Three Rivers Stone Quarry Expansion

Draft Environmental Impact Statement
ID-330-2006-EIS-1464
December 2007

BLM
Challis Field Office / Idaho

THREE RIVERS STONE QUARRY EXPANSION PROJECT

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Prepared for

U.S. Department of the Interior
Bureau of Land Management
Challis Field Office
Custer County
801 Blue Mountain Road
Challis, Idaho 83226

On behalf of

L&W Stone Corporation
1036 South Street
Orland, CA 95963

December 2007

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Challis Field Office
801 Blue Mountain Road
Challis, Idaho 83226
(208) 879-6200
http://www.blm.gov/id/st/en/fo/challis.html

Reply to: ID-330-2006-EIS-1464 December 2007

Dear Interested Reader:

Enclosed for your review and comment is the *Draft Environmental Impact Statement for the Proposed Three Rivers Stone Quarry Expansion Project* (DEIS). The Applicant, L&W Stone Company, has submitted a proposed Amended Plan of Operations to the Bureau of Land Management, Idaho Falls District, Challis Field Office (BLM), requesting to expand the quarry operations up to an additional 73 acres in order to increase mine production and to begin exploration to determine if additional marketable flagstone exists on their mining claims. The quarry is located roughly 5 miles east of the town of Clayton in Custer County, Idaho, just north of the confluence of the East Fork Salmon and Salmon rivers.

Based on the analysis of the proposed alternatives, the reader is being informed that the **agency preferred alternative at this time is Alternative D, Proposed Action.** A complete description of Alternative D and all other alternatives can be found in this DEIS.

This DEIS was prepared in accordance with the *National Environmental Policy Act, 1969* (NEPA) and with applicable laws and regulations passed subsequent to NEPA. It is intended to provide the public and agency decision makers with a complete and objective evaluation of impacts, beneficial and adverse, resulting from the Proposed Action and all reasonable alternatives.

To ensure a complete analysis, we are asking you to help by reviewing this DEIS and providing comments. The comment period for this document will close 45 days following the publication of the Notice of Availability by the Environmental Protection Agency in the Federal Register. Two public meetings will be scheduled, one in Boise and one in Challis, Idaho during the comment period to discuss the findings disclosed in this DEIS and accept public comment. The dates, times and exact location of the public meetings will be announced through one or more sources (project newsletter, local newspapers, or via website at http://www.blm.gov/id/st/en/fo/challis/nepa/Three_Rivers.html). A copy of the DEIS will be posted to this website.

Please send your written comments to: via mail

Chuck Horsburgh, Project Manager
Bureau of Land Management
1405 Hollipark Drive
Idaho Falls, Idaho 83401

via fax: (208) 524-7505
via email: Three_Rivers_EIS@blm.gov

The BLM will review and analyze the comments received and will then publish a Final EIS and Record of Decision in late 2008. Those who do not comment on the DEIS, or otherwise participate in this EIS process, may have limited options to appeal or protest the final decision. Federal court decisions have ruled that environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of a Final EIS. This is to ensure substantive comments and objections are made available to the BLM when they can be meaningfully considered and responded to in the Final EIS.

Comments received on the DEIS, along with comments received during scoping or at other stages of this process, will be placed into the Administrative Record, where they will be available for public review. **Please be aware that information, such as addresses and phone numbers, may be viewed and copied by anyone with access to these public files in this open process**.

To be most helpful, comments on the DEIS should be specific, mentioning particular pages or chapters where appropriate. Comments may address the adequacy of the DEIS, the merits of the alternatives, or the procedures followed in the preparation of this document as called for under NEPA and its implementing regulations.

For a comment to be considered to have substance, it should:

- Provide new information pertaining to the Proposed Action or an alternative;
- Identify a new issue or expand upon an existing issue;
- Identify a different way to meet the underlying need;
- Provide an opinion regarding an alternative, **including the basis or rationale for the opinion;**
- Point out a specific flaw in the analysis; or
- Identify a different source of credible research which, if used in the analysis, could result in different effects.

For further information regarding this proposal, you may contact Chuck Horsburgh at (208) 524-7500; fax (208) 524-7505; or email at Three_Rivers_EIS@blm.gov.

Thank you for your interest and participation in this analysis.

Sincerely,

David Rosenkrance

David Rosenkrance
Field Manager

Enclosure

DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE THREE RIVERS STONE QUARRY EXPANSION PROJECT
CUSTER COUNTY, IDAHO

Lead Agency:	**U.S. Department of the Interior** **Bureau of Land Management** **Idaho Falls District** **Challis Field Office, Challis, Idaho**
Cooperating Agencies:	**U.S. Fish and Wildlife Service (USFWS)** **National Marine Fisheries Service (NMFS)**
Participating Agency:	**Idaho Department of Fish and Game**
Tribal Governments:	**Shoshone-Bannock Tribes**
Responsible Official:	**David Rosenkrance** **Bureau of Land Management** **Challis Field Office Manager**
Further Information:	**David Rosenkrance, Field Office Manager or** **Chuck Horsburgh, Project Manager** **BLM Idaho Falls District Office** **1405 Hollipark Drive** **Idaho Falls, Idaho 83401** **(208) 524-7500** **e-mail: Three_Rivers_EIS@blm.gov**

ABSTRACT:

This Draft Environmental Impact Statement (Draft EIS) documents the analysis conducted for the proposed expansion of the Three Rivers Stone Quarry. The Three Rivers Stone Quarry is operated by L&W Stone Corporation, a privately owned stone retailer with corporate offices in Orland, California, and is mined for flagstone rock. The quarry is located near the town of Clayton in Custer County, Idaho, just north of the confluence of the East Fork Salmon and Salmon rivers and lies entirely on lands administered by the BLM Challis Field Office. L&W Stone is proposing to expand the production of flagstone at this mine. This would involve upgrading roads, expanding existing and potentially creating new pits, exploring for additional flagstone, drilling a well under an approved water right, and reclaiming disturbed areas.

Mining at the Three Rivers Stone Quarry has occurred since the 1970s. Mining is currently occurring at the quarry under an Interim Mining Plan. In 2005, as a result of a lawsuit, U.S.

District Court Judge Lynn Winmill ordered that an EIS be completed for the Amended Plan of Operations and alternatives submitted by L&W Stone in 2002 and analyzed in 2004 in an Environmental Assessment (EA). Judge Winmill has allowed L&W Stone to continue to operate under an Interim Mining Plan until the EIS is completed.

This Draft EIS has been completed which analyzes four alternatives in detail: Alternative A: The No Action Alternative, Alternative B: Continuation of the Interim Mining Plan, Alternative C: Preferred Alternative from the 2004 EA, and Alternative D: Proposed Action. Other agencies may tier to this analysis for any decisions they may make associated with this proposed project.

At this time, Alternative D has been identified as the preferred alternative after having considered the environmental impacts to public lands and the opportunities for use of those lands, which would benefit the most people over the longest term.

National Environmental Policy Act Disclosure Statement
Bureau of Land Management Draft Environmental Impact Statement
Three Rivers Stone Quarry Expansion

The President's Council on Environmental Quality (CEQ) regulations at 40 CFR 1506.5(c) require that consultants preparing an environmental impact statement (EIS) execute a disclosure specifying they have no financial or other interest in the outcome of the project. The term "financial interest or other interest in the outcome of the project" for the purposes of this disclosure is defined in the March 23, 1981, guidance "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 FR 18026-18038 at Questions 17a and b.

"Financial interest or other interest in the outcome of the project" includes "any financial benefits such as promise of future construction or design work in the project, as well as indirect benefits the contractor is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients)," 46 FR 18026-18038 at 18031.

In accordance with the above-referenced regulatory requirements, URS Corporation has prepared this Draft EIS on behalf of the Bureau of Land Management and declares no financial or other interest in the outcome of the proposed project.

Certified by:

08/30/07

Glenn Roberts
Vice President

Date

URS Corporation
1750 Front Street, Suite 100
Boise, Idaho 83702

CHAPTER 1.0 PURPOSE AND NEED

CHAPTER 2.0 PROPOSED ACTION AND ALTERNATIVES

LIST OF APPENDICES

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LIST OF FIGURES

ACEC	Area of Critical Environmental Concern
ACEC/RNA	Area of Critical Environmental Concern/Research Natural Area
ACHP	Advisory Council on Historic Preservation
AMP	Allotment Management Plan
amsl	Above mean sea level
ANFO	Ammonium nitrate fuel oil
ANSI	American National Standards Institute
APE	Area of potential effect
APHIS	Animal, Plant Health Inspection Service
APOO	Amended Plan of Operations
As	Arsenic
AUMs	Animal Unit Months
BA	Biological Assessment
BCP	Bird Conservation Plan
BLM	Bureau of Land Management
BMPs	Best Management Practices
BURP	Beneficial Use Reconnaissance Project
Cd	Cadmium
CEQ	Council of Environmental Quality
CERCLA	Comprehensive Environment Response, Compensation and Liability Act
CFO	Challis Field Office
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
Cu	Copper
CWA	Clean Water Act
CWMA	Cooperative Weed Management Areas
dB	Decibels
dBA	A-weighted sound level
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FIRE	Financial services, insurance, and real estate
FONSI	Finding of No Significant Impact

FTA	Federal Transit Administration
HMA	Herd Management Area
HP	Horsepower
Hydride-AA	Hydride generation atomic absorption spectrometry
Hz	Hertz
I-90	Interstate 90
IBI	Index of Biotic Integrity
ICP-AES	Inductively coupled plasma-atomic emission spectrometry
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
IDT	Interdisciplinary Team
IISC	Idaho Invasive Species Council
ITD	Idaho Transportation Department
IDWR	Idaho Department of Water Resources
KOP	Key observation point
kV	Kilovolt
LAUs	Lynx Analysis Units
LCAS	Lynx Conservation Assessment and Strategy
Ldn	Day-Night Average Noise Level
Leq	Equivalent sound level
Lmax	Maximum Sound Pressure Level
Lmin	Minimum Sound Pressure Level
mg/Kg	Milligrams per kilogram
MOU	Memorandum of Understanding
MSHA	Mine Safety and Health Administration
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966, as amended
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPS	National Park Service
OHV	Off-Highway-Vehicle

PLS	Pure live seed
PM	Particulate matter
PPV	Peak particle velocity
Proposed Project	Three Rivers Stone Quarry Expansion Project
PSD	Prevention of Significant Deterioration
RAC	Resource Advisory Council
RAMP	Recreation Area Management Plan
RMC	Risk Management Criteria
RMP	Resource Management Plan
RNA	Research Natural Area
SCORTP	Statewide Comprehensive Outdoor Recreation and Tourism Plan
Se	Selenium
SH	State Highway
SHPO	State Historic Preservation Office
SNRA	Sawtooth National Recreation Area
SPL	Sound Pressure Level
SQRU	Scenic Quality Rating Units
SRMA	Special Recreation Management Area
the Applicant	L&W Stone Company
TCU	Transportation, communication, and utilities
TMDL	Total Maximum Daily Load
URS	URS Corporation
US	United States
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
VRM	Visual Resource Management
WSR	Wild and Scenic River
WWP	Western Watersheds Project
Zn	Zinc

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY
OF THE DRAFT
ENVIRONMENTAL IMPACT STATEMENT FOR THE
PROPOSED THREE RIVERS STONE QUARRY EXPANSION PROJECT
CUSTER COUNTY, IDAHO

This Executive Summary is intended to be a synopsis of the *Three Rivers Stone Quarry Expansion Project Draft Environmental Impact Statement* for the reader. The detailed analysis of the Proposed Action, alternatives to the Proposed Action, and the disclosure of impacts are displayed in detail in the Draft Environmental Impact Statement (DEIS), available both on CD and in hard copy formats. The DEIS is also available on the internet at www. blm.gov/id/st/en/fo/challis/nepa/Three_Rivers.html.

INTRODUCTION

In 2002, L&W Stone (the Applicant) submitted an Amended Plan of Operations to the Bureau of Land Management (BLM), Challis Field Office, Challis, Idaho to continue quarrying flagstone (Three Rivers Stone) at the Three Rivers Stone Quarry, located about 5 miles east of the town of Clayton in Custer County, Idaho. In 2004, an Environmental Assessment (EA) was completed that evaluated the Amended Plan of Operations and alternatives. The BLM signed a FONSI and Decision Record in July 2004 that authorized implementation of Alternative 2, as described in the 2004 EA, contingent upon submittal of a revised Plan of Operations and an acceptable bond for full reclamation of the operations. In 2005, as a result of a lawsuit that was filed objecting to the authorization, the BLM was ordered by U.S. District Court Judge Lynn Winmill to prepare an EIS for the Amended Plan of Operations.

On October 21, 2005, the BLM published a *Notice of Intent to prepare an EIS* and initiated the public scoping process in the Federal Register. This triggered an initial public scoping period that ran for 45 days and concluded on December 5, 2005. The process for analyzing the proposal and alternatives began with the publication of the Notice of Intent and was consistent with the requirements of the National Environmental Policy Act, 1969 (NEPA).

SCOPING

Significant Issues Identified through Scoping and Used to Develop Alternatives

Public, government-to-government, and interagency scoping for issues was accomplished early in the analysis process through public meetings, scoping documents, and internal BLM interdisciplinary discussions and continues today. Issues that emerged during the scoping process were also considered in formulating the alternatives. The issues considered to be significant and addressed in detail include:

- Protecting the East Fork Salmon River Bench Area of Critical Environmental Concern/Research Natural Area (ACEC/RNA)
- Maintaining the values of the Salmon River and East Fork Salmon River
- Improving the socioeconomics of the Challis area
- Protecting visual resources
- Protecting fish and wildlife, including threatened and endangered species
- Protecting water quality
- Minimizing noise impacts to residents and wildlife from use of explosives
- Reducing and mitigating dust generated from mining activities
- Clarifying the purpose and need for the Proposed Project
- Maintaining and protecting Tribal treaty rights and interests

Other Issues and Concerns Addressed:

- Wild horse protection
- Access to the quarry site
- Cultural and historic resource protection
- Range resource protection
- Geology and soils
- Spread and establishment of weeds and invasive species
- Recreation opportunity changes
- Hazardous materials
- Conformance with the existing Resource Management Plan
- Vegetation disturbance and restoration

Issues Deemed Outside the Scope of the Environmental Impact Statement (EIS):

- Quarrying at alternate sites or for alternative sources of flagstone

LEAD, COOPERATING AND PARTICIPATING AGENCIES

The **BLM** is the Federal agency responsible for the preparation of the Draft and Final EIS and the associated analysis. The responsible official will be David Rosenkrance, Challis Field Office Manager.

Cooperating agencies are Federal agencies that have jurisdiction by law (40 CFR 1501.6) and may or will make a decision relative to the Three Rivers Stone Quarry Expansion Project (Proposed Project) based on the analysis disclosed in this EIS. Cooperating agencies may also have special expertise or have information that will assist in development of the analysis. In this analysis, the cooperating agencies include the **U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS)**.

The **Idaho Department of Fish and Game** (IDFG) is a participating agency and is providing input relevant to fish and wildlife and fish and wildlife habitat.

GOVERNMENT-TO-GOVERNMENT CONSULTATION

The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. The Federal Government has enacted numerous statutes and promulgated numerous regulations that establish and define a trust relationship with Indian Tribes. As a land and resource manager, the BLM has a trust responsibility to honor treaty rights and make land management decisions and take actions that do not harm or abrogate treaty rights. The BLM must do this while still meeting its regulatory and management responsibilities to all of the nation's people.

In this analysis, the BLM has formally initiated consultation with the sovereign nation of the Shoshone-Bannock Tribes. This consultation has been initiated with this Tribal Government in the manner as requested by them and is ongoing throughout the analysis.

THE APPLICANT

L&W Stone Corporation is a privately owned stone retailer with corporate offices in Orland, California. L&W Stone produces natural stone products and services retailers in the landscaping, nursery, and building supply markets. L&W Stone operates several other quarries in the United States that produce building stone. L&W Stone is proposing to expand the Three Rivers Stone quarry in Custer County, Idaho. The Proposed Project would be located entirely on public land administered by the BLM within the BLM Challis Field Office administrative boundary.

PURPOSE OF AND NEED FOR PROPOSED ACTION

The purpose of the Proposed Action is to expand the Three Rivers Stone Quarry under the authority of BLM Title 43 Code of Federal Regulations (CFR) Subpart 3809. L&W Stone has proposed to expand the Three Rivers Stone quarry in order to increase mine production and to begin exploration to determine if additional marketable flagstone exists on their mining claims.

The need for the Proposed Action is to provide L&W Stone the opportunity to mine sufficient flagstone to meet the market demand, which has increased substantially since 2000, and is expected to continue to increase. Even though L&W Stone's quarry production has increased over the years, it has been unable to keep up with the demand for its flagstone products. The Amended Plan of Operations that was submitted to the BLM in 2002 was based on actual and projected demand for this stone by the building industry, and consumption of this stone has increased since this date.

According to the U.S. Geological Survey, the demand for stone products is predicted to increase well into the future. This prediction is based on the fact that stone continues to be a construction material of choice because of the long lasting and low maintenance aspects of natural stone products along with the variety of stone products that are available to meet a wide range of needs. The increased use of stone products is the result of a number of factors including improvements in technology and finishes and that quarrying methods have resulted in stone becoming a cost-effective material when compared to other construction materials.

CONFORMANCE WITH EXISTING RESOURCE MANAGEMENT PLAN

The Challis Resource Management Plan (RMP) was approved by the Record of Decision (ROD) dated July 1999. The RMP acknowledges that the development of minerals is a valid use of the public lands – Minerals Section – Goal 3: "Maintain the availability of public lands for locatable mineral exploration and development. Minimize adverse effects of locatable mineral development activity on other resources" (USDI-BLM 1999, p. 44). The RMP also states that, "Wild and Scenic River (WSR) segments which are found suitable or have a suitability finding deferred until a later coordinated suitability study will be open to mineral development, if consistent with the maintenance of WSR values and management of mineral development in riparian areas" (USDI-BLM 1999, p. 41). The Proposed Action and alternatives to the Proposed Action would conform to the Challis RMP to meet land management objectives.

DECISIONS TO BE MADE

Bureau of Land Management (Lead Agency)

Upon evaluating the 2002 Amended Plan of Operations through this EIS, the BLM must:

- approve the Amended Plan as submitted;
- approve the Amended Plan subject to changes or conditions necessary to meet the performance standards of 43 CFR 3809.420 and to prevent unnecessary and undue degradation; or
- withhold approval of the Amended Plan because the proposed operations cannot be modified to prevent unnecessary or undue degradation of public lands (43 CFR 3809.411).

The decision regarding the approval of the Amended Plan of Operations will be outlined in a Record of Decision, based on the outcome of the Final EIS.

