Moose Creek) have the potential to directly affect bull trout spawning and rearing. Mining activity has been noted within the claim along Independence Creek, but the level and extent of the activity is not known.

Considering a worst-case scenario, if all of the fish bearing streams within these patented claims (Moose Creek and Independence Creek) were mined in 2004 and 2005, the total stream distance would be approximately 10,000 feet or about three percent of the entire fish bearing streams in the Moose Creek drainage. Cumulatively, the total dredging activities, including USFS lands would be about 12,300 feet or about four percent of the fish bearing streams in the Moose Creek drainage (16 percent of the Moose Creek, Independence Creek, and Deadwood Creek drainages). Of course, the actual mining on the patented claims is expected to be only a fraction (less than 1,000 feet) of the entire claimed area based upon observations over the past several years. Therefore, the total distance of fish bearing streams expected to be affected in 2004 and 2005 is approximately 3,300 feet or about one percent of the fish bearing streams in the Moose Creek drainage. Surveys have indicated that minimal spawning gravels occur in the upper reaches of Independence Creek, including the patented claim areas. Therefore, mining activities within the patented claim along Independence Creek are expected to primarily affect bull trout migration

and sub-adult rearing. Based on observations of juvenile bull trout and the presence of potential spawning habitat downstream of the Deadwood Creek confluence, spawning and early rearing of bull trout most likely occur adjacent or within the patented claim in Moose Creek.

The Assessment concludes that due to the relatively small scale of the dredging operations and the small areas being disturbed in the Moose Creek patented claim area, effects to bull trout spawning and early rearing is expected to be minimal. Cumulative effects analysis addresses future actions that are reasonably certain to occur. Whether the reported current low levels of mining activity in the patented claim will continue into future years is uncertain. Considering that bull trout spawning and early rearing may be occurring within or adjacent to the Moose Creek patented claim, and considering the downstream and upstream distribution of suction dredge mining claims any future increases in patented claim dredge mining activity would be expected have more than a minimal cumulative effect on bull trout.

Illegal and inadvertent harvest of bull trout is also considered a cumulative effect. Harvest can occur through both misidentification and deliberate catch. Schmetterling and Long (1999) found that only 44 percent of the anglers they interviewed in Montana could successfully identify bull trout. Similarly Polzin and Fredenberg (2005) surveyed anglers at Swan Lake, Montana, and found that only about 54 and 26 percent of the respondents could correctly identify adult and juvenile bull trout respectively. Being aggressive piscivores, bull trout readily take lures or bait (Ratliff and Howell 1992). Idaho Department of Fish and Game reports that, during the 2002 salmon and steelhead fishing seasons, 400 bull trout were caught and released in the regional (Clearwater administrative region) waters of the Salmon and Snake Rivers (Idaho Department of Fish and Game 2004). Spawning bull trout are particularly vulnerable to harvest because the fish are easily observed during autumn low flow conditions. Hooking mortality rates range from 4 percent for nonanadromous salmonids with the use of artificial lures and flies (Schill and Scarpella 1997) to a 60 percent worst case scenario for bull trout taken with bait (Idaho Department of Fish and Game 2001). Thus, even in cases where bull trout are released after being caught some mortality can be expected.

VI. CONCLUSION

The Service has reviewed the current status of bull trout, the environmental baseline for the Moose Creek action area, the effects of the proposed action, and the cumulative effects. It is the Service's biological opinion that the suction dredging activities within the Moose Creek drainage, as proposed, are not likely to jeopardize the continued existence of the North Fork Clearwater River core area, the Clearwater River management unit, or by extension, the Columbia River Distinct Population Segment (DPS) of bull trout.

The Service concludes that potential risks to bull trout from the proposed action include short-term disturbance or harassment of migrating and resident bull trout and potentially lethal take of or harm to fry and juvenile fish through entrainment or indirect exposure of all age groups to toxic levels of mercury. Alteration of both aquatic and riparian habitat may indirectly affect bull

trout through short term reductions in prey base and through degradation or loss of important components of high quality bull trout habitat (e.g., large woody debris, water quality). These effects are anticipated to occur only within the action area and should be minimized greatly by the protection measures incorporated into the project proposal. Furthermore, survey results indicate that bull trout are present in low numbers in the Moose Creek drainage. Thus, considering both implementation of the required protection measures and low numbers of bull trout, the probability of adverse effects to individual bull trout from suction dredging, while not insignificant or discountable, is low.

The Service expects that the numbers, distribution, and reproduction of bull trout in the action area, the North Fork Clearwater River core area or in the Columbia Basin DPS will not be significantly changed as a result of this project. Reproduction should not be appreciably altered because most spawning that currently occurs in the action area would be expected to occur after August 15, the closing date for the mining season. Although fluvial adults may be disturbed or delayed in their upstream passage, movement will not be precluded. As such, we have concluded that the survival and recovery of bull trout populations will not be jeopardized by suction dredging activities.

VII. INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without 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 the Service 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. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, 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. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The terms and conditions described in this Opinion must be undertaken by the Forest so that they become binding conditions of any grant or permit issued to suction dredge applicants, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest (1) fails to assume and implement the terms and conditions or (2) fails to require dredging applicants to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Forest must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

A. Amount or Extent of Take

With full implementation of the required protection measures, the Service anticipates the total amount of take will be low during the 2006 and 2007 suction dredge mining seasons. The Service anticipates all bull trout in the action area (mainstem Moose Creek, Deadwood Creek, and Independence Creek drainages) may be subject to take in the form of harm or harassment resulting from the interrelated and interdependent effects of camping on riparian and aquatic habitats. Specifically, mining camp occupancy during the period 2006 to 2007 may result in loss or reduction of existing or potential large woody debris, reduction in canopy cover, and bank trampling and disturbance resulting in increases in sediment delivery and risk of noxious weed establishment (with a concomitant increase in the need for the use of herbicides for weed control). Additionally, bull trout in the action area may be subject to take in the form of harm from direct exposure to mobilized mercury or indirectly through consumption of mercury contaminated prey (i.e., biomagnification in the food chain). All life history stages of both resident and migratory bull trout may be so affected.

Authorized take will be confined to 1) that area located within the boundaries of each suction dredge claim and to that area potentially affected by suspended sediment extending downstream from each claim a distance of 300 feet, and 2) to camping areas utilized by claimants.

The Service expects no lethal take of any life history stage of bull trout and none is authorized. If the incidental take authorized by this document is exceeded, as indicated by the discovery of dead or injured bull trout, excessive degradation of riparian habitat, or evidence that claimants are not following mercury handling guidelines, suction dredging operations will cease and the Forest will reinitiate consultation.

B. Effect of the Take

The Columbia River DPS comprises 22 management units including the Clearwater River unit (Service 2002). The Clearwater management unit contains five core areas with 36 local populations. Bull trout are currently known to use spawning and rearing habitat in at least 12 streams or stream complexes (i.e., local populations) in the North Fork Clearwater core area. Risks to long-term viability of this core area are considered reduced because of the presence of more than 10 local populations, presence of the migratory life history form, and presence of connectivity between local populations within the core area. Take is expected to be confined to individual bull trout in the Moose Creek drainage. The anticipated take may be reduced because 1) protection measures designed to avoid and reduce adverse effects are included in the proposal; 2) instream work is of limited duration, and 3) the likelihood of encountering fluvial, rearing, or spawning bull trout during instream work is low. The probability that the proposed action will eliminate the Moose Creek drainage local population of bull trout is insignificant. Local bull trout densities and distribution are not expected to be significantly altered by this action. As the Moose Creek drainage local population of bull trout is one out of a total of 11 local populations in the North Fork Clearwater core area affected by Project activities, it is unlikely that the proposed action would impair productivity or population numbers of bull trout in the core area, the Clearwater recovery unit or in the Columbia River DPS.

C. Reasonable and Prudent Measures

Recreational suction dredging in the Moose Creek drainage will only be permitted if the Forest approves a Plan of Operation (PO) submitted by each claimant. The Forest will only approve Plans of Operations that have the 29 protection measures (PMs in Appendix A) attached. The Service assumes that claimants operating in the Moose Creek action area will comply with the PMs. The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize take each year suction dredge operations in the Moose Creek drainage.

1. Minimize the disruption of riparian (i.e., the vegetation zone immediately adjacent to a body of water) and aquatic habitat.
2. Minimize the potential for harm of bull trout from exposure to mercury.

D. Terms and Conditions

To be exempt from the prohibitions of section 9 of the Act, the Clearwater National Forest must ensure claimant/operator compliance with the following terms and conditions which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

- 1a. As an addition to PM 23, only native vegetation will be used to revegetate any disturbed streambanks or riparian camping areas. The Forest will assist operators in this effort by facilitating the procurement of native planting stock and seeds, and by providing technical assistance where needed to ensure successful reestablishment. The use of non-native plants for revegetating disturbed areas may adversely affect bull trout habitat and may require future use of herbicides for control, potentially resulting in take of bull trout.
- 1b. Claimants/operators will not remove potential or acting large woody debris for firewood or any other purpose. Potential large woody debris is defined as standing trees within one potential tree length of a stream. Large woody debris is a component of quality bull trout habitat. To maintain quality bull trout habitat and to prevent adverse effects and potential harm to bull trout, large woody debris recruitment is needed over time.
- 2a. As an addition to PM 29, claimants/operators will not entrain, mobilize, and disperse any mercury discovered during mining operations. Rather, claimants/operators will ensure that all mercury discovered is removed from the stream and disposed as described in PM 29.

E. Monitoring/Reporting

The Forest will provide an annual monitoring report, by November 30, to the Service that describes:

1. Claimant/operator compliance with the Terms and Conditions of this Opinion and suction dredging Protection Measures (Appendix A), and
2. The amount of stream area mined at each site, photographs of the mined areas, and details about streambank disturbance and revegetation, if any.

The report will also include and remedies to address and resolve any identified problems, and will also include any environmental effects of the action that were not considered in the Assessment or this Opinion. The Forest will provide the Service an update on pre-season monitoring no later than June 15, and a report on post-season monitoring progress no later than September 15.

Submit all reports to: Fish and Wildlife Service, Snake River Fish and Wildlife Office, 1387 S. Vinnell Way, Suite 368, Boise, Idaho 83709.

VIII. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act requires Federal Agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends that the Forest implement the following conservation measures.

1. Limit future activities and projects that may negatively affect watershed conditions in the Moose Creek drainage. Allow sufficient time for the watershed to become hydrologically and ecologically stable following suction dredge activity before undertaking substrate disturbing activities.
2. Promote recovery of bull trout in the Moose Creek drainage by identifying potential habitat restoration opportunities and implementing these actions in the near-term. Potential restoration activities may include repairing the ford on Independence Creek to allow fish passage and reduce sediment inputs, placing large woody debris in Moose Creek, and decommissioning roads in the action area to reduce streamside road density.
3. Continue to survey and monitor bull trout populations and habitat in the Moose Creek drainage.

4. Monitor invasive/noxious weed infestations in the action area. Take necessary steps to control or eliminate weed infestations to minimize negative impacts on bull trout habitat.
5. Collect necessary data to update the Matrix of Pathways and Indicators for Moose Creek. Specifically, temperature data shown the Matrix is from 1994, and there is no data for Riparian Vegetation Condition, Floodplain Connectivity, Turbidity/Suspended Sediment, Chemical contamination/Nutrients, Percent Surface Fines, Percent Fines by Depth, Pool Frequency, Pool Quality, Off-Channel Habitat, and Habitat Refugia.

IX. REINITIATION NOTICE

This concludes formal consultation on the action outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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APPENDIX A. Protection measures (PM) to be included with Plan of Operations¹. Claimants must comply with these (Note: Many of these PMs were designed to be applicable to waters with both anadromous and resident salmonids.)

1. Operations may occur only below the ordinary high water line during a dredge season extending from July 1 through August 15.
2. The suction dredge may have a nozzle diameter of 5 inches or less and a horsepower rating of 15 horsepower or less.
3. Dredge sites must be located in areas of large substrate not preferred for spawning steelhead trout and bull trout.
4. If streambanks are disturbed in any way, they must be restored to the original contour and revegetated.
5. Prior to dredging, operators must meet with a Forest Service fisheries biologist who will inspect the proposed dredge sites. No dredging will be allowed in areas of known bull trout spawning or in areas identified as spawning habitat.
6. Operators may not move cobbles in the stream course to the extent that the deepest and fastest portion of the stream channel (the thalweg) is altered or moved.
7. Operators must cease activities during wet periods when project activities are causing excessive ground disturbance or excessive damage to roads.
8. All human waste must be kept more than 200 feet away from any live water. All refuse from dredging activities must be packed out and disposed of properly.
9. No mechanized equipment may be operated below the mean high water mark except for the dredge itself and any life support system necessary to operate the dredge. No mechanized equipment other than the suction dredge may be used for conducting operations.
10. Dredging must be conducted in a manner so as to prevent the undercutting and destabilization of stream banks, and may not otherwise disturb streambanks.
11. Dredging may not dam the stream channel.
12. Operators must maintain a minimum spacing of at least 100 linear feet of stream channel between suction dredging operations.
13. Dredges may not operate in the gravel bar areas at the tails of pools.

¹ Unforeseen circumstances or changes may require additions or wording revisions to listed protection measures.

14. Dredges may not operate in such a way that fine sediment from the dredge discharge blankets gravel bars.

15. Operators must visually monitor the stream for 300 feet downstream of the dredging operation after the first half hour of continuous operation. If noticeable turbidity is observed downstream, the operation must cease immediately or decrease in intensity until no increase in turbidity is observed 300 feet downstream.

16. Dredges must not operate in such a way that the current or the discharge from the sluice is directed into the bank in a way that causes erosion or destruction of the natural form of the channel, that undercuts the bank, or that widens the channel.

17. Operators may not undermine, excavate, or remove any stable woody debris or rocks that extend from the bank into the channel.

18. Operators may not remove, relocate, or disturb stable in-stream woody debris or boulders greater than 12 inches in diameter.

19. Gasoline and other petroleum products must be stored in spill-proof containers at a location that minimizes the opportunity for accidental spillage.

20. The suction dredge must be checked for leaks, and all leaks repaired, prior to the start of operations each day. The fuel container used for refueling must contain less fuel than the amount needed to fill the tank. The suction dredge must be on stilts or anchored to the stream bank when refueling while afloat, so that the distance over which fuel must be carried over water is minimized. Unless the dredge has a detachable fuel tank, operators may transfer no more than one (1) gallon of fuel at a time during refilling. Operators must use a funnel while pouring, and place an absorbent material under the tank while refueling to catch any spillage. A spill kit must be available in case of accidental spills. If soil is contaminated by spilled petroleum products, the soil must be excavated to the depth of saturation and removed from the National Forest for proper disposal.

21. All dredge piles must be broken down and all dredge holes must be backfilled before moving to a new dredge location and by the end of the operating season, no later than August 15.

22. Dredging operations must be shut down immediately if fish eggs are excavated, if sick, dead, or injured steelhead or bull trout are observed, or if destruction of redds is observed. Operators must contact Clearwater National Forest and receive authorization to proceed prior to resuming operations. Operators must record the date, time, location, and possible cause of fish injury or death. Also, operators must notify the Forest if any emergency or unanticipated situation arises that may be detrimental to bull trout relative to suction dredging.

23. Camping areas, paths, and other disturbed sites that are located along stream banks and that are associated with dredge operations must be revegetated or otherwise restored to their original conditions at the end of the dredge season.
24. Dredging operations must be shut down immediately if the operator observes bull trout in either creek or steelhead in Lolo Creek. The operation must remain shut down until the fish move out of the area, to a point at least 100 feet upstream of the operation or at least 500 feet downstream.
25. Intakes must be screened with 3/32 mesh.
26. Dredging operations must take place during daylight hours.
27. Shallow areas must be restored to their original grade each day and natural pools may not be filled. Tailings must be redistributed to avoid creating unstable spawning gravels.
28. If operators encounter mercury in dredged material, it may not be returned to the active stream channel or disposed of on Forest Service lands. Operators must cease operations and notify the Forest if more than two droplets of mercury are discovered during the dredging process. Operators may not use mercury, cyanide, or any other hazardous or refined substance to recover or concentrate gold.
29. At the end of the operating season, no later than September 15, the operator must provide Clearwater National Forest a description of the actual location(s) of the operation, the surface areas dredged, and the number of days operated.

APPENDIX B. Specific monitoring and reporting requirements for the Forest included in the proposed action.

1. Monitor active operations and the impact of mining on fish habitat in each creek at least five times during the mining season.
2. Upon notice by an operator under item 22 above of dead, injured, or sick bull trout, or of the destruction of redds, notify USFWS Division of Law Enforcement and the Snake River Basin office within 24 hours.
3. Inspect dredged areas after all dredging activities have been completed for the season.
4. Provide a written report or letter to USFWS, within 90 days of the end of each dredging season, indicating the actual number of bull trout taken, if any, and any relevant biological/habitat data or other pertinent information on bull trout that was collected.

SURNAME SLIP

DRAFT, Author	CF	2-9-06
DRAFT, Other	TR	2-16-06
DRAFT, Reviewer		
FINAL, Typist/Format	ETD 3/03/06	2-28-06
FINAL, Author	CF	2-24-06 2/11/06
FINAL, Reviewer	ARBH	3/3/06

DATES
 First Contact Date 1-24-06
 Date of Correspondence 1-19-06
 Start Date _____
 Date Formal Consultation Started _____
 Draft BO Due Date _____
 Draft BO Date _____
 Final BO Date _____
 Due Date _____
 Conclusion Date _____
 MAR - 7 2005

Core Information

Title Moose Creek
 Description BO regarding suction Dredging activities within the Moose Creek drainage - Clearwater NF
 Consultation Type F Complexity std Species Bull trout
 Action/Type Work Mining - suction dredging
 Lead Agency FS - Clearwater NF Other Agencies North Fork Ranger District
 Biological Conclusion: not likely to adversely affect - non-jeopardy
 Take _____
 Re-Initiate Yes No Date _____ Withdraw YES Date _____

Rationale

Details

Habitat Involved _____
 Recommendations Provided Yes No Final Plans Received Yes No
 Comments _____

Affiliated Offices

Location:

Location Description Moose Creek
 Township 39N Range 11E Section 4 DecLat 46.7513 DecLong -115.0983
 Quad Osier Ridge Watershed N.E. Clearwater 17060307

References:

Associated With Fire Yes No Fire Name _____
 Permit Number _____ Permit Type _____
 FOIA Reference Code _____ ER # _____
 Hardcopy Location 104:0000 Electronic File Location F-06-0335
 GIS Files Location _____
 Hours:
 Staff _____ Species _____
 QA/QC _____ Date _____ Retention Schedule _____



United States
Department of
Agriculture

Forest
Service

Clearwater National Forest

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File Code: 2670

Date: January 19, 2006

Mr. Jeff Foss
Supervisor
Snake River Basin Office
U.S. Fish and Wildlife Service
1387 South Vinnell Way, Suite 368
Boise, ID 83709

Dear Mr. Jeff Foss

We would like to conclude formal consultation and acquire a biological opinion regarding the proposed suction dredging activities within the Moose Creek drainage. The Level One team has reached closure on this project. As noted in the Biological Assessment (BA), the proposed activities have been determined to **may affect, likely to adversely affect** bull trout within the North Fork Clearwater River drainage.

As a result of the listing of bull trout as a threatened species under the ESA on July 10, 1998, the Forest was directed to complete biological assessments and consultation on any action, which may affect bull trout prior to project implementation. This Regional Forester's direction as outlined in the memo dated January 27, 1998, was followed by the Forest with a Section 7 Watershed Biological Assessment completed for the North Fork Clearwater River drainage using the matrix pathways and indicators of watershed condition procedures. The North Fork Clearwater River Watershed BA included all ongoing and proposed projects (as of January 2000). The Forest received a letter of concurrence on these activities on March 13, 2000.

Because of complex issues, the suction dredging for the Moose Creek drainage was discussed under a project-specific consultation process. The Forest submitted biological assessments dated June 16, 2000 and April 26, 2001, to the USFWS for concurrence regarding the 2000 and 2001 mining seasons in the Moose Creek drainage respectively. The USFWS concurred with the Forest's determination via concurrence letters dated, July 11, 2000, and May 29, 2001, that the suction dredging in the Moose Creek drainage during the summers of 2000 and 2001 may affect, not likely to adversely affect bull trout. The concurrence was based on eight considerations and rationale that the Forest and USFWS agreed upon during the consultation process.

For the 2002 mining season, the Forest re-evaluated the determination regarding bull trout based on additional fish population and spawning data collected by the Idaho Department of Fish and Game and the Forest. Due to the higher than anticipated occurrences of bull trout within the Moose Creek drainage, the Level One team decided to upgrade the determination that the suction dredging activities may affect, likely to adversely affect bull trout.

The Forest submitted a BA for the Moose Creek drainage and a letter dated June 10, 2002 requesting formal consultation on the proposed suction dredging activities for the 2002 mining season. However no mining was authorized by the Forest in 2002 due to the pending completion of an Environmental Impact Statement (EIS). Since no mining was authorized in the Moose Creek drainage in 2002, the completion of the biological opinion was not imperative for 2002.



As agreed upon during a Level One conference call on July 30, 2002 and subsequent memo, dated August 6, 2002 the Forest requested the time frame of the BA be extended to include the 2003 mining season. The USFWS concurred with the Forest's determination of "may affect, likely to adversely affect" bull trout in a biological opinion dated January 15, 2003.

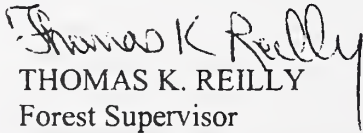
As in 2002, the Forest did not authorize any mining in 2003 due to the pending completion of an EIS. Therefore the monitoring provisions, conservation measures etc. that were noted in the BA and biological opinion did not apply to the 2002-2003 field seasons as no authorized instream mining (suction dredging) was permitted in the Moose Creek drainage. The Forest did find some minor stream bank alterations at an unauthorized mining claim during 2003. The Forest is currently investigating the unauthorized mining and the responsible party (claimant) was required to stabilize the impacted bank with rock during 2004.

Anticipating mining would commence in 2004, the Forest submitted a BA for the Moose Creek drainage and a letter dated April 29, 2004 requesting formal consultation on the proposed suction dredging activities for the 2004 and 2005 mining seasons. The U.S. Fish and Wildlife Service (USFWS) concurred with the Forest's determination of "may affect, likely to adversely affect" bull trout in a biological opinion dated July 2, 2004. No mining was authorized by the Forest in 2004 and 2005 due to the pending completion of an Environmental Impact Statement (EIS).

Currently the Final EIS for suction dredging activities within the Moose Creek drainage is completed and the Record of Decision is awaiting completion of the consultation efforts. The Level One team has discussed the proposed activities associated with suction dredging during 2005 and has reviewed the enclosed BA. On January 18, 2006, the Level One team agreed to consultation closure at the monthly Level 1 meeting. The BA details the mitigation and conservation measures that will be implemented and enforced during the 2006 and 2007 field seasons.

If you need any further information or have questions regarding this request for consultation, please contact Pat Murphy at this office.

Sincerely,


THOMAS K. REILLY
Forest Supervisor

cc: Clay Fletcher, USFWS - Boise

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SNAKE RIVER BASIN OFFICE

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BIOLOGICAL ASSESSMENT: THREATENED, ENDANGERED AND PROPOSED SPECIES

**Suction Dredging on USFS Lands in the Moose Creek Drainage
Final Version – January 19, 2006**

File # 104.0000

TAILS 14420-06-F-0035

This biological assessment addresses potential effects to designated Threatened and Endangered Species from proposed suction dredging activities within the Moose Creek drainage. All sites occur within the North Fork Ranger District, Clearwater National Forest. The project legal descriptions are in the Boise Meridian from T39N, R11E to T40N, R11E. The projects are located in the mainstem Moose Creek, Independence Creek and Deadwood Creek, within Idaho County, Idaho (Figure 1).

The Endangered Species Act of 1973 directs federal agencies to conserve Endangered and Threatened Species and to ensure that federal actions authorized, funded, and carried out are not likely to jeopardize their continued existence or result in the destruction or adverse modification of critical habitat. In response to Section 7(c) of the Endangered Species Act and Forest Service Manual (FSM) 2670, this biological assessment displays the potential effects of 38 suction dredging operations upon Threatened and Endangered Species that are known or may occur in the area. The analysis area used to evaluate effects of the proposed project includes the watersheds listed above.

The U.S. Fish and Wildlife Service (USFWS) species list of September 1, 2005, (from Bi-annual Forest-wide Species List, 1-4-05-SP-736), identified two endangered, seven threatened species under ESA within North Central Idaho. The following species were included in the list: gray wolf (E:YN), sockeye salmon (E), bald eagle (T), fall chinook salmon (T), spring chinook salmon (T), steelhead trout (T), bull trout (T), Canada lynx (T). Two of the fish species, sockeye salmon and spring chinook salmon were not listed within the Clearwater National Forest (specifically the Clearwater River and Palouse River subbasins); therefore these species will not be discussed as ESA species in this Biological Assessment.

Background Information

Moose Creek is a major tributary of lower Kelly Creek located within the upper North Fork Clearwater River drainage (Figure 1). Since its discovery near Moose City in the 1860s, gold has been mined sporadically in the Moose Creek drainage. Early mining activities included sluicing and hydraulic mining in the early 1900's. In the 1950's, dragline dredges mined the mainstem Moose Creek from the Independence Creek upstream to Deadwood Creek. The entire stream valley was impacted by the dragline. Moose Creek was relocated and flowed along and around high berms of mine tailings. With the rise in prices in the 1970s, the drainage experienced a renewed interest in prospecting for gold. It was also around this time that prospectors started using suction dredges to explore and process instream gravels. While the numbers who actually prospect varies from year to year, miners have established and maintained 30 placer claims on Moose, Independence, and Deadwood Creeks.

1998-1999 Mining Seasons: Following the listing of bull trout in July 10, 1998, the Forest assessed the mining operations within the Moose Creek drainage during 1998. Due to the low numbers of bull trout documented in the mining area, direct impacts to bull trout were

ATTACHMENT 6
COMMENTS AND RESPONSES

Prepared in part by:
Science Applications International Corporation
18706 North Creek Parkway, Suite 110
Bothell, Washington 98011

On April 2, 2004, the Environmental Protection Agency published a notice in the Federal Register (Volume 69, Number 64, page 17405-17406) announcing the availability of the Draft EIS. Clearwater National Forest issued a press release on April 13 and published a notice in the Lewiston Tribune, Idaho on April 4, that announced the availability of the Draft EIS and invited comments from the public on the document. The notices stated the comment period on the Draft EIS would extend through May 17, 2004. The Draft EIS was also made available for public review on the Clearwater National Forest website, <http://www.fs.fed.us/r1/clearwater/Projects/Dredge/dredge.htm>, and interested parties could submit comments through e-mail, written letter, or telephone conversation.

This appendix identifies the commenters; presents comments received by the public; agencies and organizations; and describes the Forest Service responses to these comments. These comments were used to make changes into the Final EIS (hereafter referred to as EIS in the response to comments).

A total of 11 individuals, organizations, and agencies submitted comments during the public comment period. The Forest Service carefully reviewed each comment received on the Draft EIS and organized them by 1) agency, and 2) individuals, alphabetically. Then, the Forest Service reviewed the letters for content to capture the public's concern and assigned a comment number to facilitate the organization of responses. Table D-1 identifies the individuals, organizations, or agencies that provided oral or written comments. This table also lists the number assigned to each separate comment. Table D-2 presents each the individual comments and the USACE responses to these comments.

Following Table D-2, comment letters and e-mails received are presented.

Table D-1. Individual and Organizational Commenters on the Draft EIS	
<i>Commenter</i>	<i>Name of individual / organization submitting comments</i>
1	Judith Leckrone Lee, U.S. Environmental Protection Agency (letter dated June 10, 2004)
2	Preston Sleeper, U.S. Department of the Interior (letter dated May 11, 2004)
3	Cal Groen, Idaho Fish & Game (letter dated May 17, 2004)
4	Anthony D. Johnson, Chairman, Nez Perce Tribal Council (letter dated May 12, 2004)
5	Gary McFarlane, Friends of the Clearwater and other organizations (letter dated May 17, 2004)
6	Lynn Card (letter dated April 16, 2004)
7	Del DuPont (letter via e-mail dated April 21, 2004)
8	Ron Hartig (verbal, via telephone, May 17, 2004)
9	Bernie W. Janes (letter dated April 3, 2004)
10	Rod Neumann (letter dated April 12, 2004)
11	Larry Yount (letter dated April 16, 2004)
12	Larry Yount (e-mail dated April 18, 2004)

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
General Comment		
2-1	The Department of the Interior does not have any comments to offer. We appreciate the offer to comment.	Thank you for your comment.
Purpose and Need (Chapter 1)		
5-1	The scoping letter indicated that this proposal covered 16 proposals in Lolo Creek and 13 in Moose Creek. Now, the DEIS says it apparently covers 17 claims on Lolo Creek and 26 on Moose Creek. Why the change?	The scoping letter was based on what the Forest Service believed to be the maximum number of operations that could reasonably be expected in the respective creeks. Following scoping, the Forest Service consulted with BLM and determined that there are 17 mining claims on Lolo Creek and 26 on Moose Creek. Ownership of individual claims varies from 1 to 8 people. There are 18 people owning 17 mining claims on Lolo Creek, and 38 people owning 26 claims on Moose Creek. Using these figures, the absolute maximum that could be expected is 18 operations on Lolo Creek and 38 operations on Moose Creek. As noted in the EIS, there generally are far fewer operations than these numbers suggest.
5-2	Does this DEIS cover any proposal for suction dredge mining in the area covered by the analysis? There is still no clear indication whether suction dredging could occur in other streams. That is particularly true of the Moose Creek proposals which flow into Kelly Creek and then the North Fork Clearwater. The Big Game Habitat Restoration and a Watershed Scale (BHRWS) document indicate that the North Fork, from Kelly Creek to Beaver Creek, and all of its tributaries in that section, except Weitas Creek, are open to suction dredging. These pose a major threat to water quality and fisheries.	This EIS covers only suction dredging that occurs in portions of Moose Creek (including tributaries Independence and Deadwood Creeks) and Lolo Creek. Actions or activities that occur outside the project area such as in the North Fork Clearwater River from Kelly Creek to Beaver Creek and including all tributaries for those sections are beyond the scope of this analysis. Surface impacts and impacts to threatened fish from operations occurring outside the project area would be analyzed in a separate analysis and Endangered Species Act consultation.
5-3	... the refusal to do separate NEPA analysis for each proposal not only fails to comply with NEPA's requirements for site-specific analysis, it adds considerable confusion to the process. The District Ranger could approve suction dredge mining years after completion of this EIS without any NEPA analysis at all. It seems that in order to review this decision at higher levels, citizens who own the national forest would be required to challenge this document. Yet, the DEIS notes any ROD emanating from this EIS would not approve any proposed action (p. 2-9). A clearer statement of policy is needed as it appears many decision memos or other non-challengeable decisions would emanate from this EIS and no ROD would be prepared. Is that accurate? If so, it violates not only NEPA but the Appeal Reform Act as well.	The Forest Service believes that the analysis in this EIS is sufficient for the types and numbers of operations evaluated, and that separate NEPA analyses for each operation are not necessary. As stated in the EIS, the ROD for this EIS would not blanket approve plans of operations. Rather, it would allow the Forest Service to approve a limited number of individual plans if they met specified criteria.
5-4	The DEIS is unclear whether the current plans of operations (POOs) are sufficient to meet the requirements of the DEIS proposed on page 2-27. The FOIA response sent to Friends of the Clearwater indicates none of the POOs explicitly mention the 30 conditions in the DEIS. Does the	The operators who submitted the plans of operations will need to amend their individual plan to contain the conditions or to submit a new plan. The Forest Service will require each operator to submit a proposed plan of operations for each mining year. The Forest Service will approve a limited