U.S. Fish & Wildlife Service (Cooperating Agency)

The USFWS will issue a concurrence letter based on consultation with the BLM on an amended Biological Assessment (BA) of impacts of the Proposed Project to threatened and endangered aquatic species. The assessment will amend the BA for aquatic species that was prepared for the 2004 Three Rivers Stone Quarry Expansion EA and will address potential impacts of the Proposed Project on Snake River sockeye salmon, Snake River spring and summer Chinook salmon, Snake River Basin steelhead, and Columbia River Basin bull trout. Since no impacts to Federally listed terrestrial species would result from implementation of the proposed alternatives, a BA for terrestrial species will not be submitted to the USFWS. The concurrence letter will address only the aquatic species under the authority of the USFWS (the Columbia River Basin bull trout). The results of consultation with the USFWS will be included in the BLM ROD for the Final EIS.

National Marine Fisheries Service (Cooperating Agency)

The NMFS will issue a concurrence letter based on consultation with the BLM on an amended BA of impacts of the Proposed Project to threatened and endangered aquatic species. The assessment will amend the BA for aquatic species that was prepared for the 2004 Three Rivers Stone Quarry Expansion EA and will address potential impacts of the Proposed Project on Snake River sockeye salmon, Snake River spring and summer Chinook salmon, Snake River Basin steelhead, and Columbia River Basin bull trout. The concurrence letter will address only the species under the authority of the NMFS (the Snake River sockeye salmon, Snake River spring and summer Chinook salmon, and Snake River Basin steelhead). The results of consultation with the NMFS will be included in the BLM ROD for the Final EIS.

PROPOSED ACTION AND ALTERNATIVES

This section identifies and describes the Proposed Action, the No Action Alternative, and the action alternatives associated with the Proposed Project. The EIS analyzed four alternatives in detail:

- Alternative A: The No Action Alternative
- Alternative B: Continuation of the Interim Mining Plan
- Alternative C: Preferred Alternative from the 2004 EA
- Alternative D: Proposed Action (BLM Preferred Alternative)

A brief description of these alternatives and project features common to all action alternatives is provided below.

Alternative A (No Action)

Alternative A, the No Action Alternative, serves as a baseline against which the action alternatives can be compared. This baseline also allows for the disclosure of the effects of not authorizing expansion of and continuation of mining at the quarry. Under Alternative A, current mining at the Three Rivers Stone Quarry would cease and the quarry site would be reclaimed. All reclamation activities would be completed by L&W Stone within 2 years of cessation of mining operations. Following completion of reclamation activities, waste rock would be allowed to be removed from a portion of the Pit 1 waste rock storage area that would be designated as a community pit. This rock would be used as rip rap and other construction materials.

The main objectives of reclamation would be the following:

- Stabilize and protect surficial soils (minimize wind and water erosion);
- Protect public health by eliminating hazards (remove chemicals, petroleum products, and explosives);
- Protect surface and ground water resources (implement erosion control measures);
- Meet post-mining land uses;
- Minimize view-shed issues (visual impacts);

- Remove operational structures and equipment, regrade, add stockpiled topsoil, and reseed waste rock piles (Pit 1 waste rock storage area would be regraded to match contours of adjacent talus slopes and Pit 2 waste rock storage area would be contoured, covered with topsoil, and planted);

- Reclaim and revegetate operational roads and other disturbed areas (mining roads would be ripped, recountoured, and revegetated, the power-line access road would be reduced to a single-lane road, gates would be removed, and the administrative area would be reseeded; pits would be left in their final mining configurations and pit floors would be sloped and berms would be removed to allow drainage; BLM-approved seeds or container-grown species would be used for revegetation);

- Establish a weed management program; and

- Color the Pit 1 footwall, highwall, and waste rock storage area to meet BLM Visual Resource Management (VRM) Class II Objectives.

Alternative B (Continuation of the Interim Mining Plan)

Alternative B would be a continuation of the Interim Mining Plan that was developed by L&W Stone and approved by District Judge Winmill to enable mining activities at the Three Rivers Stone Quarry during the preparation of this EIS. Under Alternative B, mining activities would continue for 3 to 5 years. Approximately 8 acres of new surface disturbance would result, thus the overall footprint of new mining activities at the quarry would be minor. No exploration activity would be allowed.

The proposed operations would consist of an administrative area on the valley floor and two open-pit (surface) mines (Pit 1 and Pit 2) on the adjacent ridge. In addition, development would include a waste rock storage area, haul roads, interceptor trenches, sediment traps, roll berms, roll ditches, explosives magazines, portable trailers, storage tanks, and a variety of transport vehicles and heavy equipment that would be used for mining activities.

Under Alternative B, a maximum of 100,000 tons of waste rock and flagstone would be removed. Mining would continue in Pit 1 and the highwall would be laid back at a maximum rate of 30 feet per year to expose additional flagstone deposits. Mining activities in Pit 2 would be limited to mining 15 feet in depth and expanding the pit 15 feet to the southwest each year. Blasting, up to 16 times per month, would be used to expose the flagstone in the pits. Mining would continue concurrently in Pit 1 and Pit 2 and waste rock from both pits would be deposited at the Pit 2 waste rock storage area. It is anticipated that Pit 1 would be mined out before Pit 2, therefore, once mining activities at Pit 1 have been completed, waste rock from Pit 2 would be diverted to Pit 1 and used as backfill. Following the completion of mining in Pit 2, all remaining reclamation activities would be completed, as described under Alternative A.

Mining activities would likely occur for 10 to 12 hours per day, 5 days per week. Approximately 75 employees (39 year-round and 36 seasonal) would be required at the peak of mine production. Seasonal workers would typically work from April through December of each year.

The delivery of the quarried flagstone from the quarry to wholesale and retail markets throughout the western United States would occur by commercial trucks hauling on county, state, and Federal roads and highways. Under Alternative B, approximately 800 to 1,200 truck trips per year would be required to transport the flagstone to market.

Water for mining operations, primarily dust suppression, would be obtained from the existing screened diversion on the Salmon River located approximately 1 mile north of the administrative area under a permanent water use permit from the IDWR associated with property owned by L&W Stone. One 3,500 gallon water truck would be used for dust suppression activities. It is estimated that approximately 10 acre-feet per year of water would be needed each year of operation, with maximum daily use estimated at 55,000 gallons.

Runoff from the project site flows either to an ephemeral drainage of the East Fork Salmon River or passes under SH-75 to the Salmon River through three corrugated metal pipe culverts. Straw bales would continue to be placed upgradient of the culverts to trap sediment. The existing stormwater detention trench would border the northeast perimeter of the administrative area and end in a sediment trap located just north of the administrative area. State of Idaho Mining Best Management Practices (BMPs) would be used in an effort to minimize potential sediment delivery to the East Fork and Salmon rivers.

Alternative C (Preferred Alternative from the 2004 EA)

Alternative C is the BLM Preferred Alternative from the 2004 EA. This alternative is similar to Alternative B in that mining would continue in Pit 1 and Pit 2. However, the area mined would be expanded, exploration for additional flagstone deposits would occur, and operations would take place for up to 30 years. Up to 49 acres of new surface disturbance would occur from mining operations and up to 31 acres could be disturbed from exploration activities.

Under Alternative C, mine production would increase through the expansion of Pit 1 and Pit 2, with up to 240,000 tons of waste rock and flagstone removed per year. The east highwall of Pit 1 would be laid back up to 90 feet per year and the portion of the existing Pit 1 waste rock storage area that covers mineable flagstone (up to 6 million tons) would be moved to the Pit 2 waste rock storage area to allow the flagstone to be mined. The proposed final configuration of Pit 1 would be approximately 2,000 feet long, 900 feet wide (at the widest point), and 500 feet deep (measured from the highest point) with a pit floor elevation of 5,425 feet above mean sea level (amsl). The proposed final configuration of Pit 2 would be approximately 1,000 feet long, 900 feet wide, and 100 feet deep with a pit floor elevation of approximately 5,900 feet amsl. Blasting, up to 16 times per month, would be used to expose the flagstone in the pits. Mining operation would occur concurrently in both Pit 1 and Pit 2. At the time that the flagstone is mined out of either Pit 1 or Pit 2, all waste rock from the remaining pit would be used to backfill the finished pit.

Reclamation would occur concurrently with mining operations and at the expiration of the 30-year project period. Reclamation objectives and associated activities would be similar to Alternative A, but with two differences. Upon completion of mining operations, the proposed well would be sealed. Also, if the BLM demonstrates that coloring the backwall is not meeting the VRM objectives, then an alternative proposal to coloration that would meet the VRM objectives would be considered.

Mining activities could occur 24 hours per day, 7 days per week, and 12 months per year. Approximately 100 employees (61 year-round and 39 seasonal) would be required at the peak of mine production. Seasonal workers would typically work from April through December of each year.

The delivery of the quarried flagstone from the quarry to wholesale and retail markets would occur by commercial trucks hauling on county, state, and Federal roads and highways.

Under Alternative C, approximately 1,200 to 1,500 commercial truck trips per year would be required to transport the flagstone to market.

Exploration for additional flagstone deposits would occur under Alternative C within an area of approximately 31 acres, with a maximum of 15 acres unreclaimed at any one time. Exploration could include construction of roads, drill pads/drill holes, trenches, test pits, and local surface stripping. Reclamation of exploration disturbance would include plugging exploration drill holes and returning disturbed areas to their approximate original surface contour with the original surface composition, i.e., rock or soil and vegetation. Where the original surface composition is vegetation, seeds or container-grown plant species would be planted. No exploration activity would occur within 50 feet of the boundary of East Fork Salmon River ACEC/RNA. If exploration identifies additional reserves outside the perimeter of Pit 1 or Pit 2, the Plan of Operations under this alternative would need to be amended and additional documentation and analysis under NEPA could be necessary.

The expansion of mining activities under Alternative C would require an increase in the amount of water needed for dust control and irrigation of reclaimed areas. The IDWR has approved L&W Stone's application for a water right for a proposed well. The water right would be for a maximum volume of 340 acre-feet per year. The well would be located on the northeast side of the administrative area. It is estimated that under Alternative C, a maximum of 87,000 gallons of water from the well would be used daily for dust suppression. Two 8,000 gallon water trucks would be used for dust suppression activities.

Under Alternative C, improvements would be made to the existing stormwater management system. The western portion of the administration area would be built up using waste rock and screened material from the quarry. The entire administration area would then be regraded to slope to the east and northeast and regraveled. The existing stormwater detention trench along the northeastern edge of the administration area, which is not functioning properly, would be modified to capture surface runoff. The trench would be lined with either concrete or rock to prevent erosion. The captured water would be delivered through the trench to a new stormwater detention pond that would be located north of the administration area.

Alternative D (Proposed Action and BLM Preferred Alternative)

Alternative D is similar to Alternative C, in that mining would continue in Pits 1 and 2, but it also would include the exploration and future expansion of mining activities into two new prospects that contain unproven reserves of flagstone. These areas are identified as Pit 2-Expansion (Pit 2-E) and Pit 3. Past surface geologic reconnaissance in the Proposed Project Area indicates that mineable flagstone deposits may exist in the proposed Pit 2-E and Pit 3 areas. Mining operations would take place for up to 40 years under this alternative. Up to 73 acres of new surface disturbance would occur from mining operations and up to 18 acres could be disturbed from exploration activities. **ALTERNATIVE D IS THE BLM'S PREFERRED ALTERNATIVE.**

Under Alternative D, mine production would increase through the expansion of Pit 1 and Pit 2, as under Alternative C, and through the exploration and mining of Pit 2-E and Pit 3, with up to 300,000 tons of waste rock and flagstone removed per year. Blasting, up to 32 times per month, would be used to expose the flagstone in the pits.

Topographically, Pit 2-E is located on a knob with the flagstone outcrop located on the upper western flank of the ridge extending to the top of the ridge. Mining of Pit 2-E would start at the top of the knob and would work easterly following the dip of the flagstone. An actual pit would not be formed until the knob was removed; however a pit highwall would be present. It is expected that the pit would be approximately 40 to 60 feet deep on the east side dependent on the orientation of the flagstone at depth. The highwall on the west side of the pit would be approximately 120 feet high and the elevation of the pit floor would be 5,760 feet amsl. Pit 2-E is anticipated to contain approximately 230,000 cubic yards of flagstone with approximately 50 percent recovery. The pit would generate approximately 1,000,000 cubic yards of waste rock.

The proposed Pit 3 would be located on a rounded knob south of the proposed Pit 2-E area. Pit 3 sits lower topographically than the existing Pit 2 or the proposed Pit 2-E site. The flagstone outcrop is located on the upper western flank of the Pit 3 area. The mining of Pit 3 would start at the top of the knob and work easterly following the dip of the flagstone. It is expected the pit would be approximately 40 feet deep with a total highwall height of approximately 100 feet, and the elevation of the pit floor would be 5,760 feet amsl. Pit 3 is anticipated to contain approximately 72,000 cubic yards of flagstone with another 300,000 cubic yards of waste rock. A 50 percent recovery of the flagstone is anticipated for this pit.

Under Alternative D, it is assumed that mining in Pit 2-E would commence as mining in Pit 2 nears completion. In this event, waste rock generated from Pit 2-E would be placed into Pit 1 or Pit 2. Mining in Pit 3 would commence following completion of quarrying in Pit 2-E and would permit sequential backfilling of either Pit 1, Pit 2, or Pit 2-E with waste rock from Pit 3. In the event mining would begin in Pit 2-E or Pit 3 prior to Pit 1 or Pit 2 completion, waste rock would be hauled to the Pit 2 waste rock storage area. The Pit 2 waste rock storage area would have sufficient capacity to hold all the waste generated in all four pits concurrently.

Under Alternative D, reclamation would occur concurrently and at the end of the 40-year operation period as described for Alternative C.

Mining activities could occur 24 hours per day, 7 days per week, and 12 months per year. Approximately 112 employees (66 year-round and 46 seasonal) would be required at the peak of mine production. Seasonal workers would typically work from April through December of each year.

The delivery of the quarried flagstone from the quarry to wholesale and retail markets would occur by commercial trucks hauling on county, state, and Federal roads and highways. Under Under Alternative D, approximately 1,500 to 2,000 commercial truck trips per year would be required to transport the flagstone to market.

Exploration activity, as described for Alternative C, would occur in an approximately 18-acre area on both sides of, but primarily south of, the Spar Canyon South Butte transmission line.

A maximum of 15 acres in the exploration area would be unreclaimed at any one time. No exploration activity would occur within 50 feet of the boundary of the East Fork Salmon River ACEC/RNA.

As under Alternative C, a well would be drilled under the IDWR-approved water right application to provide a water source for dust control and irrigation. Two 8,000 gallon water trucks fitted with front and rear spray booms would be used for dust suppression activities. It is estimated that under Alternative D, a maximum of 95,000 gallons of water would be used daily for dust suppression. Total water use would not exceed the annual 340 acre-feet per year water right.

Under Alternative D, in addition to the improvements to the existing stormwater management system described for Alternative C, an additional stormwater detention pond would be constructed between Pit 2-E and Pit 3. Pit 2-E and Pit 3 would be graded to allow water to be captured in lined ditches and delivered to the stormwater detention pond. Additional drainage ditches would be constructed to capture surface runoff from the main mine access road in the vicinity of Pit 2-E and Pit 3 and deliver runoff to the stormwater detention pond. The stormwater detention pond would be large enough to capture all surface water runoff from Pit 2-E, Pit 3, and the main mine access road, and would prevent mine generated runoff from flowing into the East Fork Salmon River ACEC/RNA. These stormwater detention basins would be monitored to ensure that they function properly over the life of the project.

Project Features Common to All Action Alternatives

Major components of the Proposed Action and common to the other action alternatives identified include:

- An administration and staging area for mining operations, consisting of an office trailer, general supplies storage, and a staging area for crated flagstone stored prior to shipping.

- A transmission line would be constructed into the administrative area to provide power to the office trailer.

- Fuels and lubricants used for mining equipment would be stored at three separate locations at the quarry site and would comply with applicable Federal regulations.

- A storage silo for ammonium nitrate and two explosive magazines for storing explosives would be located at the quarry and in compliance with Mine Safety and Health Administration (MSHA) regulations.

- Rock in the quarry pits would be loosened by drilling and blasting. Blasting would be used to loosen flagstone and waste rock. Blasting would occur approximately 4 times per week or could include several days of blasting followed by several days with no blasting. Blasting would comply with all MSHA and Bureau of Alcohol, Tobacco, Firearms, and Explosives regulations.

- Waste rock would be removed after blasting by loaders and haul trucks, exposing the flagstone. The flagstone then would be removed from the ground by hand or with the assistance of a hydraulic excavator. Some flagstone would be further split by hand, and all flagstone would be placed by hand on pallets. The pallets would be loaded onto flatbed trucks and transported from the splitting areas to the administrative area.

- No additional waste rock material would be deposited into the Pit 1 waste rock storage area. A portion of the Pit 1 waste rock would be made available as a mineral material by sale or free-use permits in the form of a community pit.

- The Pit 2 waste rock storage area would continue to accept waste rock material from Pit 1 and Pit 2. Topsoil would be stripped from the waste rock storage area and stockpiled nearby for use in reclamation. Reclamation at the Pit 2 waste rock storage area would continue to occur concurrently with mining activities at the quarry.

- Topsoil would be salvaged for reclamation and stored at the quarry. The topsoil stockpile would be graded and seeded to minimize erosion and soil loss by wind and water if not used within 6 weeks for reclamation. The proposed topsoil storage site would be approximately 0.9 acres in size and would be large enough to hold all stockpiled topsoil removed during mining operations.

- The existing main mining roads that access Pit 1 and Pit 2 would continue to be used. The main access roads would generally be 30 feet in width. Secondary quarry roads would be constructed as needed and would generally be 15 feet in width.

- Equipment used at the project site would be typical of surface mining operations and would include drill rigs, hydraulic excavators, front-end loaders, 30-ton and

40-ton haul trucks, dump trucks, water trucks, flat-bed trucks, bulldozers, service trucks, a grader, fork lifts, light trucks, and personnel transport vehicles. Each piece of equipment would be fitted with its required safety devices, and all equipment would be operated in compliance with all MSHA regulations concerning equipment operator safety and the safety of other workers.

- Heavy equipment and more mobile mine equipment would be properly maintained at all times to minimize leaks of motor oils, hydraulic fluids, and fuels. The maintenance of equipment that is authorized for highway travel would be performed off-site at an appropriate facility. Equipment that is not highway-authorized would be serviced on the project site.

- Gates are installed along the only public access route through the Proposed Project area due to liability and safety concerns. The general public would not be allowed access to the quarry without first coordinating with personnel, and then, access would be restricted and allowed only if accompanied by a quarry employee. Signs with a contact name and phone numbers for the Applicant and the BLM would be posted on all gates.

- Waste rock would be allowed to be removed from a designated area of the Pit 1 waste rock storage area in the form of a community pit. During the ongoing operation of the quarry, due to public safety considerations, only government entities or their representatives would be allowed access to the waste rock material. Following completion of quarry activities and during implementation of reclamation, a plan would be developed that would allow continued access to the waste rock by government entities and additionally allow access by the general public for obtaining rip rap and other construction material. The amount of waste rock that would be removed as a mineral material from the Pit 1 waste rock storage area is estimated to be as much as 20,000 cubic yards per year.

- Sanitation facilities at the quarry site would consist of portable toilets for all personnel. The toilets would be distributed at the project site according to location of work being performed.

- Mining operations and reclamation would be implemented in accordance with State of Idaho Best Management Practices for Mining to minimize potential environmental and public safety impacts. These include, but are not limited to dust abatement, erosion control, revegetation, hazardous materials, and noxious weed management.

- A Chemical Spill Prevention, Control, and Countermeasures Plan is currently in place at the quarry and would continue to be implemented.

Table ES-1 below provides a comparison of the action alternatives by Proposed Project features. The reader should note that the numbers provided in the table are approximate values and should be used for analysis purposes only.

Table ES-1. Comparison of Project Features of the Action Alternatives.

Project Features	Alt. B	Alt. C	Alt. D
Period of Operation (Years)	3-5	30	40
Total Work Force (yr-round/seasonal)	75 (39/36)	100 (61/39)	112 (66/46)
Acres of surface disturbance			
Existing	92	92	92
Proposed New	8	49	73
Exploration	None	31	18
Total	100	172	183
Pit Expansion			
Pit 1	30 feet per year	90 feet per year	90 feet per year
Pit 2	15 feet per year	15 feet per year	Expanded (Pit 2-E)
Pit 3	NA	NA	Excavated
Material removed per year (In tons; waste rock and flagstone)	100,000	240,000	300,000
Number of blasts per month	16	16	32
Truck loads of flagstone leaving the quarry per year	800-1,200	1,200-1,500	1,500-2,000
Water source	Off-site surface water	On-site well	On-site well
Water use (maximum daily use, gallons)	~55,000	~87,000	~95,000
Pits	2	2	3
Reclamation	Same for all alternatives		

ALTERNATIVES CONSIDERED AND ELIMINATED FROM DETAILED STUDY

This section identifies and discusses the four alternatives that were considered but were not carried forward in the analysis.

Applicant's 1992 Plan of Operations

A November 1992 Plan of Operations, which proposed a maximum of 16.3 acres of surface disturbance for the quarry was analyzed (EA #ID-040-3-4) and approved by the Challis Field Office on December 8, 1992. The 1992 Plan of Operations included an administration area and three separate quarries. By August 2002 the operations had increased well beyond the approved 16.3 acres to over 50 acres in size. Implementation of the 1992 Plan of Operations is no longer feasible because the 16.3 acres proposed in the 1992 plan has been enveloped by the expanded operations. For this reason, this alterative is not carried forward or analyzed in detail in this EIS.

Applicant's Proposed Action from 2004 EA

This alternative was developed by The Applicant as the Proposed Action in 2002 for analysis in the EA that was completed in 2004 (USDI-BLM 2004). This alternative was not selected as the Preferred Alternative in the 2004 EA because it did not include standard BMPs and mitigating measures. For these reasons, this alternative is not carried forward or analyzed in detail in this EIS.

Complete Backfill of Pit 1

BLM's 43 CFR 3809 Regulations do not require that pits or quarries be backfilled as part of the Plan of Operations approval. The Regulations do require that reclamation be completed so as to prevent unnecessary or undue degradation of the public lands.

An analysis conducted by the BLM in 2005 indicated that it would cost over $6 million to move the waste rock that existed at that time from the Pit 1 waste rock storage area back into Pit 1. For these reasons, the total Pit 1 backfill alternative is not carried forward or analyzed in detail in this EIS.

Mining Deeper in Pit 1

A 40-foot thick flagstone unit exists beneath the flagstone unit that is currently being mined in Pit 1. It is possible that this unit could become economic to mine sometime in the future. However, mining the underlying unit would require extending Pit 1 further south into the East Fork Salmon River Bench ACEC/RNA as well as to the north to the edge of SH-75. The footwall of Pit 1 would also be lowered substantially, making more of the operation visible from SH-75. The floor of Pit 1 would also be much closer to the surface water elevation of the East Fork Salmon and Salmon rivers. Because of the potential impacts associated with this alternative, the alternative is not carried forward or analyzed in detail in this EIS.

AFFECTED ENVIRONMENT/EXISTING CONDITION

The purpose of this section is to describe the existing environment/existing condition of the Three Rivers Stone Quarry including conditions that could be affected by the alternatives described above.

The Three Rivers Stone Quarry is one of the largest single flagstone quarries in the United States with products sold in 33 cities. The quarry consists of the following: two mining pits (Pit 1 and Pit 2), two waste rock storage areas, an administration staging area, an equipment parking area, three fuel and lubricant storage areas, two explosive storage areas, a top soil storage area, and a rock and pallet storage site. A main mine road, and a few side roads, provide access to the quarry site. Currently, the quarry has approximately 92 acres of surface disturbance (primarily the administrative area, Pit 1, Pit 2, waste rock storage areas and access roads). This area of disturbance represents the cumulative result of mining at the site over the last 30 years by L&W Stone and previous operators.

The administration staging area serves as the general administrative area for the mining operation and consists of an office trailer, a storage trailer for general supplies, a staging area for crated flagstone, a truck loading area, and an employee parking area. In addition, the staging area has two used oil storage tanks and one diesel fuel tank. An approximately 0.2-acre stormwater detention basin is located on the northeast side of the staging area.

Pit 1 is approximately 20 acres in size and is where the majority of historic and current mining activity and production occurs. At present, the pit is approximately 2,000 feet long, 700 feet wide (at its widest point), and 115 feet deep. The pit is a slot cut with highwalls on both the east and west sides, a developing highwall on the south end, and no highwall (is open) at the north end. At present, Pit 2 is approximately 16.8 acres in size and is 1,000 feet long by 400 feet wide. Pit 2 contains mineable flagstone at the surface and therefore does not have an associated highwall.

The airshed in the Proposed Project Area and vicinity is classified as an attainment area with respect to IDEQ and U.S. EPA air quality regulations. Air pollution in the vicinity of the quarry site is generally non-point and temporary, consisting of smoke (Particulate Matter (PM) 2.5) and dust (PM 10). Smoke is generated from forest or farmland fires during the spring and summer and from wood-burning stoves in the winter. Dust is generated from travel on dirt roads, and from wind on disturbed, non-vegetated surfaces.

The geology of the Three Rivers Stone Quarry generally consists of Ordovician sedimentary rocks, partly covered by Eocene Challis Volcanic rocks. In many places, these rocks are overlain by unlithified Quaternary alluvial deposits of various thickness. The rock excavated at the quarry is referred to as flagstone, shale, argillite, and quartzite. The Three Rivers Flagstone is quarried from argillite layers and hand-split into individual slabs ranging in thickness from less than 1 inch to about 5 inches, and ranging in length-to-width from less than 1 foot by 1 foot to 5 feet by 8 feet. Geochemical analysis of the rock and soil in the Proposed Project Area demonstrated that the mining operations do not cause increased exposure to metals to humans or wildlife relative to the natural levels of metals in the environment.

The flagstone mined at the quarry is considered to be a locatable mineral by the BLM. All other rock at the quarry is considered to be saleable. The BLM determined that the argillite flagstone mined at the L&W quarry is an uncommon variety of building stone with a unique combination of physical properties and unusual intermixing of colors and surface textures. Therefore, the argillite is a rock deposit locatable under the General Mining Law of 1872.

The quarry area contains rock outcrops and bedrock-derived soils. The rock outcrops are classified as the Calcids-Rubble land-Rock outcrop complex. The soils at the quarry area may be erodible due to sparse vegetation, fine soil particle size (abundant silt and clay), and generally low soil moisture content.

No acutely hazardous waste or "listed wastes" as defined by the EPA are used or stored at the project site. Chemicals and petroleum products stored on site include antifreeze, brake fluid, radiator flushing fluids, hydraulic fluid, fuel de-icing additives, degreasing solvents, packaging material from explosives, ammonium nitrate, fuel oil, premixed ammonium nitrate fuel oil (ANFO), diesel fuel and fuel. Quantities stored on site are relatively small, with the exception of diesel fuel.

No perennial streams occur within the perimeter of the proposed operations, but the Proposed Project Area drains directly toward the mainstem Salmon River and East Fork Salmon River. There are two unnamed ephemeral streams at the quarry site, one along the northern side of the quarry near the administrative area and the other along the southern side of the quarry. These streams drain water from the site during high intensity precipitation events. Water quality has been an issue of concern in the Upper Salmon River Subbasin, and sediment has been observed entering these rivers from the Three Rivers Stone Quarry during a high rain event in 2006. However, the reaches of the Salmon River up and downstream of the Proposed Project Area fully support aquatic life beneficial uses and fisheries values.

Long-term sound level measurements were taken in November 2005 at the two closest residences to the quarry to quantify the existing noise environment near the quarry site. Activities at the Three Rivers Stone Quarry that were audible at these locations included noise from the diesel engines and back-up alarms on the heavy equipment, particularly when the equipment was operating near the top of the pits. Other activities that were audible on occasion included the metal scraping of the loader bucket on the rocks, trucks entering/leaving the site, and “thumps” during blasting. Daytime noise sources during the measurement periods consisted of birds vocalizing, the East Fork Salmon and Salmon River, and some vehicular traffic on SH-75.

The vegetation type present in the Proposed Project Area and vicinity is sagebrush steppe. This vegetation type is characterized by sagebrush (*Artemisia tridentata*) and other low growing shrubs and short bunchgrasses and typically occurs in dry environments. Sagebrush shrub communities comprise about 57 percent of the Proposed Project Area and grasslands about 5 percent. The rest of the area is comprise of rock outcrops (7%), bare ground (1%), and disturbed areas (mined, primarily non-vegetated; 30% of the quarry site).

No Idaho BLM special status plant species have been observed on the Proposed Project Area during survey efforts. However, populations of special status plants occur near the quarry. Due to ongoing mining activity at the quarry and the increase in surface areas covered by waste rock, it is unlikely that any special status plant species have become established in the expansion area since the inventories were completed.

The Proposed Project Area is located within mule deer winter range, and mule deer have been observed in the area. Elk and antelope may pass through the area on occasion, but the Proposed Project Area does not contain any winter or summer range for these species.

The sagebrush habitat in the Proposed Project Area provides habitat for several species of non-game birds, including migratory birds. Brewer’s sparrows, golden eagle, prairie falcon, black-billed magpie, and western meadowlark likely use sagebrush-steppe habitats in the vicinity of the quarry.

The Proposed Project Area supports habitat for several species of wildlife. Chukar and Greater sage-grouse are upland game-bird species potentially present, and furbearers likely to occur in the vicinity of the quarry site include bobcats, red fox, coyote, mountain cottontail rabbits, and black-tailed jackrabbits. The Proposed Project Area also supports habitat for numerous species of small mammals, including nine bat species, and at least ten rodent species.

Several species of game and non-game fish are known to inhabit the Salmon River and East Fork Salmon River. Game fish present include, but are not limited to, bass, rainbow trout, mountain whitefish, sockeye salmon, Snake River spring/summer Chinook salmon, and Snake River Basin steelhead trout, resident Columbia River Basin bull trout, and Westslope

Cutthroat trout. Non-game fish known to be present include Pacific lamprey, Northern pikeminnow, redside shiner, and several species of suckers, sculpin, and dace.

Several special status fish and wildlife species are also known to be present within the Proposed Project Area, or in the vicinity. Special status wildlife species include the bald eagle, gray wolf, greater sage-grouse, and peregrine falcon. Special status fish species include sockeye salmon, Snake River spring/summer Chinook salmon, and Snake River Basin steelhead trout, resident Columbia River Basin bull trout, and Westslope Cutthroat trout.

The Proposed Project Area is in the Challis Herd Management Area (HMA), which has an appropriate management level of 185 horses. The herd has varied from 185 to 253 horses between gathering events. The Three Rivers Stone Quarry receives very little use by wild horses and does not contain any areas identified as crucial habitat.

Two cultural resources were identified within the Proposed Project Area during past surveys of the quarry site for archaeological and historic resources. These sites are not eligible for the National Register and one of the sites has been mostly obliterated.

The Challis Field Office area, including the Proposed Project Area, is entirely comprised of lands (aboriginal, traditional, or unoccupied) on which the Shoshone-Bannock Tribes reserved the right to hunt, fish and gather natural resources in the Fort Bridger Treaty of 1868. Government-to-government consultation with the Shoshone-Bannock Tribes is ongoing regarding the amended plan of operations and proposed quarry expansion.

The population of Challis area (ZIP Code Area 83226) is small, with the majority of the residents living in a rural/unincorporated setting. The Challis area economy is based on a combination of mining, agriculture, tourism, government services, and land development, with mining making up almost half of the economic base. Employment in the Challis area is dominated by the service sector, followed by the mining industry. L&W Stone currently employs about 75 workers at the Three Rivers Stone Quarry, and wages paid by L&W Stone are among the highest of all employers in the Challis area and Custer County. Employment in the Challis area has increased in the last year due to expansion of the Thompson Creek Mine.

The Three Rivers Stone Quarry is visible from sections of the Salmon River and SH-75 (the Salmon River Scenic Byway Corridor). This area has been categorized as Visual Resource Management Class II, where the objectives are to retain the existing character of the landscape. Six key observation points were established for this analysis that provide a view of the Proposed Project Area from diverse locations. These KOPs were used to describe landscape appearance experienced by the public from various perspectives and were used to conduct a visual resource inventory. Since 1992, when the quarry operations were last approved by the BLM, visual contrasts have been evident from these KOPs.

A main mine access road winds through the quarry site, providing access to Pit 1 and the waste rock quarry sites. A smaller road provides access to Pit 2. Public may access the quarry from SH-75 to the west, but access is restricted for safety. Salmon River Electric Cooperative, Inc. has access to the main mine road through a right-of-way agreement so they can access a section of electric transmission line that crosses the Proposed Project Area.

Major land uses in the vicinity of the Three Rivers Stone Quarry include mineral exploration and development, transmission line rights-of-way, State Highway rights-of-way, cattle grazing, recreation, and residential living. Both the surface and mineral estates of the Proposed Project Area are owned by the Federal government and administered by the BLM.

The Proposed Project Area is located within the Upper Salmon River Special Recreation Management Area which is managed by the Challis Field Office. Recreation activities on public lands in the vicinity of the quarry include floating, boating, fishing, hunting, camping, hiking, nature study, photography, picnicking, wildlife viewing, backpacking, rockhounding, mountain biking, cross country skiing, and off highway vehicle use. The most frequent of these uses are camping at the BLM East Fork Campground, wildlife viewing along East Fork road, and floating the Salmon River. The quarry site provides minimal recreation opportunities since public access to the site is limited by locked gates and topography (i.e. the cliffs to the south).

The Proposed Project Area is within the Split Hoof Allotment, which is permitted for grazing by cattle. The allotment provides a total of 187 Animal Unit Months. Grazing of cattle on the allotment is allowed from May 16 to June 15 each year. Currently, 183 cattle are allowed to graze during that period. However, no grazing has occurred in the allotment since 2000.

The Proposed Project Area is located near the confluence of the Salmon and East Fork Salmon rivers. These rivers were both found eligible for further study for possible inclusion in the National Wild and Scenic River System during the 1993 Wild and Scenic River studies. The tentative classification for the East Fork Salmon River is recreational, and the outstandingly remarkable values are scenic, recreational and fisheries. The tentative classification for the Salmon River is also recreational, and the outstandingly remarkable values are recreational, fisheries and geological.

The East Fork Salmon River Bench ACEC/RNA is located immediately south of the Proposed Project Area. The East Fork Salmon River Bench RNA designation was made to protect remnant vegetation associated with the bench in a relatively pristine condition. The

ACEC designation is based on the historic absence of livestock grazing in the area, which has resulted in a plant community in near reference conditions. Approximately 4 acres of Pit 1 extends into the ACEC/RNA as a result of past mining activities.

ENVIRONMENTAL CONSEQUENCES

The environmental consequences of the Proposed Action and alternatives to the Proposed Action are summarized and compared in Table ES-2 below. A complete description and disclosure of the impacts are found in Chapter 4, Environmental Consequences.

Table ES-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	**B**	**C**	**D**
PHYSICAL				
Air Quality	Mining-related air pollution would be eliminated upon closure of the mine. Some dust and vehicle and equipment emissions would be generated during reclamation, although dust suppression techniques would reduce the levels of particulate matter in the air. After successful reclamation, the generation of coarse particulate matter and vehicle and equipment emissions from the quarry site would be similar to that generated prior to mining operations.	Emissions from heavy mine equipment, passenger vehicles, and trucks would be released at levels similar to current conditions, and dust would continue to be generated from blasting, excavation, and vehicle travel on unpaved roads for 3 to 5 years. Impacts to air quality would be temporary. Application of water during mining operations and reclamation would reduce dust in the air. Site reclamation would reduce long-term fugitive dust.	Sources of air pollution would be similar to Alternative B but levels would be increased due to the proposed expansion (increased use of heavy machinery, travel by employees, transport of materials, acres of surface disturbance) and by new exploration activities, and would be generated over a 30-year time period. Application of water during mining operations and reclamation would reduce fugitive dust. Reclamation of disturbed areas would reduce wind-generated fugitive dust over the long-term.	Same as Alternative C but levels of air pollution would be increased due to the proposed increase in excavation and associated release of vehicle and equipment emissions and dust, and generated over a 40-year period. Exploration activities and associated pollution would be less than under Alternative C. Application of water during mining operations and reclamation would reduce fugitive dust. Reclamation of disturbed areas would reduce amount of fugitive dust over the long-term.
Geology and Minerals (leaseable, locatable, saleable)	Locatable and saleable minerals would no longer be mined and exploration for locatable minerals would not occur. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.	About 100,000 tons of flagstone and waste rock would be removed annually from the quarry, for a maximum total of 500,000 tons. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.	About 240,000 tons of flagstone and waste rock would be removed annually from the quarry, for a total of 9.6 million tons. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.	About 300,000 tons of flagstone and waste rock would be removed annually from the quarry, for a total of 12 million tons. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.