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
5-5	<p>agency maintain that new POOs will need to be submitted before allowing suction dredging to occur?</p> <p>It also seems some of the proposed dredge sites (see figure 2-4) are within the Moose Mountain Roadless Area (see Clearwater Forest Plan Appendices, C-102). This fact is overlooked in the DEIS. Since Deadwood Creek is the boundary of the roadless area, Lobo, Golden Goose, MAC 1, PB 1, and Katerons Folly, appear within the inventoried roadless area.</p>	<p>number of operations. Each operation must agree to specific conditions/mitigation measures listed in the ROD.</p> <p>Lobo, Golden Goose, MAC 1, PB 1, and Katerons Folly are mining claims located in the Moose Mountain Roadless Area. Of the five claims, only the owner of Katerons Folly, MAC 1, and PB1 submitted an operating plan proposing to suction dredge in 2002. No proposals have been received from the Lobo or Golden Goose claimants at this time. The operators of all mining operations are entitled to access in roadless areas. However, access for suction dredge operations will be restricted to existing Forest system roads and trails.</p>
6-1	<p>I agree gold is needed. A quick look at the spot metals market shows gold at or near record levels. If they can't make money mining now they probably never will. Prospecting is needed to confirm that there is commercial quantities of gold present to mine. The high value of gold also presents a opportunity to restore, reclaim and repair past mistakes.</p>	<p>Thank you for your comment</p>
6-2	<p>For the most part this is recreational mining. This is a valued use of national forest and part of multiple-use. Just like hunting, fishing, backpacking or skiing. This keeps people especially retired people occupied and busy.</p>	<p>Thank you for your comment. As described in the EIS (Chapter 1), the Forest Service agrees that this is a valued use of Forest Service lands.</p>
Proposed Action and Alternatives (Chapter 2)		
1-1	<p>Page 1-11 To further minimize the impacts from suction dredge operations, other Alternatives which the USFS might want to consider include limiting the number of operations on each stream, limiting the number which could operate at any given time, further limiting the size of dredge or hours/day in which they could operate, or simply limiting the amount of material each dredge could process.</p> <p>The lack of site specific data makes it particularly difficult to evaluate dredge impacts. One option the USFS may want to consider is to allow only a very limited number of dredges to be operated in each of these streams in the next few years. During that time detailed monitoring could be carried out to better evaluate impacts from these facilities. This would allow some of the operators to resume mining, would permit the USFS better information on which to evaluate and possibly permit other facilities, and could provide very useful information for the upcoming TMDL and NPDES permitting process.</p>	<p>The alternatives, allowed dates of operation, and terms and conditions include State of Idaho BMPs, and the reasonable and prudent measures listed in the Biological Opinions prepared by NOAA Fisheries (2003, 2004, 2006) and USFWS (2003, 2004, 2006). The Forest Service added additional elements based on concerns raised during consultation with the Tribe and other government agencies, public scoping, and based on the agencies past experience in preventing, minimizing, or mitigating impacts from dredging activities.</p> <p>The EIS considers up to 18 operators in Lolo Creek and 38 operators in Moose Creek, which is a very conservative estimate of the maximum number of operations. Operators have the right under both the 1872 Mining Law and the 1897 Organic Act to enter upon National Forests and to conduct upon these lands reasonable activities to prospect and explore for mineral resources. The Forest Service will not approve plans of operations unless they are covered by an NPDES permit. NPDES permits would have to be brought into compliance with TMDL requirements when it is developed.</p>
1-2	<p>The EIS should state who will conduct the restoration in Alternative 3.</p>	<p>The EIS has been modified to state that the Forest Service will implement</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
3-1	Preferred Alternative: Three Alternatives were considered; No Action, Suction Dredging, and Dredge Mining and Stream Improvement Projects. IDFG supports your selection of Alternative 3 as the Preferred Alternative, which would permit dredging under stringent controls outlined in the Terms and Conditions, and includes some watershed restoration as well...	the restoration projects. Thank you for your comment.
5-6	A major purpose of NEPA is to evaluate a reasonable range of alternatives. However, the DEIS ducks this issue by failing to look at an alternative that withdraws the habitat for listed species from mineral entry (DEIS page 2-9). The agency cannot so narrowly define the purpose and need as to preclude a meaningful analysis of other alternatives.	An alternative withdrawing all lands within the Moose and Lolo Creek project areas was discussed, but rejected. Withdrawing the lands involved in this EIS would not satisfy the Purpose and Need, which is to develop operating conditions and mitigation measures that protect surface resources, including threatened fish species, from impacts of suction dredging; and allow the Forest Service to approve, with no further NEPA analysis, a limited number of Plans of Operations in specified reaches of Lolo Creek, Moose creek, Independence Creek and Deadwood Creek.
5-7	...The DEIS erroneously asserts that mining claim validity is not an important issue (page 2-11)... The full text of this comment is found in the comment letter dated May 17, 2004 from Gary McFarlane, Friends of the Clearwater and other organizations. The full text is presented with comment letters in the FEIS Appendix D.	The citation was inadvertently omitted from the references cited. This has been corrected in the final EIS. Mining claim validity is not an issue in this environmental analysis. The normal procedure for the Forest Service is to review the plan of operation without investigating claim validity, other than to check land status for withdrawals or special designations. There is no requirement in Forest Service Regulations and policy for mining operations (prospecting, exploration, development, or production) to occur on a mining claim (36 CFR 228.3(a)). Further, if an operation does occur on a mining claim, the claim need not be found "valid" under the mining laws prior to operation. While the government may at any time question a claim's validity, there is no need to do so if the surface use activities are consistent with the Clearwater National Forest Plan direction, Forest Service policy, regulations, and the mining law. The September 2003 Memorandum from Mark Ray, USDA Undersecretary for Natural Resources and Environment to Dale Bosworth, Chief of the Forest Service outlining Forest Service Policy regarding mining claim validity is provided as Attachment 2 to these comment responses.
7-1	I do support alternative 3.	Thank you for your comment.
10-1	I go along with Alternative 3....don't see any problems.	Thank you for your comment.

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
12-1	...I support Alternative 3...	Thank you for your comment.
Terms and Conditions of Approval (Chapter 2)		
1-3	EPA generally supports the terms and conditions for dredging and we believe they are designed to protect fish habitat and seem to minimize the potential to damage stream channels and banks. EPA supports the provisions that the Forest Service has developed regarding timing and locations for dredge operations to minimize disruption of aquatic habitat. Also, we support the proposed monitoring discussed in the EIS that the Forest Service will conduct.	Thank you for your comment.
1-4	Condition 4 states that if streambanks are disturbed, they must be restored but it isn't until Condition 10 that it says that streambanks shouldn't be disturbed at all. These 2 conditions should be one after the other with #10 first.	The order of the conditions has been changed as suggested by the commenter.
1-5, 3-2	Condition 12 says that operators have to maintain a 100 foot separation distance but Condition 15 says that they have to visually monitor 300 feet downstream. The EIS should explain how the 300 foot distance will be determined by the operators. It would seem that it would be difficult to discern between one operator's turbidity plume and another's. For example, what if one dredger were operating and his turbidity plume disappeared within 100 feet but another dredger was operating 110 feet away and had a turbidity plume 300 feet long - it would still be within the first dredgers 300 feet but he would have no control over it. It would seem that the length of the monitored reach should be the same as the spacing distance between dredges.	As former condition 15 (DEIS) (currently EIS, Section 2.1, condition 21) states, "...if noticeable turbidity is observed downstream, the operation must cease immediately or decrease intensity until no increase in turbidity is observed 300 feet downstream. This condition would require any operation, regardless of spacing, to shut down or decrease intensity, if the stream becomes turbid from upstream activity.
1-6	The EIS should explain what happens if conditions are found that were not expected. There are at least a couple of possibilities here. One possibility is that an operator does not abide by the agreed-upon conditions. The EIS states that the Plan of Operations will not be renewed the following year. Is there an option to withdraw the permission mid-season? A second possibility is that while all operators abide by the conditions, the amount of disturbance is greater than predicted for some reason. The EIS should consider these scenarios and have a contingency plan in order to be prepared for unforeseen circumstances.	Once a plan of operations is approved, the operator is required to conduct the operation in accordance with the approved plan. This includes the amount of disturbance and the terms and conditions listed in Chapter 2. If a violation of the approved operating plan is discovered, the Forest Service is required to follow non-compliance procedure outlined in its regulations at 36 CFR 228.7, and if necessary, seek civil or criminal penalty. Other State and Federal agencies will be also be notified of the non-compliance. If unforeseen circumstances do occur, then the approving officer will follow the procedure outlined in regulations at 36 CFR 228.4, which requires modification of the existing plan. Consultation with the appropriate service would also be reinitiated and the modification would have to be analyzed for environmental impacts.
1-7	EPA supports the commitment by the Forest Service to conduct five inspections during the season and to do a final evaluation at the end of	Thank you for your comment.

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
	the season. This provides important assurance that any impacts that do occur are not likely to go unnoticed.	
1-8	The EIS states that streams will be restored to original condition by the end of the field season. The EIS should explain how this will be evaluated and how the operators or Forest Service will determine if the next pool downstream has been reduced in volume?	Operations will be inspected by the Forest Service at least 5 times during the approximate 6-week time period where dredging would be allowed. Inspections for impacts to channel geomorphology, including upstream and downstream pool/riffle sequences, will follow the methods specified in the NOAA Fisheries Biological Opinion (2006, pp 7-8) "Monitor changes in stream morphology...at the mining site, and in the pool/riffle sequences immediately upstream and downstream from the mined area, before and after mining: (1) Wolman pebble counts; (2) channel cross-sections; (3) one longitudinal profile; and (4) pictures showing the location of ...features such as large woody debris, boulders, [and] bank condition." The Forest Service will also implement USFWS Biological Opinion (2006, p.25) conservation recommendation 5, "Collect necessary data to update Matrix of Pathways and Indicators for Moose Creek." Following each mining season, the Forest Service will report the results of post-season monitoring to NOAA Fisheries and USFWS. (See EIS, Chapter 2).
1-9	... the EIS should explain how any pools deepened by dredging will be filled back to the original level.	Pools are generally not dredged, as operators typically target rough, highly fractured bedrock; low-velocity deposition sumps above resistant outcrops, dikes or faults; and boulder concentrations or coarse lag gravels on bedrock. The terms and conditions, however, specify that dredges must operate in areas of large substrate (EIS, Section 2.1.2, T&C 6), they cannot operate in gravel bar areas at the tails of pools (T&C 19) and they may not operate in such a way that sediment from dredge discharge blankets gravel bars (T&C 20). Operators generally fill the holes they create by directing the sluice outfall into the previously dredged hole. The sluice outfall then backfills the dredge hole. Any cobble or small boulders previously removed are then returned to the hole and blended with the surrounding substrate. The morphology of sites will be monitored by the methods described in response to comment 1-28.
3-3	Provisions for protecting fish and aquatic habitat are addressed in the "Terms and Conditions"(EIS 2.2 to 2.7) that will be required of all dredge operators. We believe that the required "Terms and Conditions" for operations will be generally protective of bull trout and steelhead, if adequately implemented and enforced. However, we do have some concerns about those Terms and Conditions. In particular, we are concerned that the protections are limited to those species. The Terms and Conditions (except the additional Terms and Conditions under Alternatives 2 and 3, which are intended to meet ESA requirements) should also extend protections to other species, especially Chinook salmon, westslope cutthroat trout and Pacific lamprey. Our comments	The Forest Service agrees that the terms and conditions will protect bull trout and steelhead. The terms and conditions will also provide protection to other aquatic species. Responses to comments 3-2 through 3-5 address the commenter's last concerns.

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
3-4	<p>on specific Terms and Conditions below [comment 3-2 through 3-5] reflect that premise.</p> <p><i>T&C 3: Dredge sites must be located in areas of large substrate not preferred for spawning steelhead and bull trout.</i></p> <ul style="list-style-type: none"> Dredge sites should not be located in areas used for and suitable for spawning, not just those "preferred" by steelhead and bull trout. Since the impacts of dredging can be expected to extend beyond the actual area of dredging (e.g., 300' sediment/turbidity zone), the "dredge site" should be defined to include both the area where suction dredging will occur and 300' downstream for the purpose of protecting habitat downstream. Dredge sites should also be prohibited in areas used for spawning by westslope cutthroat trout or in substrates used/suitable for Pacific lamprey for spawning or rearing. <p><i>T&C 14. Operators must visually monitor the stream for 300 feet downstream of the dredging operation ... and cease immediately or decrease in intensity until no increase in turbidity is observed 300 feet downstream. We do not believe a "visual" assessment is a suitable means to assess water quality impacts of dredging. It is also unlikely that visual observations are adequate to satisfy state water quality requirements. Provisions should be made to measure turbidity daily and to respond immediately if standards are not met at the point of discharge.</i></p>	<p>The terms and conditions are designed to protect or minimize impacts to stream channel geomorphology, aquatic habitat, and minimize the potential for a take of T&E species. T&C 3 (EIS, Section 2.1.2) prohibits dredging "... in areas of known bull trout (and steelhead, in the case of Lolo Creek) spawning or in areas identified as spawning habitat." This identification would be made by the Forest Service biologist who inspects the proposed site prior to the mining season.</p> <p>As noted in the EIS, any observed turbidity caused by discharges from suction dredges would be expected to dissipate by 300 feet downstream. Such instances would occur only when operators were working in fine material, which is neither common nor widespread in these creeks. The Forest Service does not expect there to be anything other than transient effects on downstream habitats.</p> <p>As with steelhead trout and bull trout, westslope cutthroat trout spawning sites and Pacific lamprey spawning and rearing sites will be identified during the pre-mining field review and avoided.</p> <p>The Forest Service believes that visual observation is sufficient. Based on our past experience, turbidity levels that are less than 50 NTUs are very detectable visually. It should also be noted that the Biological Opinions prepared by the Fish and Wildlife Service and NOAA Fisheries recommended visual observations to detect turbidity. However, the Forest will be monitoring turbidity levels via instruments to determine the average increases in NTUs and if any operations are exceeding the State standard of 50 NTUs.</p>
3-5	<p><i>T&C 22. Dredging operations must be shut down immediately if fish eggs are excavated, if sick, dead, or injured steelhead or bull trout are observed, or if destruction of redds is observed.</i></p> <ul style="list-style-type: none"> We agree with the requirement to shut down and report any of the above impacts to fish. Again, however, we recommend that the same protective conditions should apply for Chinook salmon, westslope cutthroat trout and Pacific lamprey. Since operators may not recognize 'sick' fish, we recommend immediate shutdown and reporting if fish, appear "distressed" or show any unusual behavior. Will operators be trained or tested to ensure that they can identify 	<p>Because of the inability to discern the fish species, the requirement to shut down basically applies to the disturbance of any redds or excavation of fish eggs. While this requirement applies to steelhead trout and bull trout, the likelihood of this action occurring is very remote as steelhead trout spawning, egg incubation and fry emergence is completed prior to the dredging season in Lolo Creek and bull trout spawning occurs after the closure of the dredging season. This situation would also apply to spring-spawning westslope cutthroat trout and Pacific lamprey within the project areas. Besides the protection measures for the two listed species, this requirement was primarily imposed to minimize impacts to spring chinook salmon that may be spawning in early August during the last two weeks of the dredging season.</p> <p>The provision to shut down if sick, dead, or injured fish other than steelhead trout and bull trout does not apply to non-listed species.</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
	<p>eggs and larvae in their excavated material, or to differentiate between various fish species, including eggs, larvae and juveniles of various species?</p> <ul style="list-style-type: none"> The permitting process should allow no opportunity for destruction of redds. We recommend a requirement for a qualified fish biologist to survey potential dredge mining sites, including the 300' downstream allowable turbidity zone, for redds prior to permitting and start-up of operations. Monitoring should continue throughout operations. To ensure no redds are compromised by dredging or sediment discharge. 	<p>Populations of spring chinook salmon in Lolo Creek and westslope cutthroat trout within Lolo Creek and Moose Creek drainages are relatively healthy, subject to harvest and not threatened at this time. Of course, the operators are required to avoid injury to all fish, especially small juvenile fish, as species identification is difficult at the fry stage.</p> <p>The Forest Service believes the operators are sufficiently familiar with various adult fish and do not require special training. As noted above, however, the operators do need to be able to distinguish eggs, and juvenile steelhead trout (rainbow features) and bull trout (char features) to meet the requirement.</p> <p>The Forest Service agrees: each proposed site will be inspected by a Forest Service biologist prior to operations to determine potential spawning areas within Lolo Creek. The Forest Service, with assistance from the Nez Perce Tribe (during their spring chinook spawning surveys), will assess the dredging locations, turbidity etc with any spring chinook salmon spawning activity within the Lolo project area.</p>
3-6	<p>T&C 24. <i>Dredging operations must be shut down immediately if the operator observes bull trout in either creek or steelhead in Lolo Creek.</i></p> <ul style="list-style-type: none"> Will operators be trained, tested to ensure that they are able to identify bull trout, including juveniles, as well as other species the Terms and Conditions are designed to protect? Operations should also be shut down if someone other than the operator reports a valid observation of bull trout in either creek or steelhead in Lolo Creek. 	<ul style="list-style-type: none"> The Forest Service believes that operators are sufficiently familiar with adult bull trout and other species to identify them as necessary. During the pre-mining field review and throughout the dredge season, the Forest Service will work with the operators educating them so they can identify eggs, juvenile steelhead and bulltrout. Condition 24 as proposed in the draft EIS was reviewed during 2004 consultation by the Forest Service, NOAA Fisheries and FWS. The condition was not considered or deemed necessary by the three agencies and was not included in the Biological Assessment or Biological Opinions. Condition 24 has been removed as a term and condition in the final EIS.
3-7	<p>... [W]e are also concerned that monitoring of conditions of operation and decisions to cease operations seem to be left primarily to the operator. Monitoring to meet many of the conditions (e.g., occurrence of redds, identification of suitable spawning habitat, identification of juvenile salmonids) requires special training or qualifications that operators are not likely to possess. We believe that frequent, nearly continuous, oversight of operations by qualified Forest Service biologists may be necessary to ensure successful implementation of the Terms and Conditions.</p>	<p>As described in EIS (Section 2.1), the Forest Service will inspect each operation before the mining season, at least five times during the six-week mining season, and again after mining ceases. The Nez Perce Tribe will also assist the Forest Service with inspections on Lolo Creek. This level of oversight by Forest Service and Tribal employees should ensure the operators comply with the terms and conditions of approval.</p>
4-1	<p>Visual observation of excess turbidity at 300 feet downstream is too subjective. The levels should be quantified with instrumentation or quantitative analysis. The cumulative impact of multiple miners working on concurrent sections of the creeks also makes this self regulation</p>	<p>The Forest will be monitoring turbidity levels via instruments to determine the average increases in NTU's and if any operations are exceeding the State standard of 50 NTUs (EIS, Section 2.1, Monitoring Condition #3). Limiting the number of dredge operations to 18 and the requirement of</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
	potentially unworkable.	<p>minimum 100-foot spacing between dredge operations will greatly lessen the potential for multiple miners working on concurrent sections.</p> <p>The Forest Service believes that visual observation of turbidity is sufficient. Based on our past experience, turbidity levels that are less than 50 NTUs are very detectable visually. It should also be noted that the Biological Opinions prepared by the Fish and Wildlife Service (2006) and NOAA Fisheries (2006) recommended visual observations to detect turbidity.</p>
4-2	The criterion of ceasing operations if two drops of mercury are discovered is too subjective. This criterion should be changed to any visible mercury.	The criterion will be changed to, "The operator will not entrain, mobilize, or disperse any mercury discovered during mining operations. Rather, the operator will ensure that all mercury observed is removed from the stream." (EIS, Section 2.1, Term and Condition #28)
4-3	The Forest Service must ensure that each of the terms and conditions contained in the biological opinions are strictly adhered to. This will require the Forest Service to adequately fund an aggressive monitoring and enforcement program to ensure that permittees are adhering to the terms and conditions. If the Forest Service discovers violations of the terms and conditions, the Forest Service should immediately revoke the suction dredge mining permit.	As noted in response to other comments above, the Forest Service will visit each prospective dredging site before the mining season, will inspect each active operation on approximately a weekly basis during the mining season, and will verify reclamation has been completed after the end of the mining season. This will ensure compliance with the terms and conditions. (EIS, Section 2.1, Monitoring Condition #3, #6 and #7)
4-4	In addition to permit monitoring and enforcement, the Forest Service needs to aggressively conduct biological monitoring to ensure that the terms and conditions do not negatively impact fish, water quality, or fish habitat. The Tribe remains concerned about the Forest's ability to conduct such biological monitoring, given the recent trends to cut back such funding.	The Forest Service does not have authority to immediately revoke a suction dredge permit. If violations are discovered, then the Forest Service will follow non-compliance procedures outlined in regulations at 36 CFR 228A.
4-5	The Tribe hereby requests participation in all monitoring efforts. I understand that the Forest Service is proposing a pre-mining tour, as well as five (5) monitoring trips during operations. The Tribe also requests to receive all future monitoring reports related to this project.	As noted in the EIS (Section 2.1) and in responses to other comments, the Forest Service will visit each site before the mining season to verify site conditions, will inspect each operation at least five times during the six-week mining season to verify compliance, and will visit each site after the mining season. (Section 2.1, Monitoring Condition #3, #6 and #7)
4-6	Due to the high biological risks associated with suction dredge mining,	As in the past 15 years, the Forest will continue to monitor fish populations within Lolo Creek at the 15 permanent monitoring stations. As detailed in the Biological Opinion for steelhead trout, the Forest will monitor substrate conditions. In addition, the Forest will be relying upon fish population data collected by the Nez Perce Tribe.
		The Nez Perce Tribe has participated in pre- and post-mining reviews in the past and will be notified when future reviews need scheduling. The Tribe's participation in site visits will help insure compliance with the monitoring requirements. Copies of the monitoring reports will be made available to the Tribe.
		Bonding is discretionary. However, Forest Service Manual direction (FSM

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
	<p>the Tribe urges the Forest Service, to require all permittees to post a bond before beginning operations. The bond should be significant, nothing less than \$1000. The Tribe welcomes further discussion on bonding, and how the Forest Service might use the bonding fee to fund monitoring and enforcement.</p>	<p>6561.3) requires bonds to cover the actual costs of reclamation described in a plan of operation. An analysis of the reclamation costs will be prepared for each operating plan. If costs exceeds the \$200 minimum threshold (FSM 2817.24), then a bond may be required. The bond amount has to reflect actual costs and is subject to challenge through the FS appeals process (36 CFR 251).</p>
5-8	<p>There also must be effective monitoring and enforcement of the rules and regulations governing mining at each mine site and assurance that each of the claimants has the proper permits and licenses before initiation of the mining operation. Frankly, we question whether and how the agency can enforce the provisions proposed under various alternatives such as if fish eggs are evacuated or mercury is discovered (see DEIS chapter 2).</p>	<p>As noted in the EIS and in responses to other comments, the Forest Service will visit each site before the mining season to verify site conditions, will inspect each operation at least five times during the six-week mining season to verify compliance, and will visit each site after the mining season to verify reclamation has been completed.</p> <p>Two of the terms and conditions require the operators to stop operating and notify the Forest Service if they disturb fish eggs (EIS, Section 2.1, condition 24) or observe mercury (EIS, Section 2.1, condition 28).</p> <p>If violations are discovered, then the Forest Service will follow non-compliance procedures outlined in regulations at 36 CFR 228A.</p>
5-9	<p>... the conditions do not guarantee no harm to fish or other aquatic organisms. They are based upon the assumption that the conditions will be followed. It expects dredge miners are experts in fisheries (items 3, 6, 15, and 24) and expects them to notice tiny fry or alevins and notice if mercury is displaced (items 22 and 29). All the above is difficult even where operators are trying to comply. Other conditions are subjective in nature.</p>	<p>The Forest Service believes the terms and conditions, which mirror the measures stipulated by USFWS and NOAA Fisheries in their respective Biological Opinions, are sufficient to protect fish and other aquatic organisms. The conditions do not require special expertise in fisheries and should be readily achievable by operators. The Forest Service has found that suction dredge operators are very capable of monitoring conditions and identifying fish fry and alevins, and of identifying mercury. In general, they already do this, and the conditions do not require any extraordinary alertness or observational skill.</p>
5-10	<p>Although the Forest Service cannot categorically deny a reasonable plan of operations, it can reject an unreasonable plan and prohibit mining activity [emphasis in original] until it has evaluated the plan and imposed mitigation measures." Siskiyou Regional Education Protect v. Rose, f57 F. Supp. 2d 1074 (D. Or. 1999)(emphasis added by commenter).</p>	<p>The Forest Service agrees. The terms and conditions with which small-scale suction dredge operations will have to comply are reasonable and sufficient mitigation measures to protect Forest resources.</p>
5-11	<p>Under 36 CFR 228, the agency should require a financial assurance that ensure that reclamation would be completed in the event of abandonment of the site. This is especially critical due to the problematic economics of gold recovery. The DEIS fails to detail the amount, scope, and form of the financial assurance. None of the 30</p>	<p>The Forest Service does not believe bonding is necessary. The small-scale nature of the operations evaluated in the EIS, and the fact that there will be at least five inspections during the six-week mining season, limits the amount of reclamation that could go uncompleted in the event of abandonment.</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
	conditions address bonding.	Bonding is discretionary. However, Forest Service Manual direction (FSM 6561.3) require bonds to cover the actual costs of reclamation described in a plan of operation. An analysis of the reclamation costs will be prepared for each operating plan. If costs exceeds the \$200 minimum threshold (FSM 2817.24), then a bond may be required. The bond amount has to reflect actual costs and is subject to challenge through the FS appeals process (36 CFR 251).
6-3	We will need to limit the number of people that can mine at any one time. Establish a mining season and shut down mining when stream levels get very low.	The Forest Service agrees that there should be a limit to the number of mining operations, and that there should be a defined mining season. The EIS evaluates the potential impacts of approving up to 18 proposed plans of operations on Lolo Creek and up to 38 on Moose Creek, and also establishes a six-week mining season from July 1 to August 15. The Biological Opinions and the EIS concluded that this number of small-scale dredges operating during this time would have only minor impacts to the streams. The time of lowest stream flow generally occur in late August through October, after the mining season ends.
7-2, 11-1	In several places the DEIS states that the stream will be reclaimed by the end of the mining season. Small Scale Miners, reclaim their dredge holes as they move forward until they reach the last hole or when we have to move to another area. Then we turn the dredge around and dredge the hole full or back as close to grade as possible. I would like to urge that we be given at least one day after the season is over, to reclaim where we have worked. (Reference to page: ES-6, ES-7, 2-5,2-15, 3.1.2 item 21)	In order to comply with the terms and conditions listed in the EIS, all instream activities, including reclamation activities in Moose Creek and Lolo Creek have to be completed on or before August 15.
7-3	I would like to suggest that you let the miners remove the logs that were put in to make spawning beds. All they are now is silt traps. This would reclaim more spawning beds. The Fish and Game have been doing the same thing and this way we can extract the gold.	The impacts of removing log weirs is beyond the scope of this analysis, and would have to be addressed in a separate environmental analysis. Until such time, all large stable woody debris that extend from the bank into the channel may not be undermined, excavated, or removed (EIS, Section 2.1, Conditions 13 and 14).
11-2	The DEIS states in several places that the stream will be reclaimed by the end of the mining season. In most cases we fill in our holes behind us as we dredge, however I urge that we be given at least one day after the season is over to reclaim where we have worked. (Reference to page: ES-6, ES-7, 2-5, 2-15, 3.1.2 item 21)	In order to comply with the terms and conditions, all instream activities in Moose Creek and Lolo Creek have to be completed on or before August 15.
11-3, 7-4	Under the Terms and Conditions in section 2 and under 3.0 Environmental Consequences, item 8 should read "All human waste must be kept more than 200 feet away from any live water <u>or as approved by the Forest Service.</u> "	All human waste must be kept more than 200 feet away from any live water, or contained within a sanitary portable toilet.

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
11-4	Item 18 should change to: "Operators may not remove, relocate, or disturb stable in-stream woody debris or <i>remove</i> boulders greater than 12 inches in diameter."	The wording of former Condition 18 (currently condition 14) remains unchanged. NOAA Fisheries and FWS have reviewed the wording of the mitigation measures during 2004 consultation. No changes were made to Condition 18. Changes to wording of a mitigation measure would require concurrence from both agencies before changes are made.
11-5	Under the monitoring and reporting by the Forest Service as outlined in the Terms and Conditions in section 2 and under 3.0 Environmental Consequences, 3.2.2: Item 1 specifies that the FS monitor operations five times during the mining season. Even though we would welcome a visit by our friendly FS representative, this hardly seems practical for those miners that only operate for a week or as little as a week end. I would propose that the FS visit at least once for every week of operation, with a maximum of 5 visits. We only have a six-week season.	The wording of the monitoring of active operations will remain unchanged. The monitoring requirement has gone through NOAA Fisheries and FWS review and no changes were made during 2006 consultation. Changes to wording of a monitoring measure would require concurrence from both agencies before implementation. The monitoring requirement was specifically geared to ensure the Forest monitored operations throughout the dredging season. For operations that extend over the full six-week period, we expect to visit each operation a minimum of five times. For other operations that extend for one weekend, the monitoring requirement would mostly likely be met with one visit.
11-6, 7-5	2-1, Mitigation Measures lists the intakes having a 2/32 screen. It should read 3/32	This has been corrected.
7-6, 11	In the Environmental Consequences "Item 9 under the Terms and Conditions; should start with "NO".	No correction is needed. Former Condition 9 (currently EIS, Section 2.1, condition 17) has been edited and starts with "No".
9-1	I would say ok on this project if no fish were in the area..., but if any fish are there, then no mining should be allowed.	Condition 24 was reviewed during consultation with NOAA Fisheries and FWS. The condition was not considered or deemed necessary by either agency and was not included in their respective Biological Opinions. Condition 24 has been removed as a term and condition in the final EIS.
Existing Conditions (Chapter 3)		
1-10	Page 3-7 A reference is made to USFS 2001e, which was not found in the reference list.	This has been corrected in the final EIS.
1-11	Page 3-9 Typographical error based on September bedload rates, change as follows: "... bedload ranges between 5 percent and 61 percent ..."	This has been corrected in the final EIS.
5-12 the DEIS fails to address issues we raised in our scoping letter. In particular, monitoring current conditions would be important to see what the impacts of suction dredging are on the Clearwater National Forest. For example, camping in one place beyond 14 days and the impacts of repeatedly loading the dredge from the trailer or pick-up in and out of the streams.	The Forest Service anticipates that camping would continue at approximately the same level even without suction dredging, so there would be no incremental impact due to camping by suction dredge operators. A discussion of impacts on riparian vegetation, stream banks and upland areas associated with the No Action and the Action Alternatives is provided in Section 4.9 of the EIS. Additionally, suction dredge operators generally load their dredge into the stream the first day of operation and then do not remove it until the last day, so there is not repeated loading