Table ES-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	**B**	**C**	**D**
Soils	Surface disturbance would be limited to previously disturbed areas during reclamation. A minor amount of soil loss would occur. Once vegetation becomes successfully established in reclaimed areas, there would be a decrease in the amount of soil loss from disturbed areas over current conditions.	There would be 8 new acres of surface disturbance over current conditions. Soil loss could occur during salvage and replacement operations and from the topsoil stockpile due to wind and water erosion. Water erosion of soil could also occur in disturbed areas during heavy rains. Reduced biological activity and structure of soil could also result. BMPs would be applied to minimize soil loss.	There would be 49 acres of new surface disturbance and a potential increase in the amount of topsoil stockpiled. This would result in an increase in the potential for soil loss from the topsoil stockpile and from disturbed areas. Potential impacts to biological activity and structure of soil would be greater than under Alternative B. BMPs would be applied to minimize soil loss.	There would be 73 acres of new surface disturbance and a potential increase in the amount of topsoil stockpiled. This would result in the greatest potential for soil loss of all alternatives. Potential impacts to biological activity and structure of soil would be greater than under alternatives B and C. BMPs would be applied to minimize soil loss.
Hazardous Substances and Petroleum Products	During cleanup and reclamation, there would be the potential for chemicals and petroleum products stored on site to leak or spill during removal and transport from the quarry. The risk would be reduced by implementing the Chemical Spill Prevention, Control, and Countermeasures Plan. The risk would be eliminated upon completion of reclamation.	There would be the potential for leaks and spills of chemicals and petroleum products, including fuel, to occur during storage and transport of materials and maintenance and operation of vehicles and heavy equipment. There would also be the potential for leaks and spills during the storage, transport, and mixing of ammonium nitrate and fuel oil. The risk would be reduced by implementing the Chemical Spill Prevention, Control, and Countermeasures Plan.	The risk of leaks or spills of chemicals and petroleum products would be increased and would exist over a longer time period than under Alternative B. The risk would be reduced by implementing the Chemical Spill Prevention, Control, and Countermeasures Plan.	The risk of leaks or spills of chemicals and petroleum products would exist over the longest time period of all alternatives. The risk would be reduced by implementing the Chemical Spill Prevention, Control, and Countermeasures Plan.

Table ES-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	**B**	**C**	**D**
Water Quality	The potential for impacts to water quality would cease upon successful reclamation of the quarry. During reclamation, there would be short-term potential for fuel spills and erosion and potential subsequent fuel and sediment delivery to the Salmon and East Fork Salmon rivers. This risk would be reduced by implementing a Chemical Spill Prevention, Control, and Countermeasures Plan and BMPs.	There would be a minor increase over existing conditions for the potential risk for spills of fuel, petroleum products, and other chemicals, and erosion and the potential subsequent delivery of fuel and petroleum products and sediment to the Salmon and East Fork Salmon rivers. This risk would be reduced by implementing a Chemical Spill Prevention, Control, and Countermeasures Plan and BMPs.	The risk and the levels of fine sediment and fuel, petroleum products, and other chemicals potentially reaching the Salmon and East Fork Salmon rivers would be increased over Alternative B and would occur over a longer period of time. Improvements to the existing detention basin and addition of one new detention pond along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan. BMPs would reduce this risk.	The risk and the levels of fine sediment and fuel, petroleum products, and other chemicals potentially reaching the Salmon and East Fork Salmon rivers would be the greatest of all alternatives and would occur over the longest period of time. However, improvements to the existing detention basin and construction of a two new detention basins, along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan. BMPs would reduce this risk.
Noise	Noise would be generated by reclamation activities at sound levels acceptable for residential land use. Upon completion of reclamation, daytime noise impacts from the quarry would be insignificant. Noise generated from reclamation activities in the vicinity of raptor perch and nest sites would not exceed the 65 dBA hourly Leq threshold.	Noise would be generated by mining operations and reclamation activities at sound levels acceptable for residential land use. Noise generated in the vicinity of raptor perch and nest sites from mining operations and reclamation activities would not exceed the 65 dBA hourly Leq threshold.	Noise levels from mining operations at the closest residence to the quarry would approach the 55 dBA sound level limit recommended by the EPA for determining acceptable sound levels for residential land use and could possibly be exceeded if additional blasting is used for exploration. Noise generated in the vicinity of raptor perch and nest sites from mining and reclamation activities would not exceed the 65 dBA hourly Leq threshold.	Noise levels from mining operations at the closest residence to the quarry would exceed the 55 dBA sound level threshold recommended by the EPA for determining acceptable sound levels for residential land use. Noise generated in the vicinity of raptor perch and nest sites from mining and reclamation activities would not exceed the 65 dBA hourly Leq threshold.

Table ES-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
BIOLOGICAL				
Vegetation	Reclamation would increase the number of vegetated acres within the Proposed Project Area, but vegetation composition of the reclaimed acres could differ from pre-mining conditions. A weed management plan would be implemented under all alternatives to control weeds.	Approximately 2 acres of shrublands would be disturbed over a period of 3 to 5 years. Surface disturbance would create potential habitat for invasive species.	Approximately 32 acres of shrublands, 3 acres of grassland, and 2 acres of rock outcrop (with associated vegetation) would be disturbed over a period of 30 years. There would be a greater likelihood for establishment and spread of invasive plants than for Alternative B.	Approximately 51 acres of shrublands, 3 acres of grassland, and 5 acres of rock outcrop would be disturbed over a period of 40 years. The likelihood of establishment and spread of invasive plants would be greatest under this alternative.
Special Status Plants	No impacts to special status plants.	No special status plant species are known to occur at the quarry. Up to 4 acres of potentially suitable habitat for special status plant species would be disturbed.	Up to 68 acres of potentially suitable habitat for special status plant species would be disturbed (37 from mining and 31 from exploration).	Up to 77 acres of potentially suitable habitat for special status plant species would be disturbed (59 from mining and 18 from exploration).

Table ES-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Fish and Wildlife	Potential impacts to wildlife from noise, visual disturbance, and human/wildlife encounters from mining operations would cease upon closure of the mine, once reclamation activities are completed. Reseeding would improve vegetative cover and associated habitat and food sources for wildlife at the quarry site. Potential impacts to fish habitat from mining operations would be eliminated following completion of successful reclamation.	Removal of vegetation would potentially impact habitat for big game, upland bird, furbearer, non-game bird, and small mammal species. Mining activities would create a potential visual disturbance to wildlife and could increase the chance of human/wildlife encounters. Noise from blasting and heavy equipment use could impact noise-sensitive wildlife species and could lead to displacement. Fragmentation of habitat could lead to displacement from or avoidance of the Proposed Project Area. Disturbance from mining during severe winters could lead to reduced reproduction or increased winter mortality of mule deer. Impacts to habitat quality for game- and non-game fish species could result from the potential delivery of sediment and chemicals and petroleum products to the East Fork Salmon and Salmon rivers.	Types of potential impacts to wildlife would the same as Alternative B, but the potential for occurrence and level of severity would be greater due to the increased surface disturbance, number of employees, heavy equipment use, passenger vehicle and truck traffic. Potential impacts to fish habitat would be similar to Alternative B, but risk of impact would be greater. Improvements to the existing detention basin and addition of one new detention pond along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan. BMPs would reduce this risk.	Types of potential impacts to wildlife would the same as Alternatives B and C but the potential for occurrence and level of severity would be greater due to the increased surface disturbance, number of employees, heavy equipment use, blasting, and passenger vehicle and truck traffic. Potential impacts to fish habitat would be similar to Alternatives B and C, but risk of impact would be greater. Improvements to the existing detention basin and construction of a two new detention basins, along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan. BMPs would reduce this risk.

Table ES-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Special Status Fish and Wildlife	Potential impacts of noise, visual disturbance, and human/wildlife encounters from mining operations would cease upon closure of the mine, once reclamation activities are completed. Reseeding would improve vegetative cover and associated forage and browse for wolf prey species and habitat for sage-grouse at the quarry site. Potential impacts to aquatic biota, special status fish, and fisheries habitat from mining operations would be eliminated following completion of reclamation.	Potential disruption of bald eagle foraging and perching behavior during the winter. Potential increase in prey availability to wolves from potential displacement of mule deer. Minor reduction in and fragmentation of potential habitat for sage-grouse. Potential disruption of peregrine falcon foraging activities during the breeding season. Canada lynx and pygmy rabbits would not be impacted. Potential impacts to aquatic biota, special status fish, and fisheries habitat could result from the potential delivery of sediment and chemicals and petroleum products to the East Fork Salmon and Salmon rivers. Implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan and BMPs would reduce this risk.	Types of potential impact to the behavior or habitat of the bald eagle, gray wolf, sage-grouse, and peregrine falcon would be the same as under Alternative B, but the potential for occurrence and level of severity would be greater due to the increased amount of surface disturbance, number of employees, heavy equipment use, and passenger vehicle and truck traffic. Potential impacts to aquatic biota, special status fish, and fisheries habitat would be similar to Alternative B, but risk of impact would be greater. Improvements to the existing detention basin and addition of one new detention pond along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan and BMPs would reduce this risk.	Types of potential impact to the behavior and habitat of the bald eagle, gray wolf, sage-grouse, and peregrine falcon would be the same as under Alternatives B and C, but the potential for occurrence and level of severity would be greater due to the increased amount of surface disturbance, number of employees, heavy equipment use, blasting, and passenger vehicle and truck traffic. Potential impacts to aquatic biota, special status fish, and fisheries habitat would be similar to Alternatives B and C, but risk of impact would be greater. Improvements to the existing detention basin and construction of two new detention basins, along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan and BMPs would reduce this risk.
Wild Horses and Burros	Upon successful reclamation, there would be the potential for increased use of the project site by wild horses in the Challis HMA. There are no burros in the Challis HMA.	Use of the mine by wild horses would be expected to continue at its current low level. Mining activities should not impact retention of the management level in the HMA.	Use of the mine by wild horses during the period of operation could potentially decline over current conditions. Activities should not impact retention of the management level in the HMA.	Same as Alternative C.

Table ES-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	**B**	**C**	**D**
OTHER RESOURCES				
Cultural Resources	Cultural resources eligible for the National Register would not be affected.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
Tribal Rights and Interests	There would be no negative impacts to Tribal rights and interests.	Access limitations in the active quarry area could impact tribal treaty rights. The BLM would work with the Shoshone-Bannock Tribal members regarding access needs so that treaty rights are honored.	Same as Alternative B.	Same as Alternative B.
Social and Economic Conditions	Loss of 75 jobs and a 100% decrease in earnings and industrial output associated directly with the mine. A 12% reduction of total employment in the Challis area and about a $5.4 million loss in annual income. Potential population reduction of up to 307 people over the long-term, depending on the employment base in the area.	The mine would continue to employ approximately 75 workers for up to 5 years. Social and economic conditions would stay the same as current conditions. After 5 years, the impacts to the number of jobs and the changes to the population and economy of the Challis area would be similar to Alternative A.	Gain of 25 jobs relative to existing conditions and a 32% and 33% increase in earnings and industrial output associated directly with the mine, respectively. A 3% increase in total employment in the Challis area and about a $1.5 million annual increase in new income. Population in the area could increase by about 87 people.	Gain of 37 jobs relative to existing conditions and a 48% and 50% increase in earnings and industrial output associated directly with the mine, respectively. A 6% increase in total employment in the Challis area and about a $2.7 million annual increase in new income. Population in the area could increase by about 145 people.

Table ES-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Visual Resources	Long-term visual contrasts would move from strong to moderate at KOP 6, from weak to none at KOP 3, and from moderate to weak at KOP 1 and KOP 2. Reclamation would diminish visual contrasts at the site and it could begin to resemble the surrounding landscape after approximately 5 years. VRM Class II objectives would be met over the short-term when viewed from KOP 1, KOP 3, KOP 4, and KOP 5 but would not be met when viewed from KOP 2 and KOP 6. Upon completion of reclamation, VRM Class II objectives would be met from all KOPs.	There would be strong visual contrasts apparent from KOP 6, weak contrasts visible from KOP 3, and moderate contrasts from KOP 1 and KOP 2 until reclamation was complete. Reclamation would diminish some visual contrast. Long-term visual contrasts would be the same as Alternative A. Naturalness would return to the site after approximately 10 years. VRM Class II objectives would be met over the short-term when viewed from KOP 1, KOP 3, KOP 4, and KOP 5 but would not be met when viewed from KOP 2 and KOP 6. Upon completion of reclamation, VRM Class II objectives would be met from all KOPs.	There would be strong visual contrasts apparent from KOP 6 and moderate contrasts from KOP 1 and KOP 2 until reclamation was complete. There would be a long-term weak increase in landscape form contrast at KOP 4. After reclamation, contrasts could move from strong to moderate at KOP 6, and from moderate to weak at KOP 1 and KOP 2. Reclamation at the site would be concurrent with operations and would diminish contrasts once completed. Naturalness would return to the site after approximately 35 years. VRM Class II objectives would be met over the short-term when viewed from KOP 1, KOP 3, KOP 4, and KOP 5 but would not be met when viewed from KOP 2 and KOP 6. Upon completion of reclamation, VRM Class II objectives would be met from all KOPs.	There would be strong visual contrasts apparent from KOP 6 and KOP 2 and moderate contrasts from KOP 1 until reclamation was complete. There would be a long-term weak increase in landscape form contrast at KOP 4. After reclamation, contrasts could move from moderate to weak at KOP 1, and from strong to moderate at KOP 6 and KOP 2. Reclamation at the site would be concurrent with operations and would diminish contrasts once completed. Naturalness would return to the site after approximately 45 years. VRM Class II objectives would be met over the short-term when viewed from KOP 1, KOP 3, KOP 4, and KOP 5 but would not be met when viewed from KOP 2 and KOP 6. Upon completion of reclamation, VRM Class II objectives would be met from all KOPs.

Table ES-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Transportation, Access, and Public Safety	Daily traffic on SH-75 would be reduced by about 7%. Gates would be removed from mine access roads, allowing public access.	Daily traffic on SH-75 associated with the quarry would continue at the current rate. Access roads would continue to be used and constructed, as needed, to facilitate mining. Access to the quarry would continue to be restricted for public safety purposes.	Daily vehicle use associated with the quarry would increase traffic volume on SH-75 by about 3% over Alternative B. Access roads would continue to be used and constructed, as needed, to facilitate mining and additional small, two-track roads would be constructed to facilitate exploration activities. Impacts to public access and safety would be the same as Alternative B.	Daily vehicle use associated with the quarry would increase traffic volume on SH-75 by about 5% over Alternative B. Access roads would continue to be used and constructed, as needed, to facilitate mining, including construction of a new road to access Pit 3. Additional small, two-track roads would be constructed to facilitate exploration activities, but less than under Alternative C. Impacts to public access and safety would be the same as Alternative B.
Lands Uses and Private Property	Mining operations would cease. All other existing land uses (cattle grazing and right-of-way (ROW) agreements) would continue. Recreation would no longer be restricted in the quarry site by locked gates and mining operations.	All existing land uses would continue. A ROW application for the proposed 14.4 kV transmission line would be submitted by L&W Stone to the BLM. Access to the quarry would continue to be restricted for public safety purposes by locked gates and land would not be available for other uses or other ROW applications.	Same as Alternative B, but additional areas, specifically those proposed for exploration, would have access restricted for public safety purposes.	Same as Alternative B, but additional areas, specifically Pit 2-E and Pit 3 and the area proposed for exploration, would have access restricted for public safety purposes.

Table ES-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Recreation	Recreational use of the quarry site would likely increase upon removal of access gates and upon completion of reclamation. Recreational values of the Upper Salmon River Special Recreation Management Area (SRMA) would increase.	Recreational use of the Proposed Project Area would continue to be restricted in operating areas and access to the mine would continue to be closed to the public for up to 5 years. Minor impacts to the scenic values of the SRMA would result, but the objectives of the SRMA would still be met. Potential impacts to the SRMA from quarry operations would occur in an area consisting of less than 1% of the entire SRMA.	Increased restrictions of the Proposed Project Area to recreational use over Alternative B due to quarry expansion and exploration. If mining operations were to occur at night, the lights could potentially alter the ambient evening light level at the East Fork Campground and be visible to travelers on SH-75. Objectives of the SRMA would still be met; however, the scenic values would be reduced to some degree over Alternative B because of the longer duration of the proposed operations.	Same as Alternative C, but areas where restrictions would apply could be different. Objectives of the SRMA would still be met; however, the scenic values would be reduced over Alternative B and C because of the increase in visual impacts and longer duration of the proposed operations.
Livestock Grazing	Potential increase of 4 to 5 animal unit months (AUMs) after successful reclamation of the quarry.	Reduction in available cattle forage in the Split Hoof Allotment by less than 1 AUM. The Split Hoof Allotment would likely continue to be ungrazed.	Reduction in available cattle forage in the Split Hoof Allotment by less than 3 AUMs. Otherwise, same as under Alternative B.	Reduction in available cattle forage in the Split Hoof Allotment by less than 5 AUMs. Otherwise, same as under Alternative B.

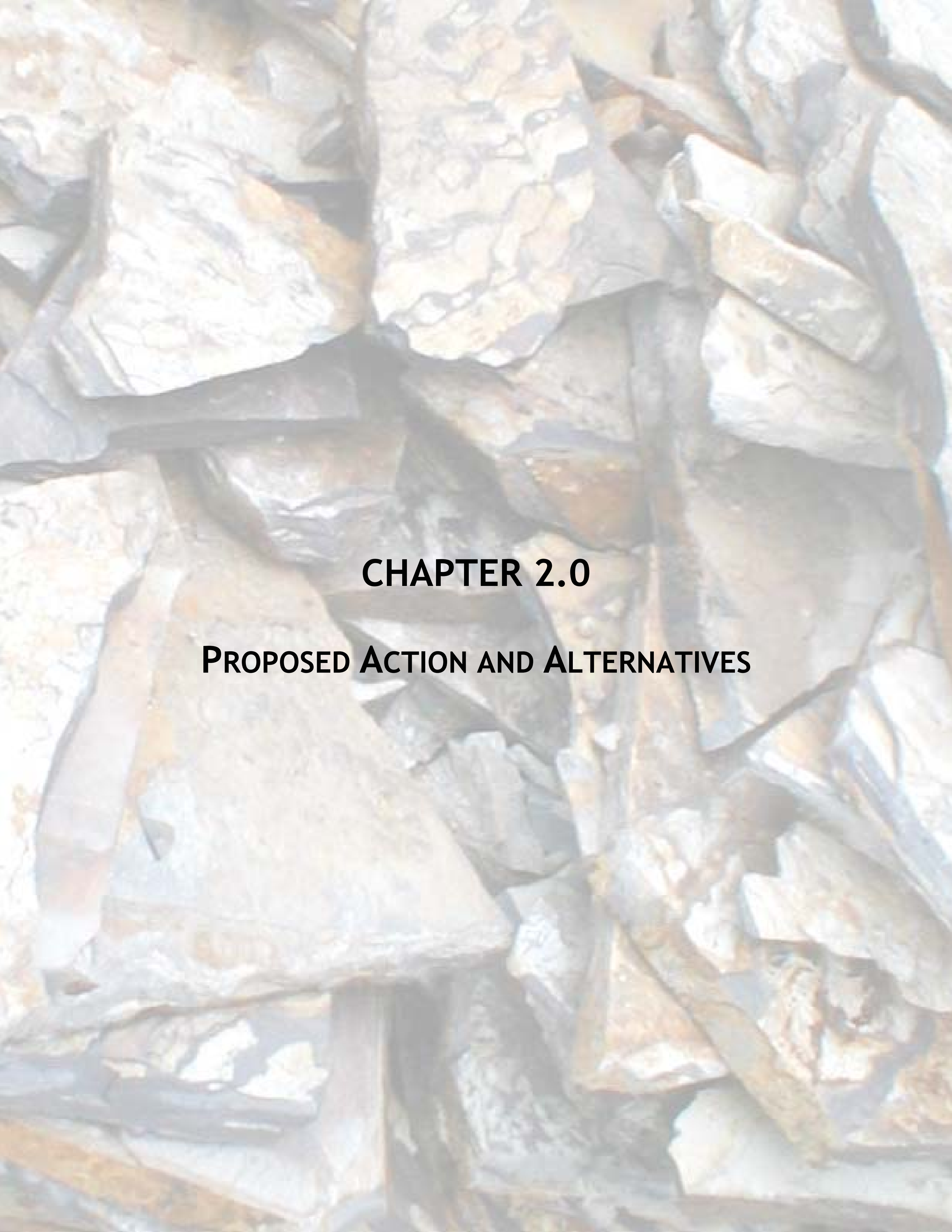
Table ES-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	**B**	**C**	**D**
Special Designations (Wild and Scenic Rivers, ACEC/RNA)	The outstandingly remarkable values of the Salmon River (recreational, fisheries, and geologic) and East Fork Salmon River (scenic, recreational, and fisheries) would be maintained. Following reclamation activities the Proposed Project Area would appear less altered and would mostly blend in with the surrounding landscape. The free-flowing characteristics of the rivers would not be affected. The portion of Pit 1 that overlaps the East Fork Salmon River Bench ACEC/RNA would not be reclaimed. An appropriate buffer would be maintained during reclamation activities to prevent any rockfall into, or disturbance of, the ACEC/RNA.	Short-term impacts to fisheries habitat in the Salmon and East Fork Salmon rivers and alterations in geology in the vicinity of the Salmon River due to the removal of flagstone. However, no degradation of the outstandingly remarkable values of these rivers would result. Following reclamation activities, the quarry would appear less altered and would mostly blend in with the surrounding landscape, reducing the potential for any impacts to the geologic quality of the Salmon River. The free-flowing characteristics of the Salmon and East Fork Salmon rivers would not be affected. The southern end of Pit 1 would continue to be located in, but would not be expanded further into, the ACEC/RNA. Measures would be in place to prevent and contain potential fuel spills. A weed management plan would be implemented to monitor and control the potential spread and establishment of invasive weeds from the quarry site to the ACEC/RNA. Reclamation impacts would be the same as under Alternative A.	No degradation of the outstandingly remarkable values of the Salmon and East Fork Salmon rivers, as under Alternative B. Impacts to geology would be realized through expanded mining under Alternative C to a greater degree than under Alternative B but would not result in degradation of the overall geology along the Salmon River. Pit 1 would continue to be located in the ACEC/RNA as under Alternative B. Pit 1 would be expanded, but not into the ACEC/RNA. A 50-foot buffer zone would be maintained between the proposed exploration area and the cliffs to minimize potential rockfall into the ACEC/RNA. Otherwise, same as under Alternative B.	No degradation of the outstandingly remarkable values of the Salmon and East Fork Salmon rivers, as under Alternative C. Potential impacts to the ACEC/RNA would be the same as under Alternative C, except that Pit 3 would be excavated adjacent to a portion of the ACEC/RNA, increasing the potential risk of weeds spreading and rocks rolling into the ACEC/RNA. A 50-foot buffer zone would also be maintained between Pit 3 and the cliffs to protect the plant communities in the ACEC/RNA from potential rockfall.

CUMULATIVE IMPACTS

The CEQ regulations for implementing the NEPA require assessment of cumulative effects in the decision-making process for Federal projects. Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative effects are considered for each resource and disclosed in detail in the EIS.

Cumulative effects in this analysis were determined by combining the effects of each alternative with past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other past, ongoing, or reasonably foreseeable future actions in this area and in the surrounding landscape. All resource impacts would be added to these actions to portray the cumulative picture or incremental contribution this Proposed Project would have on the environment. Potential cumulative impacts are discussed in detail in Section 4.8 of this Draft EIS.



CHAPTER 2.0

PROPOSED ACTION AND ALTERNATIVES

The purpose of this chapter is to identify and describe the alternatives associated with the proposed Three Rivers Stone Quarry Expansion Project (Proposed Project). Under the National Environmental Policy Act (NEPA), agencies must:

> "rigorously explore and objectively evaluate all reasonable alternatives and for alternatives which are eliminated from detailed study, briefly discuss the reasons for their having been eliminated [(40 Code of Federal Regulations (CFR) 1502.14(a))]."

The Environmental Impact Statement (EIS) shall examine all reasonable alternatives to the proposal (40 CFR 1502.14). In determining the scope of alternatives to be considered, the emphasis is on what is "reasonable" rather than whether an applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are technically and economically practical, are feasible, and use common sense, rather than simply being desirable from the standpoint of an applicant or an interested party (Council of Environmental Quality [CEQ] 46 FR 18026 [March 23, 1981] as amended).

In this document the words quarry or quarry site are used to describe the physical boundary of the Three Rivers Stone Quarry. The words mine or mining activities are used to describe any and all actions used to remove the locatable mineral from the quarry. The words Proposed Project or Proposed Project Area are used to define the quarry or quarry site and all of the mining activities and actions associated with it.

2.1 HISTORICAL AND CURRENT OPERATIONS

The Bureau of Land Management (BLM) case file shows interest in the building stone from the site dating from May 1966 (USDI-BLM 2003c). Rock was intermittently mined at the site through 1990, when increased mining activity caused the surface disturbance to increase from less than 5 acres to approximately 16 acres by May 1992. The Challis Field Office approved a Plan of Operations for the quarry on December 8, 1992 (USDI-BLM 1992). The operations increased in size to approximately 50 acres by August 2002, with the development and expansion of two pits. The quarry is now one of the largest single flagstone quarries in the United States with products sold in 33 cities (Challis Messenger 2003).

By 2000, the BLM determined that the operations were substantially outside the terms and conditions of the approved Plan of Operations. As a consequence, the financial guarantee held by the BLM was determined insufficient to reclaim the site. The Idaho Department of Lands also expressed concerned about the inadequacy of the bond. L&W Stone was informed on a mine tour September 12, 2000 and by a letter dated February 21, 2001 that the approved Plan of Operations was inadequate for the level of activity that had occurred and for the expansion that was anticipated by L&W Stone.

Currently, the quarry has approximately 92 acres of surface disturbance (primarily the administrative area, Pit 1, Pit 2, waste rock storage areas and access roads). This area of disturbance represents the cumulative result of mining at the site over the last 30 years by L&W Stone and previous operators (Figure 2.1-1).

The existing administration staging area covers approximately 5 acres. This area serves as the general administrative area for the mining operation and consists of an office trailer, a storage trailer for general supplies, a staging area for crated flagstone, a truck loading area, and an employee parking area. In addition, the staging area has two used oil storage tanks (250 and 1,000 gallon) and one 500-gallon diesel fuel tank. All fuel and oil storage tanks are sited within containment areas consisting of unlined earthen berms. An approximately 0.2-acre stormwater detention basin is located on the northeast side of the staging area.

Pit 1 is approximately 20 acres in size and is where the majority of historic and current mining activity and production occurs. Pit 1 is located approximately 1,500 feet to the southwest of the administration staging area. The pit is a slot cut with highwalls on both the east and west sides, a developing highwall on the south end, and no highwall (is open) at the north end. At present, the pit is approximately 2,000 feet long and 115 feet deep. The highest point on the rim of Pit 1 is at an elevation of 5,920 feet and the current pit floor elevation is approximately 5,805 feet above mean sea level (amsl). The top of Pit 1 is approximately 700 feet wide (east to west) and the floor of the pit is approximately 250 feet wide by 1,300 feet long (north to south).

Pit 2 is approximately 16.8 acres in size and is located approximately 2,000 feet south of the administration staging area. At present, Pit 2 is approximately 1,000 feet long and 400 feet wide. Pit 2 contains mineable flagstone at the surface and therefore does not have a highwall associated with the pit.

Located between Pit 1 and Pit 2 is a fuel and lubricants storage area. This area contains a 3,000 gallon diesel fuel tank, a 250 gallon gasoline tank, a 250 gallon used oil storage tank and miscellaneous bulk lubricants storage. Again, all fuel and oil storage tanks are sited within unlined bermed containment areas.

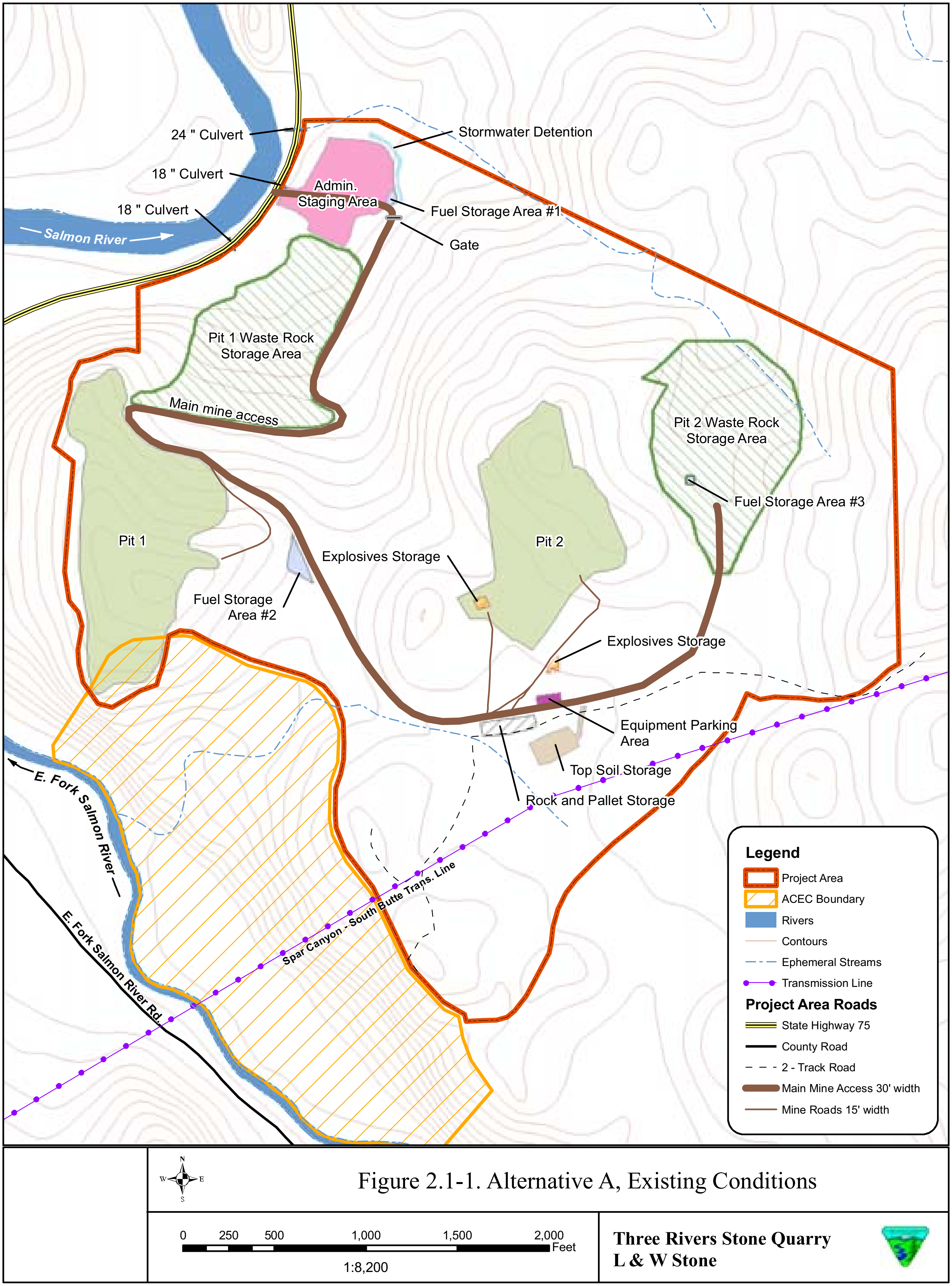


Figure 2.1-1. Alternative A, Existing Conditions

Three Rivers Stone Quarry
L & W Stone

Located north of Pit 1 is a waste rock storage area. Until 2004 waste rock from Pit 1 was deposited at this location on the slope north of Pit 1 and above the administration and staging area. Currently this waste rock storage area covers approximately 15.8 acres. Waste rock from Pit 2 was originally deposited along the southwest edge of Pit 2. In 2005, a new waste rock storage was developed to the east of Pit 2. Currently all waste rock from both Pit 1 and Pit 2 is now deposited in the new waste rock storage area. This new waste rock storage area is currently 16.4 acres in size. A 500 gallon diesel fuel tank is sited within the Pit 2 waste rock storage area.

Located at the south and southwest edge of Pit 2 are two explosive storage areas totaling approximately 1.2 acres in size. The explosives storage area to the southwest contains the ammonium nitrate. The storage area to the south contains separate facilities for storage of the explosives, such as blasting caps, detonator cords, primers, and dynamite.

Located south of Pit 2 is an equipment parking area. This area is used to park mine equipment when not in use or while awaiting repair. The equipment parking area is approximately 0.2 acres in size.

Directly south of the equipment parking area are two storage areas. Pallets loaded with flagstone awaiting transfer to the administrative and staging area are stored temporarily on a 0.5-acre area. Directly adjacent to the pallet and rock storage area is an area used to store topsoil that would be used for reclamation. The topsoil storage area is approximately 0.9 acres in size.

There are approximately 1.9 miles of quarry roads that have disturbed approximately 5.8 acres. The main access road extends from the administration and staging area up to the northeast side of Pit 1 (Figure 2.1-1). The access road to Pit 2 extends to the south from the main access road, passes through a small saddle, and then curves to the east. The main quarry access road is approximately 30 feet in width. Other mine roads are approximately 15 feet in width. There are several old quarry roads that have been recontoured and reseeded with BLM-approved native seed mixes that are still visible within the area of operations.

Additional areas of surface disturbance within the Proposed Project Area include approximately 9 acres consisting of “two-track” roads and reclaimed mining roads that are no longer needed for quarry operations. The Spar Canyon-South Butte 230 kilovolt (kV) Transmission Line crosses the southern portion of the Proposed Project Area. An unimproved, gated “two-track road parallels the transmission line and provides access to portions of the applicants mining claims as well as access to Spar Canyon located to the east of the Proposed Project Area. Other “two-track” roads exist on the site that provides limited access to areas south of Pit 2.

L&W Stone gets water for dust suppression from a permanent water right associated with an L&W Stone-owned property approximately 1 mile north of the administration area on State Highway 75 (SH-75). Water is obtained from a screened diversion on the Salmon River under Idaho Department of Water Resources (IDWR) water right 72-7247. In addition to water use on this privately-owned property, this property is used as an off-site office and for equipment storage associated with current operations of the Three Rivers Stone Quarry.

2.2 PROPOSED ACTION AND ALTERNATIVES TO THE PROPOSED ACTION

This Draft EIS considers four alternatives:

Alternative A:	The No Action Alternative
Alternative B:	Continuation of the Interim Mining Plan
Alternative C:	Preferred Alternative from the 2004 EA
Alternative D:	Proposed Action and BLM Preferred Alternative

These alternatives have been developed in accordance with CEQ regulations to provide decision-makers and the public with a clear basis for choice (40 CFR 1502.14). A detailed description of these alternatives is provided below. Whichever alternative is selected, L&W Stone would submit a Plan of Operations to the BLM as required by 43 CFR 3809 that is consistent with the alternative and contains engineered diagrams and details of the proposed operations. This Plan of Operations would become part of the Record of Decision.

2.2.1 Alternatives Considered and Eliminated from Detailed Study

Applicant’s 1992 Plan of Operations

A November 1992 Plan of Operations, which proposed a maximum of 16.3 acres of surface disturbance for the quarry was analyzed (EA #ID-040-3-4) and approved by the Challis Field Office on December 8, 1992. The 1992 Plan of Operations included an administration area and three separate pits. By August 2002 the operations had increased well beyond the approved 16.3 acres to over 50 acres in size. Implementation of the 1992 Plan of Operations is no longer feasible because the 16.3 acres proposed in the 1992 plan has been enveloped by the expanded operations. For this reason, this alterative is not carried forward or analyzed in detail in this EIS.

Applicant's Proposed Action from the 2004 EA

This alternative was developed by The Applicant as the Proposed Action in 2002 for analysis in the Environmental Assessment (EA) that was completed in 2004 (USDI-BLM 2004). This alternative was not selected as the Preferred Alternative in the 2004 EA because it did not include standard Best Management Practices (BMPs) and mitigating measures. For these reasons, this alternative is not carried forward or analyzed in detail in this EIS.

Complete Backfill of Pit 1

BLM's 43 CFR 3809 Regulations do not require that pits or quarries be backfilled as part of the Plan of Operations approval. The Regulations do require that reclamation be completed so as to prevent unnecessary or undue degradation of the public lands.

An analysis conducted by the BLM in 2005 indicated that it would cost over $6 million to move the waste rock that existed at that time from the Pit 1 waste rock storage area back into Pit 1. For these reasons, the total Pit 1 backfill alternative is not carried forward or analyzed in detail in this EIS.

Mining Deeper in Pit 1

A 40-foot thick flagstone unit exists beneath the flagstone unit that is currently being mined in Pit 1. It is possible that this unit could become economic to mine sometime in the future. However, mining the underlying unit would require extending Pit 1 further south into the East Fork Salmon River Bench Area of Critical Environmental Concern/Research Natural Area (ACEC/RNA) as well as to the north to the edge of SH-75. The footwall of Pit 1 would also be lowered substantially, making more of the operation visible from SH-75. The floor of Pit 1 would also be much closer to the surface water elevation of the East Fork Salmon and Salmon rivers. Because of the potential impacts associated with this alternative, the alternative is not carried forward or analyzed in detail in this EIS.