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
Water Quality (Chapter 4)		and unloading.
1-12	<p>EPA has concerns related to water quality and the lack of information regarding affected environment and cumulative effects. EPA's water quality concerns relate to the potential number of simultaneous mining operations, turbidity, bedload impacts, and lack of site-specific information on effects of dredging. EPA believes that too many dredges operating at once could have potentially significant impacts on individual stream reaches. We recommend that the EIS address this concern and include contingency measures for unforeseen circumstances.</p>	<p>See response to comments 1-23, 1-26, 1-28, 1-30, 1-32, 1-33, 3-4, 4-1 and 6-3. The terms and conditions are designed to minimize impacts to channel geomorphology and minimize turbidity in the water column downstream. The EIS will be modified to highlight that there is a greater potential for impacts to turbidity from multiple operators within close proximity and the conditions for them to cease operations.</p> <p>The terms and conditions specify that dredgers must operate in areas of large substrate (EIS, Section 2.1, T&C 6), they cannot operate in gravel bar areas at the tails of pools (EIS, Section 2.1, T&C 19), and they may not operate in such a way that sediment from dredge discharge blankets gravel bars (EIS, Section 2.1, T&C 20). Potential impacts to substrates and channel geomorphology are discussed in Section 4.2.2 of the EIS. The EIS concludes that small scale suction dredging would not result in long-term alternation of stream channel morphology or stream equilibrium when the conditions are properly followed.</p>
1-13	<p>... EPA recommends that components of the alternatives be considered such as limiting the number of dredges operating at a time, limiting the hours of operation per day, and/or limiting the amount of material each dredge could process.</p>	<p>Dredging through the substrate and depositing these materials back into the channel does not result in an increase of bedload, which is the rate of movement and transport of substrate continuously downstream. The terms and conditions mitigate any significant or long-term effects to the bedload moving within a stream.</p>
1-14	<p>We believe that the EIS should discuss the proposed 303(d) listing of Lolo Creek and how the TMDL will drive future management decisions once developed.</p>	<p>Morphology of sites will be monitored by the methods described in response to comment 1-28.</p> <p>See response to comment 1-30.</p>
1-15	<p>We recommend that the EIS have additional discussion on potential bedload impacts, include additional information on cumulative impacts on water quality and aquatic habitat related to historic, currently proposed, and reasonably foreseeable future mining and include these</p>	<p>A discussion of the proposed Section 303(d) listing has been added to the final EIS. It is premature to discuss how the future TMDL may drive management decisions.</p> <p>See response to comment 1-2 above. Cumulative impacts are evaluated in Section 4.16 and are based on past watershed practices and all reasonably foreseeable future mining activities.</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses	
Commenter #	Response
	discussions in the EIS.
	It is unclear how the instantaneous IDEQ turbidity standard (background turbidity shall not be increased by more than 50 NTU) relates to the proposed requirement that visible plumes shall not extend more than 300 feet downstream. The EIS should explain how many NTUs are equivalent to a visible plume. This information is necessary in demonstrating that the operations would meet water quality standards.
1-16	<p>There is no direct relationship between a visible plume, which is qualitative, and a quantitative measurement of turbidity. However, it is our experience that turbidity levels that are less than 50 NTUs are very detectable visually. It should also be noted that the Biological Opinions prepared by the Fish and Wildlife Service and NOAA Fisheries recommended visual observations to detect turbidity. Suction dredging in the Moose Creek and Lolo Creek project areas often results in no visible plume of fine sediments downstream. However, the 300-foot downstream condition is imposed so the operator can reasonably apply a Best Management Practice to be in compliance with the standard of no more than a 50 NTU instantaneous increase below an established mixing zone.</p> <p>As stated above in the response to comment 3-4, the Forest will be monitoring turbidity levels via instruments to determine the average increases in NTUs and if any operations are exceeding the State standard of 50 NTUs.</p> <p>Also, it is important to note that the Forest Service will not approve plans of operations unless the operator has sought coverage by an NPDES permit. It is anticipated that EPA would address turbidity in any NPDES permits.</p> <p>Potential impacts to stream channel geomorphology and stability are discussed in Section 4.2 of the EIS.</p>
1-17	<p>Page 2-12 EPA recommends that the EIS discuss whether or not the loss of relative stream bed stability is possible in areas which have been mined.</p> <p>Page 3-7 The EIS states that Lolo Creek does not meet the Forest Plan sediment standard. The EIS should further discuss this issue by stating the source of sediment and how this standard relates to Idaho State standards.</p>
1-18	<p>Lolo Creek does not currently meet the Forest Service plan standard for sediment. This is a goal relating sediment yield from the watershed to land management practices and is used for land planning and management. There is no relationship between this standard and Idaho water quality standards, which are related to turbidity and impacts to beneficial uses. The amount of sediment in a stream and the degree of embeddedness is a result of past watershed practices and conditions which have improved, reducing sediment delivery to the creeks (see EIS, Sections 3.2.3 and 3.3.3). These have improved (that is, have been reduced) as a result of changes in practices in the watershed. Embeddedness is naturally reduced as sediments are naturally transported by the creeks out of the watershed. It is not expected that suction dredging significantly impacts sediment delivery to stream systems or sediment transport from the watershed. The sources of sediment in Lolo Creek are from past and present watershed management activities such as logging, roads, grazing and fire. The EIS will be modified to clarify relative erosion and sediment yield in the watershed</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
1-19	Page 3-11 Discussion of temperature criteria should also include the Idaho salmonid spawning criteria, and the federal bull trout criteria.	in relation to past and present land use activities. Since the bull trout and steelhead trout spawning seasons do not overlap the mining season, the EIS does not discuss temperature. The Forest Service will add the criteria to the EIS, however.
1-20	Page 3-45 Table 3-18. The percent substrate composition of particles in the sand size and smaller differ substantially between this table and 3-7 and 3-6 for Moose Creek and Independence Creek, respectively. Table 3-7 and 3-6 show much higher levels of fine material, and are based on a more recent (2003) reference. The EIS should indicate which is more representative of current conditions.	The data presented in Figures 3-6 and 3-7 are from different studies that occurred on different reaches within the Moose Creek watershed. The data available for Figures 3-6 and 3-7 show size fractions <2.0 mm (small gravel and less), while data in Table 2-8 shows smaller size classes. The EIS will be modified to further expand discussions of existing particle size distribution.
1-21	Page 2-7 The text should clarify that the Idaho ambient turbidity standard is <25 NTU above background for 10 consecutive days, and not to exceed 50 NTU above background (IDAPA 58.01.02.250.02.e).	The EIS will be modified according to the comment.
1-22	Page 2-8 "These data show that sediment production in Lolo Creek is meeting State water quality standards and beneficial uses for steelhead trout and cutthroat trout as listed in the Forest Plan for the Lolo Creek watershed (USFS 1987)." We agree that the turbidity data indicate compliance with the turbidity criteria cited above, however, Idaho also has a narrative sediment standard which indicates that sediment shall not be present in quantities which will impair beneficial uses (IDAPA 58.01.02.200.08). This provision can account for impacts from other forms of sediment not captured by the turbidity criteria, such as excessive bedload. Since Idaho is planning to list Lolo Creek for sediment in the project area, this section should be revised to indicate that while data show compliance with turbidity criteria, Idaho has determined that sediment is impairing beneficial uses. Idaho has not completed a similar assessment of the Moose Creek drainages for 303(d) purposes.	Section 4.1.2 and 4.3 of the EIS indicates that there would be no discharge of new sediment to the creeks. Former Condition 10 (currently Condition 8) stipulates that operators not undercut, destabilize or otherwise disturb streambanks, which would be sources of new sediment (see Section 4.3.2 of the EIS). As discussed in Section 4.1.2, "...dredging would not introduce sediment to or increase sediment ..." See response to comment 1-2 concerning bedload and response to comment 1-6 concerning NPDES permit requirements and compliance with a TMDL when completed.
1-23	Page 4-2 Section 4.1.2 indicates that sediment would not increase in the study areas, but substrate sediment would be dredged and then settle out within a short distance. We believe other aspects of this sediment movement need to be addressed to make this discussion complete. The EIS does not provide information to substantiate what a "short distance" is, nor whether all size fractions of sediment will settle out in a short distance. Coarse sands and gravels likely would settle out quickly, but sand size material may contribute to increased bedload movement, and finer fractions (silts and clays) could be transported much greater distances downstream. We recommend further addressing this concern and avoiding dredging up silts and clays and if these are encountered that the dredging process should cease to operate and	EIS sections 3.2.2, 3.3.3, 3.2.4, 3.3.2, 3.3,3, and 3.3.4 provide data available concerning relative distributions of particle sizes within the substrate. And streamflow velocities in relation to total sediment load. These data are provided to show relative amounts of small size fractions and their potential for entrainment and transport. Potential impacts related to the entrainment and transport of small size fractions in relation to stream velocities is provided in section 4.3.2. The Forest Service feels that the condition which stipulates that operations must cease when visible plumes extend past 300 feet addresses impacts related to dredging in areas with smaller transportable size fractions.

Table D-2. Comments on the Draft EIS and Forest Service Responses

Committer #	Comment	Response
1-24	<p>move to another location.</p> <p>Page 4-2 We are concerned that while the sediment which is moved is part of the existing stream bed, it is being introduced into the water column at a time of the year (summer) when elevated water column and bedload sediment loading typically does not occur. Given the low flows at this time, sediment in the water column will not be diluted by higher flows, and bedload sediment will be less likely to be flushed from the system. Furthermore, dredging into the substrate several feet and/or to bedrock may be below the typical scour depth from high spring flows. Sediment dredged up from such depths would only be exposed by typical stream flow infrequently, rather than annually during the dredge season. EPA recommends providing additional discussion regarding this concern.</p>	<p>Temporary increases in total suspended load that could potentially result from dredging in some locations would not be significant in relation to normal increases in total suspended load that occur during convective storm events which occur throughout the summer. Dredging through the substrate and depositing these materials back into the channel results in an increase of bedload, which is the rate of movement and transport of substrate continuously downstream or that it significantly increases the amount of sediment in a stream system.</p>
1-25	<p>Page 4-3 Water Quality Effects, Alternative 2. As stated in the previous comment, sediment introduced by dredging is atypical in that it occurs at a time of year when normally it would not, and a greater depth of sediment may be liberated than would normally occur during annual high flows. The ambient turbidity criteria cited in this section is correct, but Idaho water quality standards also include a treatment technique for point sources, which specifies that point source discharges must not increase turbidity by more than 5 NTU above background outside the mixing zone (IDAPA 58.01.02.401.03.b). This treatment requirement was included as part of the wasteload allocation for suction dredging in the SF Clearwater TMDL (IDEQ, Nez Perce Tribe, USEPA, 2003), and should be cited as a relevant standard in the EIS.</p>	<p>See response to comment 1-6. The Forest Service will not approve plans of operations unless the operator has sought coverage under an NPDES permit. EPA would ensure that NPDES permits are brought into compliance with TMDL requirements when the TMDL is developed, with specific discharge requirements regarding turbidity limits and mixing zones as needed.</p>
1-26	<p>Page 4-3 The EIS states, "These extremely and localized and temporary increases would not be significant compared to the background total sediment loads of 1,541 and 500 pounds per day in July and August ..." We estimated what the combined fine sediment (<= 2 mm) loading would be in each stream assuming each facility was operating, each was discharging 5 yd³/day, and average stream flows for July - Aug. In Table 1 below, we compared this to average suspended sediment loading measured in these streams from Tables 3-4, 3-13, 3-14, and 3-15, averaging the July - August readings.</p>	<p>The analysis suggested in this comment implies a discharge or load from a new source to the creek. As noted in the EIS, and in responses to other comments above, small-scale suction dredging does not introduce new sediment to the creeks.</p> <p>The comment assumes that all excavated fines less than 2 mm in diameter would stay suspended in the water column and attribute to decreases in turbidity in the water column. The Forest Service does not agree that an assumption of a size class of 2 mm and smaller is a reasonable or realistic analysis to assess impacts to water quality, aquatic habitat, or fishes. The following analysis is offered as a response to this comment.</p> <p>USDA commonly accepted size classes and definitions are used for perspective. By definition particle sizes greater than 2 mm is "gravel"; 1 mm to 2 mm is defined as "very coarse sand"; 0.25 mm to 1.0 mm are defined as "medium and coarse sand"; 0.1 mm to 0.25 mm is defined as "fine sand"; 0.05 mm to 0.1 mm is defined as "very fine sand"; and silts are</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response																																		
		defined as being less than 0.05 mm. Given the disturbance of bed materials by dredging and relatively low flow velocities in July and August, a conservative assumption is that size classes of 0.25 (fine sand) and lower (very fine sand and silts) may remain suspended long enough downstream to potentially impact turbidity in the water column.																																		
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	<table border="1"> <thead> <tr> <th rowspan="2">Stream</th> <th rowspan="2"># Operations</th> <th colspan="2">Estimated Loading from Dredges</th> <th colspan="2">Historical Measurements</th> </tr> <tr> <th>Fines < 2 mm (lb/day)</th> <th>Suspended Sediment (lb/day)</th> <th>Suspended Sediment (lb/day)</th> <th>Total Sediment (lb/day)</th> </tr> </thead> <tbody> <tr> <td>Lolo Creek</td> <td>18</td> <td>30,579</td> <td>1,020</td> <td></td> <td>1,369</td> </tr> <tr> <td>Independence Creek</td> <td>6</td> <td>35,284</td> <td>80</td> <td></td> <td>352</td> </tr> <tr> <td>Moose Creek</td> <td>6</td> <td>20,125</td> <td>3,193</td> <td></td> <td>3,320</td> </tr> <tr> <td>Deadwood Creek</td> <td>6</td> <td>21,954</td> <td>88</td> <td></td> <td>534</td> </tr> </tbody> </table>	Stream	# Operations	Estimated Loading from Dredges		Historical Measurements		Fines < 2 mm (lb/day)	Suspended Sediment (lb/day)	Suspended Sediment (lb/day)	Total Sediment (lb/day)	Lolo Creek	18	30,579	1,020		1,369	Independence Creek	6	35,284	80		352	Moose Creek	6	20,125	3,193		3,320	Deadwood Creek	6	21,954	88		534	
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1-26 (cont'd)	<p>As can be seen, the estimated potential volume mobilized from these facilities is up to 30,000 pounds per day or more, far greater than that which has been measured historically, and raises serious concerns about cumulative impacts of both suspended sediment and bedload movement. While these values may not be strictly comparable, they do provide a sense of the relative magnitude of potential sediment movement from the dredges compared to historical measurements of sediment movement in the stream. This is of particular concern given the large number of facilities which could operate, and during the very low flows which occur in these streams in July-August. While the likelihood that all these facilities will operate simultaneously may not be high, it is not a worst case scenario. Under current IDWR rules, each facility may discharge up to 2 yd³/hour. Assuming each facility is operated 8 hour/day, they would discharge 16 yd³ of material vs. 5 yd³/day used in the estimates above. Further, the EIS indicates that 38 facilities could operate in the Moose Creek drainage. We estimated loading for only 26 facilities shown in Figure 2-2. The additional 12 facilities not shown in the figure would increase the estimated sediment loading shown in the table above. The EIS should consider these possibilities, and offer alternatives or strategies to address the potential consequences.</p>	<p>It is a very reasonable assumption that gravel and coarse sands would settle out almost immediately. The data used to depict particle size distributions in Lolo Creek in Figure 3-1 show that size classes less than 0.25 mm (sand) is 0.25% of the substrate material. Assuming suction dredge operations in Lolo Creek disturb 5 yd³/day (a conservatively high value), 0.25% of this material could potentially impact turbidity until settling out; and the particle density is 2.6 g/cm³ (a commonly accepted value for most minerals), the result is 55 lbs per day per operator. Assuming 18 simultaneous operations results in 990 lbs per day, although is must be noted that the 990 pounds is not discharged at a single location but at locations spread out along 10 to 11 miles of stream. A similar analysis for Moose Creek using data from Table 3-19 results in approximately 109 lbs per day per operator. As discussed in Section 4.3.2, these levels would not be significantly higher than the background total suspended loads for Lolo and Moose Creek.</p>																																		
1-27	<p>Page 4-7 The EIS suggests that measurable indirect effects from turbidity and sediment would occur within 100 meters, based on work by Royer, 1999. While we don't dispute the findings of Royer's work on the</p>	<p>See response to comment 1-14 in regards to bedload.</p> <p>The Forest Service considers the evaluations by Royer a worst-case scenario for the reasons stated in the comment because effects from 8-inch and 10-inch commercial dredges were evaluated. The Forest Service therefore</p>																																		

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
1-28	<p>Fortymile River in Alaska, the rivers in which he evaluated sediment impacts were 70 - 80 meters wide. It would be difficult to extrapolate results from this work to the Lolo and Moose Creek given the significant difference in stream flow and stream power. We recommend that data from other studies locally at a smaller scale be used, or that site specific information be developed to evaluate downstream sediment impacts from dredging</p> <p>Page 3-2 "Lolo Creek has not been identified as having any water quality concerns within the project area." In 2003, Idaho proposed to include Lolo Creek in the Idaho 303(d) list from the source to Yakus Creek for: bacteria, nutrients, oil/grease, dissolved oxygen, sediment, and temperature¹. The segment from Yakus Creek to the mouth was proposed to be listed for sediment. These listings will remain in the final 2002 303(d) list which is expected to be submitted to EPA in the near future (personal communication, IDEQ, 5/14/04). IDEQ plans to develop a TMDL for Lolo Creek in 2005. The fact that segments of Lolo Creek in the project area will be listed for sediment and other pollutants should be identified in the EIS. USFS decisions regarding these dredges may need to be revised in the future depending upon the outcome of the TMDL.</p>	<p>feels that this analysis is a reasonable and appropriate disclosure of potential impacts.</p> <p>See response to comment 1-6. The Forest Service has added a discussion of the listing to the EIS. As noted in the EIS and above, the Forest Service will not approve plans of operations unless they have sought coverage under an NPDES permit, under which EPA will ensure that discharges are in compliance with TMDL requirements (after the TMDL is developed.)</p>
1-29	<p>Page 4-9 The EIS mentions that dredging could produce synergistic effects in streams with elevated temperature. As mentioned previously, Idaho is planning to add Lolo Creek to the 303(d) list for temperature in the reach in question, so it would be worth further evaluating these impacts to establish whether operating conditions described in Chapter 1 are adequately protective.</p>	<p>See response to comment 1-18 above.</p>
1-30	<p>EPA recommends collecting data upstream and downstream from some active dredges during the low-flow season to quantitatively evaluate the amount of turbidity that results from dredging (both individually and cumulatively). Although the DEIS predicts that the operations have no significant impact, the conclusion is based on a line of evidence rather than any measured information. Site-specific data would be very useful in the near future when TMDLs are done and when NPDES permits are developed.</p>	<p>As stated above in response to comment 3-4, the Forest will be monitoring turbidity levels via instruments to determine the average increases in NTUs and if any operations are exceeding the State standard of 50 NTUs.</p>
1-31	<p>EPA recommends that past monitoring of suction dredge operations in these or similar watersheds in the Clearwater basin be brought into the</p>	<p>The EIS uses the available literature on small-scale suction dredging (most of the literature used evaluates dredges up to 8 inches or more rather than</p>

¹IDEQ, Nez Perce Tribe, USEPA, 2004. South Fork Clearwater Subbasin Assessment and Total Maximum Daily Loads. Idaho Department of Environmental Quality, Nez Perce Tribe, U.S. Environmental Protection Agency. March 2004.

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
	EIS to better clarify their potential impacts.	the smaller sizes of interest here, and this would make the evaluation conservative.)
1-32	Although the conditions of the permit appear good, we are concerned that there has not been a more thorough evaluation of the cumulative impacts of these operations on the sediment loading, particularly given the number of facilities which could potentially operate at one time, and given the very low flows which could occur during the July-August operating season. While we recognize that typically not all applicants operate each year, the analysis should evaluate this scenario, since by definition these permits could allow it to occur, and increasing gold prices may make it more likely.	The EIS evaluates the potential impacts of the maximum number of dredges have never been operated simultaneously. Also, see: the response to comment 5-1 concerning the maximum number of operations that have been considered. For the purposes of this EIS, impacts from operators up to the maximum number stated are considered direct impacts. Cumulative impacts are evaluated in the EIS, Section 4.16, and are based on past watershed practices and all reasonably foreseeable future mining activities.
1-33	EPA recommends including a table that clearly lists each stream and whether or not they are meeting State water quality standards and Forest Plan standards for each criteria.	See response to comment 1-18. The Forest Service has added a discussion of the proposed listing to the final EIS. As noted in the EIS and above, the Forest Service will not approve plans of operations unless they have sought coverage under an NPDES permit, under which EPA will ensure that discharges are in compliance with TMDL requirements (after the TMDL is developed.) Idaho DEQ has proposed that sections of Lolo Creek within the project area be listed on the Section list discharges from the dredges will have to comply with the TMDL that is eventually developed; NPDES permits that authorize the discharges will require such compliance. The Forest Service acknowledges in the EIS that Lolo Creek does not currently meet the Forest Service plan standard for sediment. This "standard" is a goal relating sediment yield from the watershed to land management practices, and is used for land planning and management. There is no relationship between this standard and Idaho water quality standards, which are related to turbidity and impacts to beneficial uses. Regardless, the EIS concludes that small-scale suction dredging will have no effect on sediment yield.
4-7	Mining activity disturbs the creek bed, suspending sediment and causing large amounts of benthic organisms to artificially drift downstream.	The EIS evaluates the extent to which small-scale suction dredges disturb and suspend sediment and concludes that the effect is relatively minor and very localized. In addition, the EIS notes that benthic organisms may be displaced downstream, leading to a temporary increase in food available to downstream fish and a short-term (seasonal) reduction in food in the dredged area.
4-8	Fine grained sediment should be discharged on the bank in settling ponds.	From a watershed or subwatershed perspective, the Forest Service does not believe that requiring this practice, or even allowing it, would significantly reduce the amount of fine sediments occurring in stream substrates, significantly reduce embeddedness of the substrate, or provide significant

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
5-13	<p>The Forest Service is prohibited by the CWA (section 313) from permitting any activity that may violate water quality standards. Since the proposed project will discharge pollutants into the river and due to the fact these streams don't meet all fishery and water quality standards, the activity should not proceed.</p>	<p>positive impacts to aquatic habitat. It would include the construction of settling ponds or direct discharge on the bank, each of which would require disturbance of the riparian zone.</p> <p>From its source to Yakus Creek, the State identified Lolo Creek, which includes those reaches within the Project Area, as having water quality concerns from bacteria, nutrients, sediment, and temperature on their EPA approved 2002 303(d) list (IDEQ 2005) (see EIS, 3.2.1). Terms and conditions listed in EIS, Section 2.2, minimizes or eliminates discharges of wastes, chemicals, or new sediment to creeks (EIS, Sections 4.1.2 and 4.3.2). See response to comment 5-14.</p>
5-14	<p>While the impacts of dredging, including fine sediments released by dredging, are not well known, it is known that dredging increases sediment. Many of these streams do not meet standards that reflect sediment such as cobble embeddedness. The bears this out. However, it should be noted the DEIS is not clear on whether the Moose Creek area meets cobble embeddedness parameters. The DEIS notes that Lolo Creek doesn't, but there is no similar analysis or charts for Moose Creek.</p>	<p>Section 4.1.2 and 4.3 of the EIS indicates that there would be no discharge of new sediment to the creeks. Former Condition 10 (currently 8) stipulates that operators not undercut, destabilize or otherwise disturb streambanks, which would be sources of new sediment (see Section 4.3.2 of the EIS). As discussed in Section 4.1.2, "[d]redging would not introduce sediment to or increase sediment ...but rather would relocate it by removing it from the substrate, passing it through the suction dredge, and replacing it into the creek, where it would settle out within a short distance."</p> <p>Lolo Creek does not currently meet the Forest Service plan standard for sediment. This is a goal relating sediment yield from the watershed to land management practices. The amount of sediment in a stream and the degree of embeddedness is a result of past watershed practices and condition. These have improved as a result of changes in management practices, and this has reduced sediment delivery to the creeks (see Sections 3.2.3 and 3.3.3 of the EIS). Embeddedness is naturally being reduced as sediments are naturally transported by the creeks out of the watershed. It is not expected that suction dredging significantly impacts sediment delivery to stream systems or sediment transport from the watershed.</p> <p>The 2003 re-survey of selected streams reaches in the lower Moose Creek, Independence Creek and Deadwood Creek drainages that are sensitive to sediment impacts showed seven streams reaches meeting the substrate conditions (cobble embeddedness) for the "High Fishable" Forest Plan standard. The lower Independence Creek reach was the only site that did not meet the substrate conditions for the "High Fishable" Forest Plan standard. This survey information was summarized in the 2003 Forest Monitoring Report and will be included in the EIS.</p>
5-15	<p>WATBAL is used to analyze impacts to the watersheds. WATBAL described watersheds devastated by the landslides in 1995 and 1996 as recovered. Until recently, the WATBAL model was never peer-reviewed</p>	<p>Very few landslides occurred in the Moose Creek or Lolo Creek watersheds during the 1995 and 1996 floods. Any potential sedimentation impacts from minor landslides would have been minimal and insignificant in the areas</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
	<p>in a scientific journal. However, a recent peer-reviewed study of WATBAL by Hickey (1997) has documented that the WATBAL model consistently underestimates the amount of sediment actually reaching streams.</p>	<p>where suction dredging would be permitted. WATBAL has been used by the Clearwater National Forest to provide relative differences in stream runoff and sediment yield that would occur from large watersheds based on land management conditions and practices occurring. WATBAL was not designed (or used) to precisely quantify sediment yields that would occur from specific projects, but rather is intended to be a comparative tool to assist in decision making. WATBAL studies were appropriately cited and discussed in Sections 3.2.3 and 3.3.3 to discuss existing watershed conditions.</p>
5-16	<p>... WATBAL seems designed for projects other than suction dredging. Such an activity is unique in that it disturbs the actual stream bed itself. While technically suction dredging may not add anything that is not already in the stream itself, the impacts of taking material from the stream bed and redistributing it in the stream must be considered. WATBAL is not formulated to do that. As such, it is an inappropriate model.</p>	<p>Comments regarding Mr. Hickey's review were refuted by Mr. Rick Patten in his declaration for THE LANDS COUNCIL et al. vs. ROBERT VAUGHT, et al. These comments have been included as Attachment 1 to these responses.</p> <p>See response to comment 5-15 above. WATBAL was not used to evaluate impacts from small-scale suction dredging. Rather, WATBAL studies were cited and discussed to assist in describing existing watershed conditions.</p>
5-17	<p>One last issue regarding water quality is very important. The Clearwater National Forest Plan Settlement agreement does not permit activities that would increase measurable sediment in areas where forest plan water quality standards are not being met. This specific issue is not addressed directly in the DEIS in this context (see chapter 5).</p>	<p>The Settlement Agreement applies to new timber harvest and road construction activities only. Additionally, see response to comment 5-14 above, which emphasizes that suction dredging would not introduce or increase sediment in the creeks.</p>
<p>Fisheries (section 4.4) and Threatened and Endangered Fish (section 4.7)</p>		
1-34	<p>ES-9 The EIS should provide more detailed information related to westslope cutthroat trout similar to the other Threatened and Endangered species.</p>	<p>More information regarding westslope cutthroat trout will be added to the EIS. The Forest Service notes that the intent of the EIS is to focus on T&E species which are far more susceptible and representative of potential impacts than relatively strong populations of westslope cutthroat trout or other fish.</p>
1-35	<p>Page 4-8 We agree that the July 1 - Aug 15 time window avoids most of the major salmonid spawning windows, but we are concerned that sediment mobilized during this time may effect spring chinook spawning in Lolo Creek which would occur immediately after the dredging season ends.</p>	<p>The dredging activity will be restricted outside potential spawning areas, which will minimize impacts to spawning gravels. Another mitigation measure (current condition 22) to avoid adverse impacts to essential fish habitat for spring chinook salmon (similar to protection measure #27 in USFWS 2004 BO for Moose Creek) notes that the tailings must be re-distributed to avoid creating unstable (unnatural) spawning gravels.</p>
2-2	<p>Steelhead Trout: (EIS, ES-8) The DEIS underrates the wild/natural steelhead trout production potential in Lolo Creek: Steelhead trout</p>	<p>The Forest Service will meet with all miners in June prior to the dredging</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses	
Commenter #	Response
	<p>season and mark proposed dredge sites for biologists to inspect. After marking, the Forest Service will then schedule specific days where sites can be inspected by personnel from interested State, Tribe, or other Federal Agencies.</p> <p>As described in Chapter 2, a Forest Service biologist will inspect each proposed operation before mining begins to identify and advise operators on spawning areas, redds, and other key areas that need to be avoided.</p>
2-3	<p>The Biological Opinions and the draft EIS stated that salmonids may be temporarily displaced by activities during the hours of suction dredge operation, but that this temporary displacement would not significantly affect rearing salmonids. The terms and conditions include measures designed to minimize disturbance to rearing habitat, such as not operating in gravel bars at the tails of pools (condition 19 [former condition 13]) and not altering the thalweg (condition 16 [former condition 6]).</p> <p>Potential impacts to substrates and channel geomorphology are discussed in Section 4.2.2 of the EIS. The EIS concludes that small scale suction dredging would not result in long-term alternation of stream channel morphology or stream equilibrium when the conditions are properly followed.</p> <p>By requiring each prospective operator's affirmative commitment to comply with the terms and conditions, and by its own frequent inspections, the Forest Service intends to ensure that operators remain in compliance with the terms and conditions.</p>
2-4	<p>Additional information regarding Pacific lamprey will be included in the EIS. In addition, the Idaho Department of Fish and Game will assist in the identification of potential lamprey spawning and rearing sites during the pre-project field review. Similar to suction dredging on the South Fork</p>
2-5	<p>were present in 207 of the 214 mainstem locations sampled in Lolo Creek, indicating widespread usage of the creek (EIS, 3-14, Table 3-9). Additionally, during Pacific lamprey sampling in the Lolo Creek drainage in 2004, Idaho Department of Fish and Game identified several hundred (total) age-0 and greater than fifty (total) age-1+ steelhead dispersed in multiple mainstem reaches. Steelhead trout spawning is known to occur in the Lolo Creek Snake Bite Place Claim reach -- one completed steelhead trout redd was observed in this reach in 2004. This observation reinforces the need for to survey for redds and steelhead presence prior to initiation of suction dredging in the reach. The greatest potential impacts of suction dredging in the Lolo Creek drainage are disturbance of rearing juveniles and displacement of spawning gravels. Preventing dredging in suitable spawning gravels will avoid the latter.</p> <p>Bull Trout: (EIS, ES-8) We anticipate that the primary impacts of suction dredge operations in the Moose Creek drainage would be disturbance of rearing bull trout and alterations of spawning and rearing habitat structure. A potential thirty-eight suction dredge operations annually in the drainage will undoubtedly displace rearing bull trout, as well as potential prey species. It is impossible for the USFS suction dredging "Terms and Conditions" (EIS, 2-2 to 2-7) to effectively limit this impact; therefore, this impact deserves greater review in the DEIS. Although the "Terms and Conditions" should protect spawning habitat and may adequately protect the morphological structure of the Moose Creek bull trout rearing habitat, the deconsolidation of substrates (estimated to exceed 380 m³) in the basin annually from suction dredge operations) could exacerbate current channel instability linked to previous mining activities. This potential impact ... is not fully reviewed in the DEIS.</p> <p>Westslope Cutthroat: (EIS, ES-9) The impacts of suction dredging to westslope cutthroat <i>O. clarki lewisi</i> in Lolo Creek and Moose Creek are expected to mirror those of other species; however, the distribution and abundance of the cutthroat is greater in both drainages than other salmonids and Pacific lamprey, potentially providing a buffer for human activities. It is essential, however, that suction dredge activities are closely held to the USFS "Terms and Conditions" to ensure cutthroat trout populations, including current distributions, remain intact in the two drainages.</p> <p>Pacific Lamprey: Impacts of suction dredging to Pacific Lamprey were not addressed in the DEIS. Pacific lamprey are considered in precipitous decline in Idaho and the species throughout the Pacific Northwest range was petitioned for federal Endangered Species Act listed protection in</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
	<p>January 2003.</p> <p>Suction dredging in Lolo Creek will likely impact Pacific lamprey to a greater degree than other species. Pacific lampreys occupy the substrates and organic debris depositional locations in stream channels for an estimated 4-7 year rearing period prior to transformation and migration to the estuary and ocean. Suction dredge activities potentially will result in mechanical damage to age-0 Pacific lamprey through adduction into the intake.</p> <ul style="list-style-type: none"> • The USFS suction dredge intake requirement of 3/32 is larger than the body width of age-0 Pacific lamprey. The suction of Pacific lamprey ammocoetes into the dredge nozzle intake could result in mechanical damage to the individuals as they move through the nozzle and over the sluice. • Displacement of ammocoetes would potentially increase the predation impacts to rearing Pacific lamprey. • Human foot travel on finer substrate deposits while working mining operations would increase stress to Pacific lamprey rearing in those locations. 	<p>Clearwater River, these areas would be excluded from the permit by Idaho Department of Water Resources for suction dredging.</p>
4-9	<p>The Nez Perce Tribe spends a substantial amount of resources restoring salmon and steelhead for the benefit of all citizens. These projects include habitat restoration projects in Musselshell Meadows and in tributaries to Lolo Creek. An acclimation site to the Nez Perce Tribal Hatchery is located on Yoosa Creek, a tributary to Lolo Creek where the proposed suction dredge mining is to occur. Significant numbers of spring chinook are released throughout Lolo Creek tributaries as part of the Tribe's comprehensive salmon recovery program. Suction dredge mining could negatively impact these significant restoration investments that total nearly \$3 million.</p>	<p>The Forest Service supports the efforts by the Nez Perce Tribe to supplement spring-run chinook. The EIS notes that the dredging season occurs after the previous year brood offspring are out of the gravel and prior to current-year spawning. Therefore, impacts would be confined to displacement and avoidance during the hours of dredging activity, and seasonal reductions in macroinvertebrate food availability in dredged areas. The relatively small area affected --- and thus the small area from which chinook would be temporarily displaced and invertebrates would be reduced --- would severely limit these potential impacts.</p>
4-10	<p>Suction dredge mining interferes with ongoing efforts by tribal, state, and federal entities to restore and protect fisheries and water quality in Idaho because it results in increased deterioration of aquatic habitats and riparian areas. Studies indicate that suction dredging has serious impacts on water quality and fishery resources. See B. Harvey & T. Lisle, Scour of Chinook Salmon Redds on Suction Dredge Tailings, 19 N. Am. J. Fish. Manage. 613-617 (1999) (stating, "Our results show that fisheries managers should consider the potential negative effects of dredge tailings on the spawning success of (all-spawning fish, such as chinook salmon and coho salmon."); see also B. Harvey & T. Lisle, Effects of Suction Dredging on Streams: A Review and an Evaluation Strategy, 23</p>	<p>The cited conclusions by Harvey and Lisle are why this EIS has been prepared, so that the Forest Service can carefully consider the potential harmful impacts of small-scale suction dredging.</p> <p>The studies cited generally evaluate conditions from larger commercial suction dredge operations with 8-inch nozzle diameters. The impacts of the larger suction dredges is significantly greater than the small-scale 4 and 5 inch dredges analyzed in this EIS.</p> <p>Over the past decade and more, small-scale suction dredging in these creeks has not had any significant effect on aquatic habitats or riparian areas, and approval of future plans of operation would not result in any</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
	Fisheries 8-20 (1998) (stating that, "Given the current level of uncertainty about the effects of dredging, where threatened or endangered aquatic species inhabit dredged areas, fisheries managers would be prudent to suspect that dredging is harmful to aquatic resources.").	more-significant effects.
4-11	Suction dredge activity will result in impacts to fisheries in the immediate area as well as areas downstream. These impacts include disruption and destruction of spawning, rearing, and feeding habitat, increased suspended sediment, and alteration of the streambed.	The EIS evaluates and discloses the potential impacts on fisheries noted by the commenter. The Biological Opinions of the U.S. Fish Wildlife Service and NOAA Fisheries concluded that suction dredging in compliance with specific measures would not jeopardize any species of concern. The terms and conditions of approval mirror and go beyond these reasonable and prudent measures. (Term and Condition #3 and #6).
5-18	Dredging affects benthic invertebrates (especially mollusks which disperse slowly and mussels whose populations are currently unstable) and fish habitat (downed woody debris and spawning beds) (see Effects of Suction Dredging on Streams: a Review and an Evaluation Strategy, Harvey and Lisle 1998 in Fisheries, Vol. 23 No.8). Little research has been done on any aspect of dredging. There is almost no mention in the literature on extremely sensitive species like bull trout, which have narrower tolerances than salmon, steelhead, and even Westslope cutthroat. The DBIS generally assumes that since impacts are expected to be temporary, there is no real impact. This ignores the fact that dredging would take place in a time of year of stress, when water temperatures are elevated.	The EIS acknowledges that impacts do occur, but only during hours of operation during the mining season. While warm temperatures are critical for spawning, typical summer water temperatures are not known to be stressful to rearing juveniles. The terms and conditions include minimizing disturbance to the deep cool thalweg and pools. In addition, disturbance to riparian vegetation that may affect shading of the streams is minimized and monitored.
6-4	Concerns about steelhead just don't make sense at Moose Creek. The nearest Steelhead are probably 100 miles away. The gill nets (clear cuts of the river) and sports fishing even with barbless hooks kill many fish. It is doubtful that dredging will kill any fish. If turbidity standards are set and enforced dredging should not kill fish on the Lolo either.	The commenter is correct in pointing out that, because of the Dworshak Dam, there are no steelhead in Moose Creek, and this point is also made in the EIS. Also, operators must reduce or stop operations if noticeable turbidity is observed within 300 feet downstream of the suction dredge (condition 15).
6-5	Bull Trout should not be adversely effected by dredging either. Sports fishing which is catch and release for Bull Trout still kills fish. Even using barbless hooks as required in Moose and Kelly creeks kill fish. Probably 6% or more are killed when the water is warm. I have seen Bull Trout feeding in the same hole where a dredge was operating in Moose Creek. The dredging was stirring up food for them.	Thank you for your comment.
6-6	The USF&WS probably kills more Bull Trout and Steelhead with their water spills than any dredging. I have seen 3 pound Bull Trout injured or killed by these spills below Dworshak Dam and the nitrogen super saturation often exceeds the state limits which kills Steelhead.	Thank you for your comment.