2.3 ALTERNATIVE A (NO ACTION)

Background: As required by NEPA, this Draft EIS includes Alternative A, a No Action Alternative, that serves as a baseline against which the action alternatives can be compared and is presented to provide the best possible reference condition against which to compare the Proposed Action and other alternatives. This baseline also discloses the effects of not authorizing expansion of and continuation of mining at the quarry.

Alternative A would result in the cessation of mining activities and the implementation of reclamation measures as outlined below.

2.3.1 Reclamation

The main objectives of the reclamation would be the following:

- Stabilize and protect surficial soils (minimize wind and water erosion);
- Protect public health by eliminating hazards;
- Protect surface and ground water resources;
- Meet post-mining land uses;
- Minimize view-shed issues (visual impacts);
- Remove operational structures and equipment and regrade, add topsoil, and reseed waste rock piles;
- Reclaim and revegetate operational roads and other disturbed areas;
- Establish a weed management program; and
- Color the Pit 1 footwall, highwall, and waste rock storage area to meet BLM VRM Class II Objectives.

All reclamation activities would be completed by L&W Stone within 2 years of cessation of mining operations.

All roads associated with the operations, except the power-line access road, would be ripped, recontoured to blend with the natural slope, and revegetated. The power-line access road, which includes a portion of the main mine access road beginning at SH-75, would be reclaimed to a single-lane road for future public access, and gates would be removed. The gravel covering the surface of the administrative-staging area would be removed to the extent necessary to create a plantable seedbed and placed in the Pit 2 waste rock storage area. The area would then be ripped and seeded.

Pit 1 and Pit 2 would be left in their final mining configurations. Pits would not be back filled. However, pit floors would be sloped to allow drainage from the pits and any berms for retaining water would be removed. Drainage would be directed toward natural drainages. All trenches, ditches, sediment traps, silt fences, and other sediment control structures, except those left as necessary for successful reclamation would be removed. Subsequent removal of sediment retention structures would occur as reclaimed areas are deemed stable by the BLM. The reclamation would not cause any surface disturbance, including rock fall, outside of the operation perimeter.

Reclamation of all areas disturbed by mining activities, with the exception of the pit walls, would occur during and following completion of specific mining operations. These areas would be reclaimed using soil stockpiled during operations and planted with BLM-approved seeds or container-grown species. The seed mix would represent a desired plant community appropriate for each ecological site description in the Proposed Project Area. The species mix would include, but not be limited to bluebunch wheatgrass (*Pseudoroegneria spicata*), Wyoming big sagebrush (*Artemisia tridentata sp. Wyomingensis*), Indian ricegrass (*Achnatherum hymenoides*), and bottlebrush squirreltail (*Sitanion hystrix*). Seed application procedures would follow established agency protocols and the best knowledge regarding reclamation of rocky mine sites. Vegetative reclamation would be considered successful when total vegetative cover of desired species reaches 15 to 25 percent foliar cover for 2 successive years on reclaimed areas.

If grazing occurs in the Split Hoof Allotment, and if revegetation efforts are hampered by cattle grazing, cattle would be restricted from the revegetated areas until vegetation is sufficiently established. If these restrictions are outside of the terms and conditions of the current grazing permit, modifications to the permit would be made.

Erosion control measures to reduce the potential for fines to enter fish bearing streams would include graveling selected roads and parking areas (equipment staging area) adjacent to SH-75, and runoff containment and control. Dust abatement and other activities along roads within the Proposed Project Area would be conducted consistent with requirements resulting from the consultation between the BLM and USFWS for road maintenance (USDI-FWS 2003).

The Applicant would be responsible for ensuring that invasive, non-native plant species associated with mining and exploration activities are not allowed to establish or spread at the quarry. The Project Site would be surveyed each spring by the Applicant for a period of 2 years following cessation of mining. The Applicant would employ a licensed herbicide applicator when herbicides are used to eradicate new weed infestations and treat Federal lands where weeds have spread from the quarry operations. Additional weed control could be completed using hand removal, or appropriate biological control. Weed treatments would be conducted consistent with the Challis BLM Field Office and the Custer County Noxious Weed Control Programs.

The Pit 1 waste rock storage area (waste dump) would be graded to match the contours of the adjacent naturally occurring talus slope (Figure 2.3-1). Straight lines on the waste rock storage area would be reduced to the extent possible. The talus slope and the waste rock storage area would be blended together to prevent distinct changes in rock form or color.

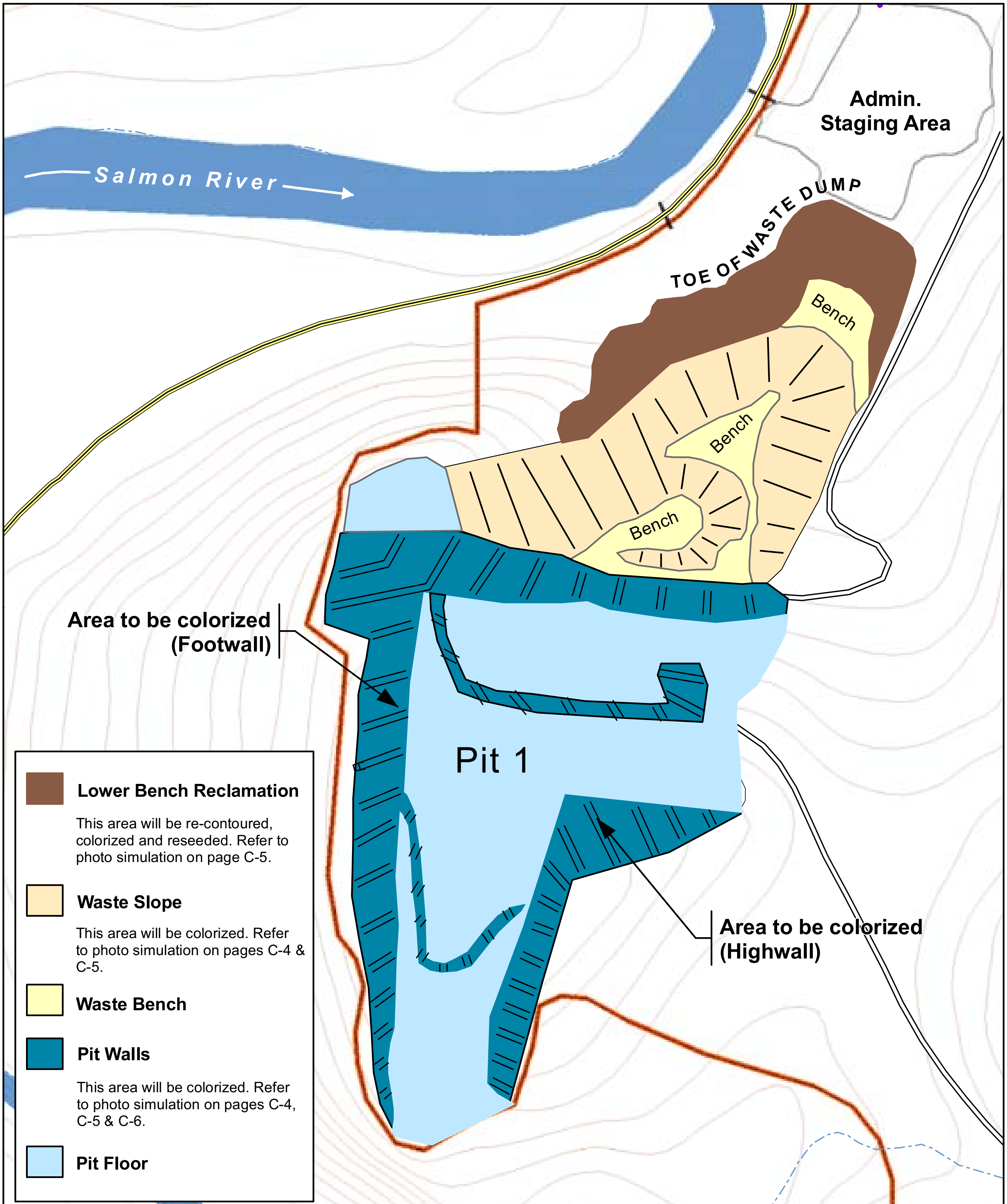


Figure 2.3-1. Reclamation Measures

Three Rivers Stone Quarry
L & W Stone

Waste rock would be allowed to be removed from a designated area of the Pit 1 waste rock storage area and used as rip rap following completion of reclamation activities. For a complete description of the community pit, see Section 2.4.12.

The portion of the Pit 1 footwall, highwall, and waste rock storage area visible from SH-75 and along the Salmon River corridor would be colored to help meet Visual Resource Management (VRM) Class II objectives (as required under the Interim Mining Plan; Figure 2.3-1). An exception would be for that portion of the waste rock storage area that would be designated as a community pit. As mining progresses downward in Pit 1 and more of the footwall becomes visible, no more than 50 feet of footwall height would remain uncolored. Coloration testing would be completed to meet the BLM VRM objectives, and the colors would be formulated to replicate the natural colors of the surrounding environment.

Waste rock deposited at the Pit 2 waste rock storage area would be constructed into 20-foot lifts. The face of the lifts would be contoured to a three-to-one slope, covered with the stockpiled topsoil and reseeded with a BLM-approved seed mixture (Appendix B).

2.4 PROPOSED PROJECT FEATURES COMMON TO ALL ACTION ALTERNATIVES (ALTERNATIVES B – D)

Mining operations would continue under Alternatives B, C and D at different levels of disturbance. However, these alternatives share many of the same project features; the common features are described below.

2.4.1 Administration and Staging Area

The administrative area and staging area for the mining operation would be approximately 5 acres in size. The area would consist of the administrative office (trailer), general supplies storage, and staging area for crated flagstone prior to shipping. All personnel or visitors entering the mine site would be required to check in at this location.

2.4.2 Transmission Line

A transmission line would be constructed into the administrative area to provide power to the office trailer. The transmission line would be constructed and operated by the Salmon River Electric Cooperative. The transmission line would be a single phase 14.4 kV line that would originate at the existing Salmon River Electric Cooperative Up River Line located approximately 0.5 miles north of the administrative and staging area. The line would consist of seven poles with an approximately 350-foot span between each pole. There would be two transmission lines on each pole. One line would be located at the top of the pole on an insulator. The second line would be located approximately 4 feet below the top of the pole on an insulator placed on the side of the pole. There would be no cross bars on the poles. The transmission line would run parallel to the east side of SH-75 for approximately 2,450 feet.

2.4.3. Fuel and Lubricant Storage

The Applicant would store various fuels and lubricants to support the mobile mining equipment used for mining activities. Fuels and lubricants would be stored at three separate locations to facilitate efficient fueling and maintenance of equipment. The fuel and lubricant storage areas would comply with the applicable regulations as described in 30 CFR 56.4101, 40 CFR Part 112, and IDL BMPs.

Fuel storage area #1 would be located in the administrative area. It would contain one 500-gallon diesel tank, a 250-gallon used oil tote and a 1,000-gallon tank for used oil.

Fuel storage area #2 would be located at the same location of the existing fuel storage area between Pit 1 and Pit 2. It would contain the following:

- One 3,000-gallon diesel fuel tank;
- One 250-gallon gasoline tote;
- One 250-gallon tote of motor oil;
- One 250-gallon tote of hydraulic oil;
- One 250-gallon antifreeze tote;
- Two 55-gallon rock drill oil drums, and
- One 250-gallon engine oil tote.

Fuel storage area #3 would be located in the Pit 2 waste rock area and would contain one 500-gallon diesel fuel tank

All fuel and lubricants would be stored within bermed containment areas lined with 10-millimeter plastic. The size of each containment area for fuel storage would vary depending on the volume of material stored at each location. The size of each containment area would be calculated according to the following formula:

> *Maximum volume of storage capacity + 10% + the 2 inches of potential precipitation from a 10-year, 24-hour storm event.*

2.4.4 Explosives Storage Areas

The proposed operations would include a storage silo for up to 40,000 pounds of ammonium nitrate delivered in bulk. The silo would be constructed in the administrative area on a concrete pad and foundation for better containment and effective material handling. The silo would be painted with BLM-approved colors to blend into the landscape. Ammonium nitrate is an oxidizer, in contrast to ammonium nitrate fuel oil (ANFO), which is a blasting agent. The ammonium nitrate would be transported from the silo to the blasting area by a bulk handling truck, in which the fuel oil would be mixed with the ammonium nitrate to produce ANFO.

Storage and usage of explosives would comply with Mine Safety and Health Administration (MSHA) regulations. The maximum quantity of ANFO that would be mixed and stored on site at one time is 15,000 pounds. Approximately 7,500 pounds of ammonium nitrate would be delivered twice per month, depending on actual production requirements. The ammonium nitrate would be bagged and in a pellet form.

Two explosives magazines would be used to store explosives per 30 CFR 56.6000 through 56.6201. The magazine on the west side of Pit 2 would contain ANFO. The magazine on the south side of Pit 2 would consist of two separate facilities for storage of the explosives. One would contain the blasting caps, detonator cords, and primers. The other would contain the dynamite. The magazines would be constructed and situated per 29 CFR 1910.109, i.e., highly secure, bullet-resistant, weather-resistant, fire-resistant, and sufficiently ventilated facilities surrounded by berms, with a 25-foot area cleared of flammable materials, and with the ground sloped away from the magazines. The magazines would be located in an area isolated from the view of any public roads or houses and painted with a BLM-approved color to minimize visual impacts. Warning signs would be located such that a bullet through the signs would not strike the magazines. The explosive magazines would be separated so that an explosion from either of the magazines would be unlikely to detonate the other or create a hazard to employees in the mine area (30 CFR 56.6131). In addition, the magazine locations would meet or exceed the setback requirements from public roads, mine haul roads, and magazine-to-magazine spacing. The magazines would be located so that downed power lines would not contact the magazines.

2.4.5 Drilling and Blasting

Rock would be loosened by drilling and blasting. Development rock (termed waste rock) is overburden, interburden, and lower grade flagstone (typically weakly-altered sedimentary rock) associated with the mining operation, which would not meet mine material specifications and must be removed to allow access to the defined zones of economic flagstone rock (ore).

Blast holes would be drilled with either a 4-inch diameter drill or a 6.75-inch diameter drill. The typical blasting pattern for flagstone would be 4-inch diameter drill holes approximately 12 feet deep on 10-foot centers. The typical blasting pattern for waste rock would be 6.75-inch diameter drill holes approximately 25 feet deep on 16-foot centers. There would be approximately 50 holes per pattern when blasting flagstone and 100 to 150 holes per pattern when blasting waste rock. Approximately 12 pounds of explosives would be used in each flagstone blast hole, and approximately 27 pounds of explosives would be used in each waste rock blast hole.

Blasts to remove overburden material typically use a powder factor of approximately 0.5 pounds per cubic yard. Typical powder factors for surface blasting range from 0.25 to 2.50 pounds per cubic yard depending on rock breakage difficulty.

If ground water is intercepted during drilling or blasting, all mining activity in the pit where water was encountered would be stopped. No dewatering would occur and mining operations for the given area would cease for the life of the project.

Only authorized personnel would be allowed in the vicinity of the blasting area. Employees and visitors would not be allowed to bring cigarettes, lighters, matches, or other highly flammable objects to the vicinity of the blasting area. Blasting would occur irregularly throughout the period of mining operation, with a maximum of two blasts on a given day. Blasting would occur approximately 4 times per week or could include several days of blasting followed by several days with no blasting. Number and schedule of monthly blasts would depend on production requirements and would vary depending upon alternative. The following steps would be taken before blasting:

1. The blasting area would be secured by barricades, and warning signs would be posted.
2. The blasting area would be inspected immediately prior to detonation.
3. The blasting area and a surrounding safety zone would be cleared of people prior to detonation.
4. A warning signal would be broadcast throughout the quarry area.
5. The blasting shot would be inspected.
6. When the blasting vicinity is clear of personnel and the shot has passed inspection criteria, detonation would occur.
7. After an inspection of the post-blast area, an “all clear” signal would be broadcast throughout the quarry area.
8. If a misfire occurs, the drill hole would be flagged. Once mining activities proceed to the location of the misfire, an excavator would carefully expose the

drill hole. If explosives are found, they would be "washed" from the hole and qualified personnel would attempt to find the detonation cord and/or primer. These would then be placed back into the magazine or detonated in place.

During the initial development of Pit 1 there were a few incidents of highwall instability above SH-75 as a result of blasting. This resulted in the movement of blocks in cliff faces to the north and west of the pit that required blasting to stabilize the highwall. Now that mining is occurring deeper in Pit 1, well below the top of the highwall, this is no longer occurring.

The project operations would continue to comply with all MSHA regulations (30 CFR Part 56) and all Bureau of Alcohol, Tobacco, Firearms, and Explosives regulations (27 CFR Part 55) concerning explosives storage, handling, and detonation.

2.4.6 Rock Handling

Waste rock would be removed after blasting by loaders and haul trucks, exposing the flagstone. The flagstone then would be removed from the ground by hand or with the assistance of a hydraulic excavator. Some flagstone would be further split by hand, and all flagstone would be placed by hand on pallets. The pallets would be loaded onto flatbed trucks and transported from the splitting areas to the administrative area. The pallets would be shipped from the quarry by highway-licensed, semi-trucks. The location of flagstone splitting activities would vary based on worker safety, available space, and efficiency; and would typically, but not always, occur in the pits or waste rock storage areas. Heated tents would be provided on site to allow a portion of the employees that split flagstone by hand to work through the winter.

The only manufacturing activities or chemical processing that would occur at the quarry site is the manufacturing of ANFO for blasting purposes. The Applicant has a flagstone processing, storage and shipping facility located in Idaho Falls where approximately 30 percent of the flagstone leaving the quarry would be sent. A portion of the material sent to this facility would be processed in a rock tumbler and then shipped to retail facilities across the western United States.

Supplies and flagstone would be stored in the administrative area. A semi-circular, gravel-covered, load-out driveway would be constructed in the administrative area to minimize mud and dirt tracked on the highway from semi-trucks leaving the area. Semi-trucks would enter the circular driveway where a forklift would load them. Trucks waiting to be loaded would be staged in the administrative area where ample parking is available.

2.4.7 Pit 1 and Pit 2 Waste Rock Storage Areas

Under all action alternatives, no additional waste rock material would be deposited into the Pit 1 waste rock storage area. A portion of the Pit 1 waste rock would be made available as a mineral material by sale or free-use permits in the form of a community pit (see Section 2.4.12). The Pit 1 waste rock storage area would be reclaimed as described under Alternative A (see Section 2.3.1).