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
7-7	<p>"Dredging noise, activities in and near the streams that scare away fish, and the presence of non-tribal members may make for climate that is less than optimal for this traditional practice." [This] is not entirely correct.</p> <p>I have been diving in the Clearwater and the North Fork of the Clearwater River since 1960. I have found that fish will come up and look at you; I do not scare them at all. I have been snorkeling and hookah diving for the last four years while dredging. I have had all kinds of fish swimming in the same hole with me. Two years ago I was dredging around a big boulder, I was watching real close as I thought it might roll on me. All at once some[thing] hit me in the face and forehead I thought[t] the boulder may have come loose and hit me. When I looked up it was a big salmon he stayed right in the hole with for two or three hours. I was tending the dredge one day,</p> <p>I looked up and there was a Tribal member standing looking under the dredge. He made the motion with his hands to show that there was a large salmon under the dredge. The salmon was looking a little worse for wear as he had already spawned several days before dredging season. (Reference: Page ES-17, 4-28)</p>	<p>Thank you for your comment.</p>
8-1	<p>The "acres" impacted on Moose Creek would not be 80% of the watershed, as stated on page 4-7 but would be considerably less.</p>	<p>The Forest Service agrees and has corrected the potentially affected area.</p>
9-2	<p>You should see this work [small-scale suction dredging] before they get started.[T]hey will kill lots of the small trout and then their operation will remove most of the food the small fish will have to eat.... They will damage the fish in all the area that they dredge.</p>	<p>The Forest Service has evaluated the impacts on trout and other fish. As noted in the EIS, most fish would vacate the immediate area. Intakes must have a 3/32-inch screen, which will preclude entrainment of most small fish. The EIS notes that aquatic insects and other food in the area being dredged will be reduced until it can recover, probably the following year. Because the area mined in any year is relatively small, the number of small fish potentially affected would be similarly small.</p>
11-7	<p>The statement, "Dredging noise, activities in and near the streams that scare away fish, and the presence of non-tribal members may make for a climate that is less than optimal for this traditional practice." is not entirely correct.</p> <p>I am not a fish biologist or scientist, however I have over 30 years experience with a snorkel observing fish while I dredged. Dredging does not scare fish. I have had cutthroat trout become so complacent with my activities that one in particular let me pet (him) on several occasions. People have caught fish while I was working as well as I have caught several fish in my dredge holes before they were reclaimed. My</p>	<p>Thank you for your comment. The Forest Service also has observed some fish in the immediate vicinity of active suction dredges, perhaps to feed on the disturbed aquatic insects. Most fish, however, vacate the area while dredging, as noted in the EIS.</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
	<p>first experience was on Newsome creek when a very large salmon swam between my legs to enter my dredge hole. The sight of this large green speckled thing inches from my mask was very startling to me not the fish. It didn't seem to have any effect on (him) as I leaped out of the hole. Many dredgers as well as myself have witnessed fish resting in the shade of the dredge while it was running. (Reference to page: ES-17, 4-28)</p>	
<p>Fisheries (section 4.4) and Noise (section 4.12)</p>		
<p>4-12</p>	<p>The noise associated with dredge motors and mining activities may disrupt certain fishery behaviors in the immediate area of these activities. Fish may need to locate other habitat in the drainage to spawn, rear, or feed.</p>	<p>Suction dredging may displace adult Chinook in the immediate vicinity of operations during the hours of operation. Chapter 4 of the EIS makes the same conclusion. Term and condition #7 restricts operations to daylight hours (EIS, Section 2.1).</p>
<p>Instream Habitat (section 4.5)</p>		
<p>5-19</p>	<p>The DEIS admits that no EAWS has yet been prepared for Moose Creek. The Forest Service is required to complete a watershed analysis prior to approving actions such as the proposed suction dredging operations. A watershed analysis is required by several Biological Opinions, including the Biological Opinion for the implementation of Forest Plans as Amended by INFISH and PACFISH. USFWS 1998. Because the watershed analysis results provide crucial data needed to adjust the Plan of Operations, this step must precede the approval of any mine operations: "Based on watershed analysis results the USFS should adjust proposed plans of operation or, if necessary, prohibit mining operations to prevent degradation of the ecological processes and functions and adverse effects to listed salmon and designated critical habitat" (NMFS Biological Opinion on LRMPS. 1995).</p>	<p>The Forest Service believes the terms and conditions with which operators must comply are sufficient "to prevent degradation of the ecological processes and functions and adverse effects to listed salmon and designated critical habitat." The Forest Service notes that the terms and conditions are based on reasonable and prudent measures stipulated by NOAA Fisheries and the USFWS, which concluded that small-scale suction dredging would not jeopardize any listed species.</p> <p>The Biological Opinions (i.e., NOAA Fisheries) noted that "...the USFS and BLM will submit to NMFS a schedule for the completion of at least one watershed analysis (EAWS) per management unit per year beginning in 1999 and each year thereafter". The Forest has sent a schedule for all 60 designated EAWS areas across the Forest to NOAA Fisheries and USFWS. The Forest has completed at least one EAWS per year since 1999. Lolo Creek was completed in 2003. Due to other areas on the Forest that have pending issues, Moose Creek was not one of the highest priority areas.</p>
<p>Wildlife (section 4.8)</p>		
<p>5-20</p>	<p>The wildlife analysis in the DEIS assumes there are no wolves or lynx in the area. The DEIS modifies this somewhat. Wolves are known from both Lolo Creek and the Moose Creek area. Lynx habitat is based upon an arbitrary 4,000 foot figure that has not gone through NEPA analysis. Case law has rejected FS lynx analysis based on lack of compliance with NEPA.</p>	<p>This comment is not clear, in that the first sentence states the DEIS assumes there are no wolves or lynx in the area, while the second sentence says the "...DEIS modifies this somewhat." Regardless, the EIS and the biological appendix state that both drainages are within the central Idaho non-essential population area for the gray wolf, with increasing sightings/tracks in the Lolo watershed. The wildlife appendix states that lynx habitat is primarily boreal (not exclusively boreal), and that the project creek bottomlands are not typical or suitable habitat. These factors, combined with no confirmed sightings in the vicinity of suction dredge operations, suggest very low potential for adverse impacts to these</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
5-21	<p>The assumptions that species such as the harlequin duck, wolverine, and northern leopard frog don't use riparian areas is ludicrous. Those species need water and the duck and frog are dependent upon riparian habitats.</p>	<p>two species.</p> <p>The DEIS does not make such assumptions. Indeed, each of these species is specifically mentioned in Table 3-11:</p> <ul style="list-style-type: none"> - Harlequin duck breeding "... has not been documented in the Clearwater National Forest, but a few sightings have been reported in the upper Lochsa River area and near the mouth of Papoose Creek (USDE 1997 from USDA 1995). There is a very low probability of occurrence in the project areas." - Northern leopard frogs: "There are no known or suspected occurrences of these frogs in the Clearwater National Forest." - Wolverine: "The riparian areas along the project creeks provide poor habitat and the level of human activity would preclude wolverine use in the affected area." The Forest Service notes that the human activity would not end if there were no suction dredging.
Vegetation (Section 4.9)		
4-13	<p>Increased activity in the stream may result in concentrating people along reaches of the river. This may result in damage to the riparian vegetation. The concentrations of people associated with mining may result in the reduction of fish within these reaches due to loss of riparian vegetation.</p>	<p>Term and condition #25 requires a minimum spacing of 100 feet between suction dredge operations will reduce concentrating people along reaches. This and limiting the number of operations to 18 will minimize and reduce impacts to riparian vegetation.</p> <p>Even if suction dredging did not occur, the Forest Service expects that approximately the same level of camping by non-miners would occur, and approximately the same (very minor) effects on riparian vegetation would occur as well.</p>

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
<p>Transportation</p>	<p>Often, numerous poorly constructed roadways parallel and across streams to access mining claims. These routes can cause sedimentation of the adjacent streams due to associated gullying and landsliding prevent the growth of woody vegetation, important for the ecological functioning of RHCAs. Thomson and Lee found that density of juvenile Chinook salmon decreased as the geometric mean road density increased among surveyed streams in the Upper Columbia River basin. They suggest that road density exceeding 0.4 mile per mile squared is a significant issue in any watershed. In addition, the negative effects of roads on bull trout habitat and population survival are well established, and recognized throughout the scientific literature. Roads used to access mining claims also provide access for recreationists whose use and presence further degrade the function and purpose of RHCAs. The Roads Policy manual direction accompanying this rule identifies unclassified roads as unneeded, and further prohibits reconstruction of unclassified roads.</p> <p>The DEIS glosses over this important issue (see page 1-13). There is no travel plan prohibiting use of motorized equipment off Forest Service system roads. The concern is the cumulative effect of new routes being pioneered to drive dredge equipment next to streams.</p>	<p>Access to the stream will be restricted to existing Forest roads and trails. If additional access is proposed, then consultation will be reinitiated and the proposal will be analyzed in a separate environmental analysis.</p>
5-22	<p>Heritage Resources (section 4.14)</p> <p>The DEIS is unclear whether heritage surveys will be conducted, as required by NEPA and the NHPA, prior to allowing these proposals to begin. Heritage sites are more frequent in riparian areas. In fact, some of the sites may be within or partially within streams themselves such as old mining ditches and other water diversion structures.</p> <p>How does the Forest Service intend to deal with old sites that may be within the highwater mark of the stream banks? Sites near water are usually more dense than those elsewhere and it is likely that many important sites could be within the substrate of stream banks and beds.</p>	<p>Compliance with Section 106 of the National Historic Preservation Act (NHPA), including SHPO consultation and archaeological survey of the area of potential effect (APE) of mining actions, would be completed prior to project initiation. Mitigation measures would be developed and implemented for sites eligible for the National Register of Historic Places that were identified within the project area that may be affected by mining actions.</p>
5-23	<p>Cumulative Impacts (section 4.16)</p> <p>Terms and Conditions designed to protect rearing Pacific lamprey in Lolo Creek. The rearing habitat utilization and preference of the species is currently known in the South Fork Clearwater River drainage (Cochner and Claire 2000; Cochner and Claire 2001; Cochner and Claire 2002) and the same patterns are likely apply to the Lolo Creek drainage. Based on current knowledge, avoidance of dredging in stream sites with</p>	<p>Additional information regarding Pacific lamprey will be included in the EIS. In addition, the Idaho Department of Fish and Game will assist in the identification of potential lamprey spawning and rearing sites during the pre-project field review. Similar to suction dredging on the South Fork Clearwater River, these areas would be excluded from the permit by Idaho Department of Water Resources for suction dredging.</p>
3-8		

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
	minimal velocities and substrates <5.0 mm in diameter will reduce the potential impacts to Pacific lamprey juveniles. Suction dredging operations in Lolo Creek are unlikely to affect adult Pacific lamprey as the spawning period is May and June.	The Forest Service notes that (as described in the EIS) the lowest gradient in Lolo Creek affected by suction dredge operations is classified as Rosgen C3 (low gradient cobble). The amount of sandy habitat (<6 mm) within the affected area ranges between 1.3 and 6.0 percent (Clearwater BioStudies 1999). Sands are not preferred by dredging operators. Even though Pacific lamprey rearing may exist in these areas and some of the sandy habitat may be dredged, the terms and conditions regarding pre-inspections of proposed dredge sites would alert operators regarding this habitat.
3-9	The DEIS addresses the legacy impacts from mining, timber harvest, road building and other past activities on Lolo and Moose Creek drainages in the cumulative impacts analysis. However, the DEIS does not assess the potential cumulative impacts that multiple new dredge mining permits might create over time. According to the DEIS, dredging activities could affect approximately 10% of each creek annually, apparently not including the 300' turbidity zone allowed downstream of each operation. The EIS should closely examine the additive and cumulative impacts of the proposed small-scale dredging activities over time, both separately and with respect to past dredge mining and other legacy impacts.	The terms and conditions for each permit adequately mitigate the seasonal impacts to aquatic habitat from small-scale suction dredging. Although a maximum of approximately 7 percent of Lolo Creek and about 10 percent of the Moose Creek project areas that are available for dredging could be impacted each year, natural changes to the creeks over 10.5 months per year, combined with the terms and conditions imposed for the 1.5 months/year for dredging operations, would not result in additive or cumulative impacts. The Forest Service will also be monitoring changes in stream morphology (as specified in the Biological Opinions) that may occur as a result of mining.
Compliance with Other Statutes and Regulations (Chapter 5)		
4-14	... without appropriate permits and analysis from the Environmental Protection Agency (EPA) and NOAA Fisheries, the Nez Perce Tribe is adamantly opposed to suction dredge mining on national forest lands.	The Forest Service agrees that EPA and NOAA Fisheries permits and/or analyses are needed. The Forest Service will approve proposed plans of operations only for applicants who have sought authorization for their discharges under the NPDES program. The terms and conditions with which all operators must comply (see Chapter 2) are based on the reasonable and prudent measures stipulated by State of Idaho BMPs, NOAA Fisheries (for anadromous fish species) and the U.S. Fish and Wildlife Service (for other threatened or endangered fish species).
4-15	Since November 1998, the Tribe has requested that the Idaho Department of Water Resources close off waters within the Nez Perce Reservation to suction dredge mining. In the interest of salmon and steelhead recovery, the Tribe has also requested waters throughout the Tribe's ceded territory be closed to suction dredge mining.	Both Moose Creek and Lolo Creek are closed to suction dredging under the State of Idaho's recreational permitting (one stop) process (IDWR Form 3804-A). This process (permit) is only used where formal consultation or NEPA are not required. Consultation is required for the project area and this EIS was prepared to evaluate impacts under NEPA. In these areas, dredgers will be required to have a State Stream Alternative Permit - Long Form (IDWR Form 3804-B) before the Forest Service will approve a POO.
4-16	Under section 402 of the Clean Water Act (CWA), suction dredgers must apply for and receive a permit from EPA under the National Pollution Discharge Elimination System (NPDES). Pollutants subject to these	The Forest Service will not approve any proposed plan of operations unless the operator has sought authorization to discharge under an NPDES permit.

Table D-2. Comments on the Draft EIS and Forest Service Responses

Commenter #	Comment	Response
4-17	<p>permits under the CWA include "dredged spoil" such as that from a suction dredger. 33 U.S.C. § 1362(6). Further, the Ninth Circuit in <i>Rybacek v. EPA</i> specifically upheld EPA's regulation under the NPDES permit regime of placer mining in Alaska. 904 F.2d 1276 (9th Cir. 1990). We urge the Forest Service to not issue any mining permits until permittees first obtain an NPDES permit from EPA.</p> <p>Impacts to salmon and steelhead could constitute a "take" in violation of section 10 of the Endangered Species Act (ESA). NOAA Fisheries has consistently warned the State that they may be violating the ESA in issuing suction dredge permits. Federal courts have made it clear that a governmental entity with authority to regulate action that may take listed species could be held liable if threatened or endangered species are taken by a permittee without proper ESA authorization. See <i>Strahan v. Coxe</i>, 127 F.3d 155 (1st Cir. 1997). Similarly, the Forest Service could be in violation of the ESA until it completes formal section 7 consultation with NOAA Fisheries and the U.S. Fish and Wildlife Service (USFWS).</p>	<p>The Forest Service has completed formal Section 7 consultations with the Fish and Wildlife Service and with NOAA Fisheries. The 2006 Biological and Conference Opinion on effects of proposed Moose Creek suction dredging (dated March 7, 2006) was received by the Clearwater National Forest from Fish and Wildlife Service on March 2006. The NOAA Fisheries Biological Opinion on effects of Lolo Creek proposed suction dredging (dated April 28, 2006) was received by the Clearwater National Forest on April 2006.</p>
4-18	<p>The Nez Perce Tribe believes that suction dredge mining is inconsistent with salmon and steelhead recovery efforts. At a minimum, suction dredge mining must be in compliance with the Clean Water Act and Endangered Species Act before the Forest Service issues permits.</p>	<p>The Forest Service agrees that suction dredging must be conducted in compliance with the Clean Water Act and Endangered Species Act. The terms and conditions with which operators must comply are based on conservation measures recommended by the Fish and Wildlife Service and NOAA Fisheries as part of Endangered Species Act consultations; the Forest Service will not approve proposed plans of operation unless operators have sought authorization to discharge under an NPDES permit.</p>
5-24	<p>The mining claimants must also demonstrate that a right to mine, under the 1872 Mining Law, exists on each claim involved in the proposed mining operation prior to the initiation of disturbing activities. We raised this issue in our scoping comments and reiterate it now.</p> <p>This cannot be done with the blanket approval of some 29 plans of operations (or some 43 mining claims, DEIS page 1-1 or 66 proposals, DEIS page 2-1).</p>	<p>As noted in the Draft EIS, the Forest Service Policy on Mining of Public Domain Mineral Estate establishes that the Forest Service "... is not required to inquire into claim validity before processing and approving proposed plans of operations."</p> <p>The Forest Service emphasizes that the EIS does not provide "blanket approval" of any plans of operations. Rather, a Record of Decision accepting Alternatives 2 or 3 would allow the Forest Service to approve plans of operation if the operators agreed to comply with all of the terms and conditions listed in Chapter 2 of the EIS.</p>
5-25	<p>This project is located in Lolo and Moose Creeks. Lower Lolo Creek is listed as water quality limited segment under section 303(d) of the Clean Water Act (CWA) for several pollutants. Major tributaries to Moose Creek are also listed on the 303(d) list such as Oster Creek.</p> <p>Federal courts have expressly held that the outfall from in-stream placer mining equipment is a point source discharge under the CWA that cannot proceed without an NPDES permit. <i>Trustees for Alaska</i>, 749 F.2d</p>	<p>See response to comment 1-1. The Forest Service will not approve plans of operations unless they are covered by an NPDES permit. Discharges from the dredges will have to comply with the TMDL that is developed; NPDES permits that authorize the discharges will require such compliance.</p>

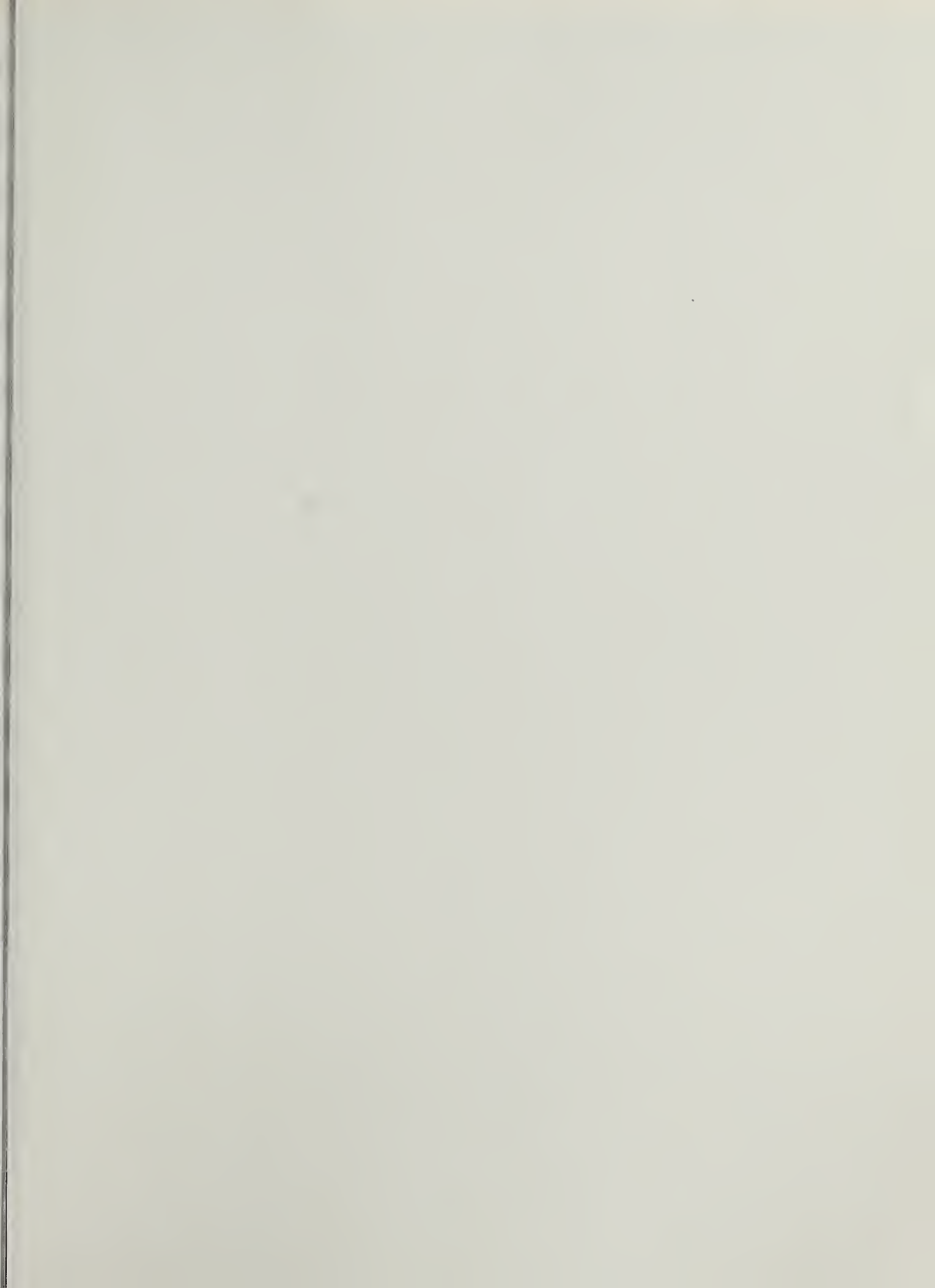
Table D-2. Comments on the Draft EIS and Forest Service Responses

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5-26	<p>539 (9th Cir. 1984). The DEIS acknowledges this fact but does not indicate how or whether the Forest Service will ensure this requirement has been met. (see next section in this comment) [comment 5-12].</p> <p>Furthermore, under the CWA, a new point source discharge affecting a parameter associated with the 303(d) listing is prohibited. This nondegradation standard applies since any new discharge affecting these parameters would by definition violate the requirement that: "existing instream water uses and the level of water necessary to protect the existing uses shall be maintained and protected." (40 CFR 131.12(a)(1)). (Note: this antidegradation standard means that no degradation will occur--not some degradation can occur as long as the beneficial uses are protected and standards are met. See, PUD No.1 of Jefferson County v. Washington Department of Ecology, 114 S. Ct 1900(1994) While most of the sites appear to be outside 303(d) segments, assuming the map is accurate on the precise location of dredging activity, it is important to also keep in mind these streams don't meet forest plan standards.</p>	<p>See response to comment 5-13.</p> <p>Discharges from the dredges will have to comply with the TMDL that is developed; NPDES permits that authorize the discharges will require such compliance.</p> <p>The Forest Service acknowledges in the EIS that Lolo Creek does not currently meet the Forest Service plan standard for sediment. This "standard" a goal relating sediment yield from the watershed to land management practices, and is used for land planning and management. There is no relationship between this standard and Idaho water quality standards, which are related to turbidity and impacts to beneficial uses. Regardless, the EIS concludes that small-scale suction dredging will have no effect on sediment yield.</p>
5-27	<p>The Forest Service cannot approve the project before the information and data necessary for NPDES permits have been obtained. The DEIS does not make this clear, as noted above. Furthermore, the Forest Service cannot meet its duty under 36 CFR 228.8 to ensure that the project will comply with the CWA without an understanding of the specific nature of the discharges. As such, the Forest Service may be putting the cart before the horse in analyzing these proposals without more information and assistance of EPA in the matter of NPDES permits.</p>	<p>The DEIS states (page 5-4) that "[t]he Forest Service cannot approve proposed plans of operations unless the operator has sought coverage for its discharges under the NPDES program." The evaluation of potential impacts to water quality is presented in chapter 4.</p>
5-28	<p>The Court in Dubois ruled, "the Forest Service was obligated to assure itself that an NPDES permit was obtained before permitting the [requested activity]." (102 F3d at 1300). How will this be done? Specifically, what mechanisms will ensure that an NPDES permit is granted before dredge mining?</p>	<p>The Forest Service must receive a copy of an operator's NPDES permit for suction dredging in Moose Creek or Lolo Creek BEFORE their plan of operations can be approved.</p>
5-29	<p>This is an important concern as the DEIS states no new NEPA analysis is expected yet no decision is expected from this EIS process. This is a catch-22 that must be resolved.</p>	<p>As noted in the EIS and above, the ROD for this EIS will not approve any suction dredge plans of operations, either individually or collectively. Rather, the ROD would allow approval of individual plans of operations without further NEPA analysis only if they meet specified criteria. Proposed plans of operations in other areas and plans that do not meet the criteria will require a separate NEPA analysis before they could be approved.</p>
5-30	<p>The agency's duties under the ESA are not overridden by any "rights" the applicant may have under the 1872 mining law. The courts are clear in ruling that prohibitions under the ESA must be enforced, even to deny mining operation and: "of course, the Forest Service would have the authority to deny any unreasonable plan of operations or plan otherwise</p>	<p>The Forest Service has not taken the position that the Endangered Species Act is "overridden" by the Mining Law. The Forest Service must comply with both ESA and the 1872 Mining Law. Pertinent laws and regulation are listed in Chapter 5.</p>

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	<p>prohibited by law. E.g., 16 V.S.C. 1538 (endangered species located at the mine site). The Forest Service would return the plan to the claimant with reasons for disapproval and request submission of a new plan to meet the environmental concerns." (Havasupai Tribe v. U.S., 752 F. Supp. 1471, 1492 (D. Az. 1990) affirmed 943 F2d 32 (9th Cir. 1991) cert. denied 503 U.S. 959 (1992); This point is particularly valid in this instance as the dredging proposals would have profound impacts on water quality and TES species.</p>	<p>Further, the Forest Service agrees that it cannot approve any unreasonable plan of operations or plan otherwise prohibited by law." As stated in the EIS, any proposed plan of operations which does not comply with the specified terms and conditions will not be approved, pending modification of the plan or a separate NEPA and Endangered Species Act evaluation.</p>
<p>Other</p>		
<p>8-2</p>	<p>[The commenter is...] ...willing to work with the Forest Service.</p>	<p>Thank you for your cooperation.</p>

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