The Pit 2 waste rock storage area is located in the upper portion of an ephemeral drainage above the administration area and to the east of Pit 2. The area has slopes that are approximately 10 percent in grade. The Pit 2 waste rock storage area would continue to accept waste rock material from Pit 1 and Pit 2. Topsoil would be stripped from the waste rock storage area and stockpiled nearby for use in reclamation. Reclamation at the Pit 2 waste rock storage area is and would continue to occur concurrently with mining activities at the quarry. Waste rock would be deposited and constructed into 20-foot lifts. The face of the lifts would be contoured to a three-to-one slope, covered with the stockpiled topsoil and reseeded with a BLM-approved seed mixture (Appendix B).

2.4.8 Topsoil Salvage and Storage

The proposed topsoil stockpile site would be on a flat area above the drainage to East Fork Salmon River. The topsoil stockpile would be graded and seeded to minimize erosion and soil loss by wind and water if not used within 6 weeks for reclamation. The proposed topsoil storage site would be approximately 0.9 acres in size and would be large enough to hold all stockpiled topsoil removed from the Pit 2 waste rock storage area and all other areas where topsoil is removed. Topsoil would be used in reclamation activities occurring as mining progresses (concurrent reclamation).

2.4.9 Quarry Access Roads

The main access road extends from the administration-staging area up a slope to the east side of Pit 1. The access road to Pit 2 would extend from the east side of Pit 1 around the southern edge of a low-lying knob and across a relatively flat area to Pit 2. The main access roads would be generally 30 feet in width with an outside berm constructed to at least mid-axle height of the largest self-propelled mobile equipment which usually travels the access road. Secondary quarry roads would generally be 15 feet in width.

2.4.10 Equipment and Vehicle Maintenance

The equipment used at the project site would be typical of surface mining operations and would include drill rigs, hydraulic excavators, front-end loaders, 30-ton and 40-ton haul trucks, dump trucks, water trucks, flat-bed trucks, bulldozers, service trucks, a grader, fork lifts, light trucks, and personnel transport vehicles. Each piece of equipment would be fitted with its required safety devices, and all equipment would be operated in compliance with all MSHA regulations concerning equipment operator safety, and the safety of other workers. Equipment speeds for the proposed operations would be consistent with the driving conditions and the type of equipment (30 CFR 56.9101).

The heavy equipment used primarily in the pits would be maintained and stored in the pits where it would not be visible from outside the project site. The more mobile equipment would be used and stored anywhere within the perimeter of the operations. Mine vehicles would be properly maintained at all times to minimize leaks of motor oils, hydraulic fluids, and fuels. The equipment would be serviced (oil changes, lubrication, minor repairs) by an equipment maintenance company.

The maintenance of equipment that is authorized for highway travel would be performed off-site at an appropriate facility. Equipment that is not highway-authorized would be serviced on the project site. Equipment would be fueled or maintained at one of the three fuel storage areas. Equipment that is immobilized due to break down during operation would be repaired at the location of break down. A Spill Prevention, Containment and Countermeasure Plan would be prepared for the Proposed Project and would contain information regarding training, equipment inspection and maintenance, and refueling for mine equipment, with an emphasis on preventing spills. The equipment maintenance company would be required to dispose of all oils, lubricants, and antifreezes offsite in accordance with State and Federal environmental requirements.

2.4.11 Public Access

Due to liability and safety concerns, the general public would not be allowed access to the quarry without first coordinating with personnel, and then, access would be restricted and only allowed if accompanied by a quarry employee. Gates are installed along the only public access route through the Proposed Project area. The gates are located at the entrance to the project site from SH-75 and on the existing power-line road to the south of the quarry. The south gate would remain locked at all times. The gate at SH-75 would be locked during periods of non-operation. Signs with a contact name and phone numbers for the Applicant and the BLM would be posted on all gates.

2.4.12 Mineral Material Disposal

The BLM may dispose of mineral materials by sale or free-use permits from areas designated as a community pit (43 CFR 3603). These pits are for noncommercial or small-scale collection. Mineral materials are some of the most basic natural resources, such as sand, gravel, dirt, and rock used in every day building and other construction uses. Adequate local supplies of these basic resources are vital to the economic life of any community. BLM policy is to make these materials available to the public and local governmental agencies whenever possible and wherever environmentally acceptable. BLM sells mineral materials to the public at fair market value, but provides them free to states, counties, or other government entities for public projects. Also, a limited amount may be provided free to non-profit organizations under a free-use permit.

Regulations which guide the BLM mineral materials program are found in 43 CFR 3600. Regulations governing sale contracts and free-use permits for mineral materials are contained in 43 CFR 3602 and 43 CFR 3604, respectively.

Under all action alternatives waste rock would be allowed to be removed from a designated area of the Pit 1 waste rock storage area. During the ongoing operation of the quarry, due to public safety considerations, only government entities or their representatives would be allowed access to the waste rock material. Following completion of quarry activities and during implementation of reclamation, a plan would be developed that would allow continued access to the waste rock by government entities and additionally allow access by the general public for obtaining rip rap and other construction material.

The amount of waste rock that would be removed as a mineral material from the Pit 1 waste rock storage area is estimated to be as much as 20,000 cubic yards per year. The volume of waste rock removed would be dependent upon the local need for the material and the distance to other sources of similar material from building or construction sites. The BLM would designate a portion of the waste rock storage area as a Community Pit under its 43 CFR 3600 Regulations. Due to the large quantities of waste rock currently on site it is likely that only a small portion of the total volume would be removed for mineral material uses in the next 40 years.

2.4.13 Sanitation

Sanitation facilities would consist of portable toilets for all personnel. The toilets would be distributed at the project site according to location of work being performed. The toilets would be provided and serviced by a licensed contractor.

2.4.14 Best Management Practices

All action alternatives would be implemented in accordance with State of Idaho Best Management Practices for Mining (Appendix B). The BMPs in Appendix B are designed to guide mining activities and to minimize potential environmental and public safety impacts. These include, but are not limited to dust abatement, erosion control, revegetation, hazardous materials, and noxious weed management.

2.4.15 Chemical Spill Prevention, Control and Countermeasures Plan

A Chemical Spill Prevention, Control, and Countermeasures Plan is currently in place and would continue to be implemented under all action alternatives. The plan has been prepared in compliance with guidelines established in 40 CFR Part 112 (oil pollution prevention requirements of the United States (US) Environmental Protection Agency (EPA) and Idaho Mining BMPs) (Idaho Department of Lands 1992). In Idaho, a spill is defined as any discharge of hazardous material, oil, or petroleum product into or adjacent to water that might have potentially harmful effects. The only chemicals that would be stored on site are petroleum products used in the fueling, lubrication and general maintenance of vehicles and equipment.

Valves on tanks would be designed so that any flow from the valve would be contained within the containment area. Tanks would be equipped with flexible hoses for draining the contents. The gravity-fed hosing would be assembled and maintained in a manner to minimize the potential for punctures and leaks. The hosing and associated fittings would be capable of the pressures and stresses of carrying the flammable liquid and material would be compatible with the contained liquid. All tanks would be labeled as to their contents. All tanks would be vented to prevent development of excessive pressure or vacuum. Both the tank and the vents would be isolated from ignition sources. Above-ground storage tanks would be securely mounted on firm foundations. Storage tanks for flammable or combustible liquids would be built to withstand the pressures and stresses of holding the liquid. The tank composition would be compatible with the liquid that is stored. Tanks would be maintained and handled in a manner that would minimize the potential for punctures and leaks.

All tanks with petroleum products would be stored above ground, allowing easy, rapid and thorough inspections. The tanks would be inspected by L&W Stone personnel weekly for any signs of weakness or deterioration. The tank inspection also would include checking for dents, drip marks, discoloration of tanks, puddles containing spilled or leaked material, corrosion, cracks, and localized dead vegetation or soil stains. The tank foundation and containment area would be inspected weekly for cracks, discoloration, puddles containing spilled or leaked material, settling, gaps between the tank and foundation, and damage caused by vegetation roots. Spill cleanup kits would be stored in the general vicinity of the chemical storage facilities. Mine personnel would be trained to report all spills, regardless of size or quantity, immediately to one of the site managers. The following information about the spill would be reported:

- The name of the substance that spilled or leaked,
- An estimate of the quantity that spilled or leaked,
- The time and duration of the release,
- Where the release was deposited,
- Why the release occurred, and
- Any immediate health and safety, or environmental threats or issues.

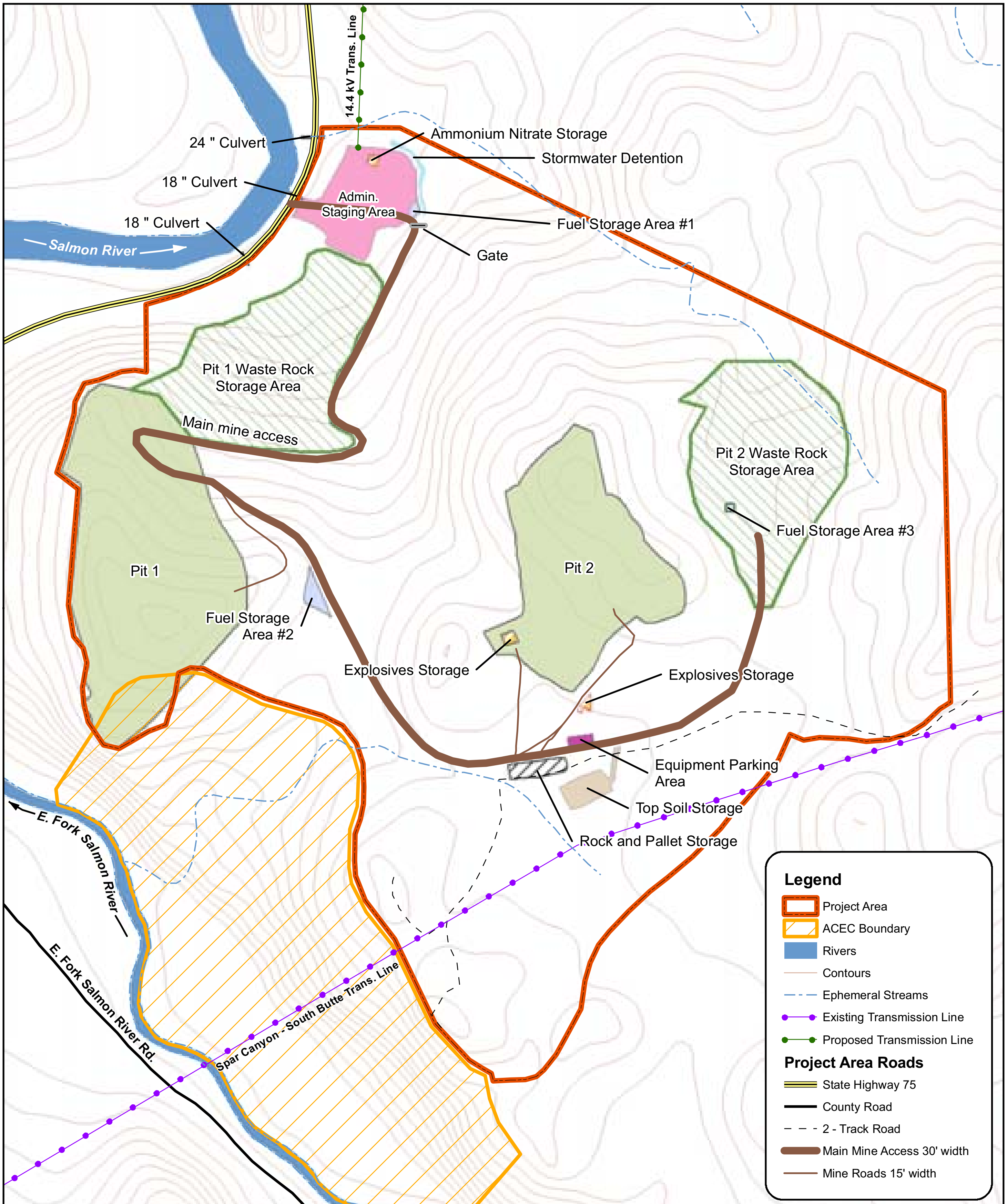
Spills that must be reported immediately to State and Federal agencies (including the BLM Challis Field Office) include the following:

- Spills of any petroleum hydrocarbon substance that exceeds 25 gallons,
- Spills that cannot be totally cleaned up within 24 hours, and
- Spills of any substance that reach a surface water body.

Trained mine personnel would respond immediately to contain the spill; with the first step, as in any emergency situation, being to ensure that personal safety is not threatened. The spill response procedures would be included in the Chemical Spill Prevention, Control, and Countermeasures Plan.

2.5 ALTERNATIVE B

Alternative B was developed as a result of the lawsuit brought by the Western Watershed Project. This alternative would be a continuation of the Interim Mining Plan that was developed by L&W Stone and approved by District Judge Winmill to enable mining activities at the Three Rivers Stone Quarry during the preparation of this EIS. The purpose of Alternative B is to allow the continuation of mining activities while minimizing the overall footprint of the quarry; no exploration activity would be allowed. All descriptions or aspects of mining listed above in Section 2.4, Proposed Project Features Common to all Action Alternatives, would be included in Alternative B. The proposed operations would consist of an administrative area on the valley floor and two open-pit (surface) mines on the adjacent ridge: Pit 1 and Pit 2 (Figure 2.5-1). In addition, development would include a waste rock storage area, haul roads, interceptor trenches, sediment traps, roll berms, roll ditches, explosives magazines, portable trailers, storage tanks, and a variety of transport vehicles and heavy equipment that would be used for mining activities. Proposed operational features of the quarry under Alternative B are summarized in Table 2.5-1 and described in the following sections.



N W E S

Figure 2.5-1. Alternative B

0 250 500 1,000 1,500 2,000 Feet

1:8,200

Three Rivers Stone Quarry
L & W Stone

Table 2.5-1. Alternative B Operational Features.

Period of Operation	3-5 years
Work Force	Year-round employees39* Seasonal employees 36*
Acres of surface disturbance	
Existing	92
Proposed New	8
Exploration	None
Total	100
Material removed per year (waste rock and flagstone)	100,000 tons**
Number of blasts per month	Overburden 10** Flagstone 6**
Truck loads of flagstone leaving the quarry per year	800 to 1,200 trucks**
Water source	Off-site surface
Water use	10 acre-feet per year (55,000 gallons, maximum daily use)

* The number of employees would be reduced to less than 50 once Pit 1 was mined out.

** Once Pit 1 is mined out the amount of material removed, the number of blasts needed to remove overburden, and the number of trucks trips needed to transport material would be substantially reduced.

2.5.1 Pits

Under Alternative B, mining would continue in Pit 1. According to the Interim Mining Plan, the highwall would be laid back at a maximum rate of 30 feet per year to expose additional flagstone deposits. This would result in Pit 1 being mined out in 3 to 5 years as the flagstone deposit becomes inaccessible. Mining activities in Pit 2 would be limited to mining 15 feet in depth and expanding the pit 15 feet to the southwest each year (Figure 2.5-1).

2.5.2 Mining Sequence

Under Alternative B, mining would continue concurrently in Pit 1 and Pit 2. Waste rock from both pits would be deposited at the Pit 2 waste rock storage area. Under Alternative B it is anticipated that Pit 1 would be mined out well in advance of Pit 2. Therefore, once mining activities at Pit 1 have been completed, waste rock from Pit 2 would no longer be deposited at the Pit 2 waste rock storage area, but would be diverted to Pit 1 and used as backfill. Mining would continue at Pit 2 until the flagstone deposits there were mined out in 3 to 5 years. Following the completion of mining in Pit 2, all remaining reclamation activities would be completed.

2.5.3 Work Schedule, Personnel and Mine Production

Based on the restrictions on expansion of Pit 1 that are imposed by the Interim Mining Plan, the Applicant estimates that mineable flagstone resources exist to support a mine life of 5 years under Alternative B. Under Alternative B mine production would occur in Pit 1 for 3 to 5 years and in Pit 2 for up to 5 years. Because of the reduced area of operation, mining activities would likely occur for 10 to 12 hours per day, 5 days per week. However, production would vary with market demand, mine logistics, quality of flagstone, and weather conditions.

Approximately 75 employees would be required at the peak of mine production. Approximately 39 year-round employees would be needed including truck drivers, heavy equipment operators (bulldozers, loaders, track hoes, drillers), explosive technicians, vehicle maintenance technicians, general maintenance staff, and rock splitters and handlers. A total of about 36 seasonal workers would be needed on a daily basis. These workers would consist primarily of rock splitters (the workers in the pits who actually split the flagstone into saleable pieces) who typically would work from April through December of each year.

2.5.4 Traffic

Workers would travel to the Three Rivers Stone Quarry site in personal vehicles. Many workers would carpool to the site, and this number would vary by season. For the purposes of analysis it is assumed that the carpool rate would be two individuals in each vehicle. The majority of workers, approximately 37 personal vehicles per day, would travel from Challis and back each day along SH-75 to the quarry.

The delivery of the quarried flagstone from the quarry to wholesale and retail markets would occur by commercial trucks hauling on county, state, and Federal roads and highways. Under Alternative B, approximately 800 to 1,200 truck trips per year would be required to transport the flagstone from the quarry to market. Trucks leaving the quarry would take one of two routes. Approximately 100 to 150 trucks (12%) per year would travel south on SH-75 passing through the towns of Stanley and Ketchum (Figure 2.5-2). The majority of trucks, approximately 700 to 1,050 (88%) per year, would travel north on SH-75 to the town of Challis and then travel south on US-93 to the town of Arco. From Arco, two routes would then be used. Approximately 200 to 300 trucks (30%) would travel east on US-20 to the Applicants processing, shipping and storage facility in Idaho Falls, and another 500 to 750 trucks (70%) would travel southwest on US-20/26/93. From these locations the trucks would further disperse to market locations throughout the western United States.

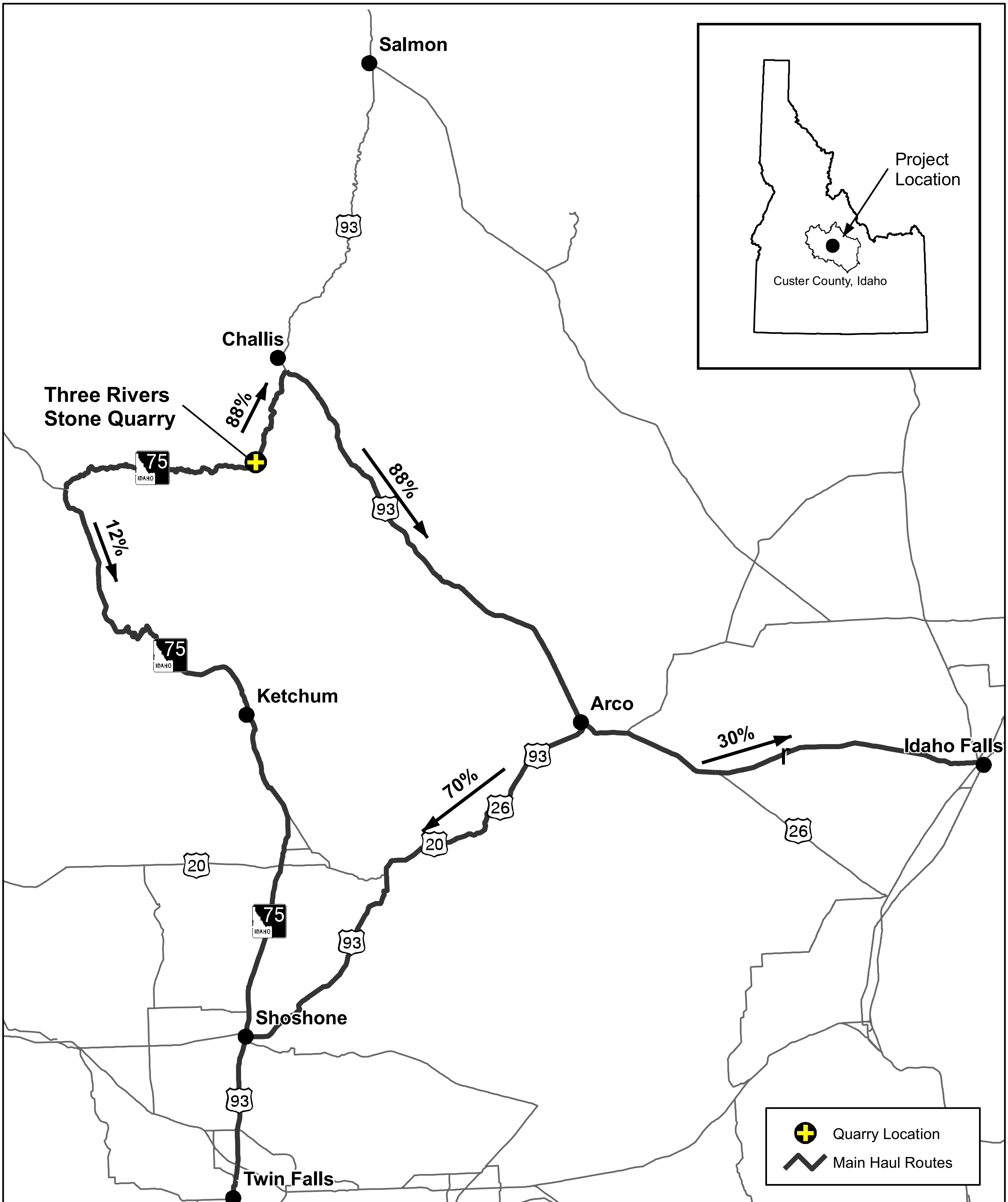


Figure 2.5-2. Truck Transportation of Rock

N
W
E
S

0 5 10 20 30 40 Miles

Three Rivers Stone Quarry
L & W Stone

2.5.5 Water Consumption

Water would be obtained from the existing screened diversion on the Salmon River located approximately 1 mile north of the administrative area under a permanent water use permit from the IDWR associated with property owned by L&W Stone. To comply with the IDWR water use permit, the pipe used to obtain water from the Salmon River would be screened with mesh size of 3/32 of an inch. In addition, water would only be drawn from the river between April and November of each year. Water would be drawn from river into an approximately 0.50-acre holding pond so that it would be available for use at the quarry throughout the spring and summer months.

It is estimated that approximately 10 acre-feet per year of water would be needed each year of operation, with maximum daily use estimated at 55,000 gallons. Nearly all of the water would be used for dust suppression on mine roads, pits and other areas of surface disturbance. Some additional water would be used for reclamation activities including compaction and irrigation of planted areas. A 3,500 gallon water truck fitted with front and rear spray booms would be used for dust suppression activities.

2.5.6 Sediment and Erosion Control and Stormwater Management

Under Alternative B, runoff from the project site flows either to an ephemeral drainage of the East Fork Salmon River or passes under SH-75 to the Salmon River through three corrugated metal pipe culverts (18 inches to 24 inches in diameter). Straw bales would continue to be placed upgradient of the culverts to trap sediment. The existing stormwater detention trench (interceptor trench) would border the northeast perimeter of the administrative area and end in a sediment trap (shallow pit) located just north of the administrative area (Figure 2.5-1). State of Idaho Mining BMPs would be used in an effort to minimize potential sediment delivery to the East Fork and Salmon rivers (IDAPA 20.03.02.140; IDL 1992; Appendix B).

2.5.7 Reclamation

Reclamation under Alternative B would be the same as described under Alternative A.

2.6 ALTERNATIVE C

Alternative C is the BLM Preferred Alternative from the 2004 EA. All descriptions or aspects listed above in Section 2.4, Proposed Project Features Common to all Action Alternatives, would be included in Alternative C. This alternative is similar to Alternative B in that mining would continue in Pit 1 and Pit 2 (Figure 2.6-1). However, the proposed operations would increase the amount of surface disturbance and could take place for up to

30 years. The expansion would occur by increasing the mine production in Pit 1. The east highwall of Pit 1 would be laid back up to 90 feet per year to expose more of the flagstone deposit that continues down into the bedrock below it. A portion of the existing Pit 1 waste rock storage area covers mineable flagstone. Therefore, a portion of this material would be moved to the Pit 2 waste rock storage area to allow the flagstone to be mined. It is estimated that 6 million tons would be moved from the Pit 1 waste rock storage area to the Pit 2 waste rock storage area.

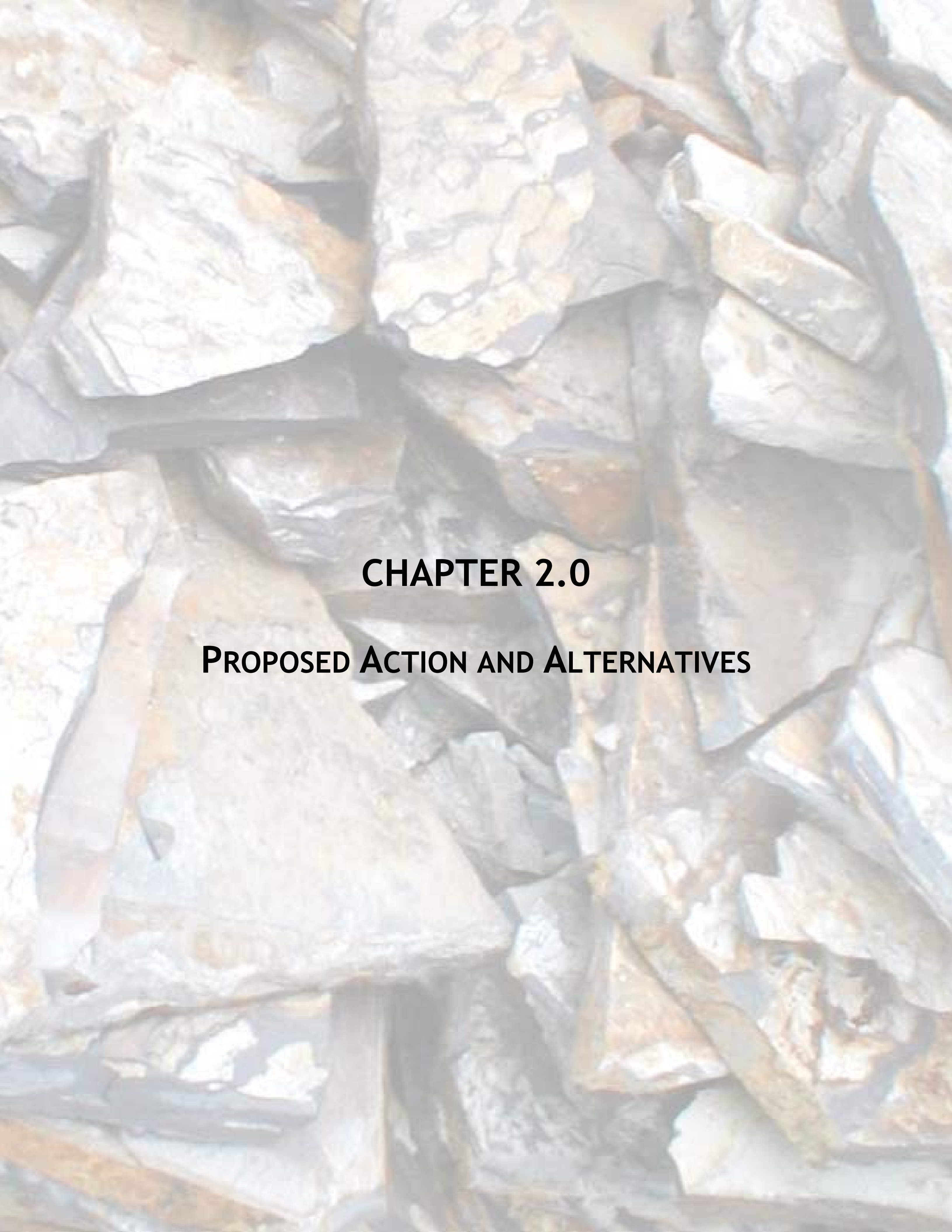
Existing mining activities would continue at Pit 2. Alternative C also includes exploration of an approximately 31-acre area for additional flagstone deposits (Figure 2.6-1). Proposed operational features of the quarry under Alternative C are summarized in Table 2.6-1 and described in the following sections.

Table 2.6-1. Alternative C Operational Features.

Period of Operation	30 years
Work Force at the mine site	Year round employees 61 Seasonal employees 39
Acres of surface disturbance	
Existing	92
Proposed New	49
Exploration	31
Total	172
Material removed per year (waste rock and flagstone)	240,000 tons
Number of blasts per month	Overburden 10 Flagstone 6
Truck loads of flagstone leaving the quarry per year	1,200 to 1,500 trucks
Water source	On site well
Water use	87,000 gallons, maximum daily use

2.6.1 Pits

Two pits are proposed to be expanded under Alternative C (Figure 2.6-1). The proposed final configuration of Pit 1 would be approximately 2,000 feet long, 900 feet wide (at the widest point), and 500 feet deep (measured from the highest point) with a pit floor elevation of 5,425 feet amsl. The southern end of Pit 1 would remain intact as a visual barrier from the East Fork Salmon River.



CHAPTER 2.0

PROPOSED ACTION AND ALTERNATIVES

The purpose of this chapter is to identify and describe the alternatives associated with the proposed Three Rivers Stone Quarry Expansion Project (Proposed Project). Under the National Environmental Policy Act (NEPA), agencies must:

> "rigorously explore and objectively evaluate all reasonable alternatives and for alternatives which are eliminated from detailed study, briefly discuss the reasons for their having been eliminated [(40 Code of Federal Regulations (CFR) 1502.14(a))]."

The Environmental Impact Statement (EIS) shall examine all reasonable alternatives to the proposal (40 CFR 1502.14). In determining the scope of alternatives to be considered, the emphasis is on what is "reasonable" rather than whether an applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are technically and economically practical, are feasible, and use common sense, rather than simply being desirable from the standpoint of an applicant or an interested party (Council of Environmental Quality [CEQ] 46 FR 18026 [March 23, 1981] as amended).

In this document the words quarry or quarry site are used to describe the physical boundary of the Three Rivers Stone Quarry. The words mine or mining activities are used to describe any and all actions used to remove the locatable mineral from the quarry. The words Proposed Project or Proposed Project Area are used to define the quarry or quarry site and all of the mining activities and actions associated with it.

2.1 HISTORICAL AND CURRENT OPERATIONS

The Bureau of Land Management (BLM) case file shows interest in the building stone from the site dating from May 1966 (USDI-BLM 2003c). Rock was intermittently mined at the site through 1990, when increased mining activity caused the surface disturbance to increase from less than 5 acres to approximately 16 acres by May 1992. The Challis Field Office approved a Plan of Operations for the quarry on December 8, 1992 (USDI-BLM 1992). The operations increased in size to approximately 50 acres by August 2002, with the development and expansion of two pits. The quarry is now one of the largest single flagstone quarries in the United States with products sold in 33 cities (Challis Messenger 2003).

By 2000, the BLM determined that the operations were substantially outside the terms and conditions of the approved Plan of Operations. As a consequence, the financial guarantee held by the BLM was determined insufficient to reclaim the site. The Idaho Department of Lands also expressed concerned about the inadequacy of the bond. L&W Stone was informed on a mine tour September 12, 2000 and by a letter dated February 21, 2001 that the approved Plan of Operations was inadequate for the level of activity that had occurred and for the expansion that was anticipated by L&W Stone.

Currently, the quarry has approximately 92 acres of surface disturbance (primarily the administrative area, Pit 1, Pit 2, waste rock storage areas and access roads). This area of disturbance represents the cumulative result of mining at the site over the last 30 years by L&W Stone and previous operators (Figure 2.1-1).

The existing administration staging area covers approximately 5 acres. This area serves as the general administrative area for the mining operation and consists of an office trailer, a storage trailer for general supplies, a staging area for crated flagstone, a truck loading area, and an employee parking area. In addition, the staging area has two used oil storage tanks (250 and 1,000 gallon) and one 500-gallon diesel fuel tank. All fuel and oil storage tanks are sited within containment areas consisting of unlined earthen berms. An approximately 0.2-acre stormwater detention basin is located on the northeast side of the staging area.

Pit 1 is approximately 20 acres in size and is where the majority of historic and current mining activity and production occurs. Pit 1 is located approximately 1,500 feet to the southwest of the administration staging area. The pit is a slot cut with highwalls on both the east and west sides, a developing highwall on the south end, and no highwall (is open) at the north end. At present, the pit is approximately 2,000 feet long and 115 feet deep. The highest point on the rim of Pit 1 is at an elevation of 5,920 feet and the current pit floor elevation is approximately 5,805 feet above mean sea level (amsl). The top of Pit 1 is approximately 700 feet wide (east to west) and the floor of the pit is approximately 250 feet wide by 1,300 feet long (north to south).

Pit 2 is approximately 16.8 acres in size and is located approximately 2,000 feet south of the administration staging area. At present, Pit 2 is approximately 1,000 feet long and 400 feet wide. Pit 2 contains mineable flagstone at the surface and therefore does not have a highwall associated with the pit.

Located between Pit 1 and Pit 2 is a fuel and lubricants storage area. This area contains a 3,000 gallon diesel fuel tank, a 250 gallon gasoline tank, a 250 gallon used oil storage tank and miscellaneous bulk lubricants storage. Again, all fuel and oil storage tanks are sited within unlined bermed containment areas.

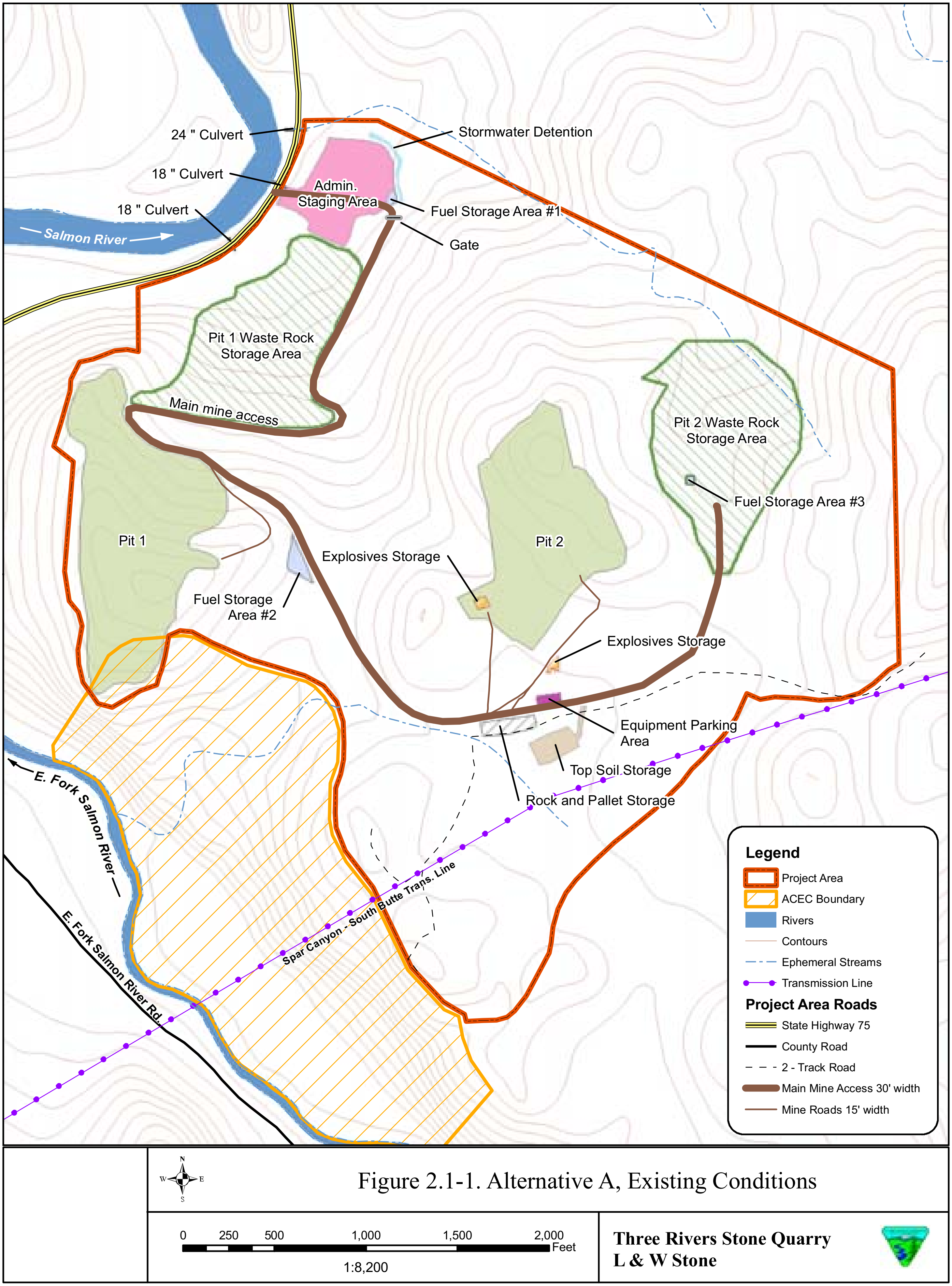


Figure 2.1-1. Alternative A, Existing Conditions

Three Rivers Stone Quarry
L & W Stone

Located north of Pit 1 is a waste rock storage area. Until 2004 waste rock from Pit 1 was deposited at this location on the slope north of Pit 1 and above the administration and staging area. Currently this waste rock storage area covers approximately 15.8 acres. Waste rock from Pit 2 was originally deposited along the southwest edge of Pit 2. In 2005, a new waste rock storage was developed to the east of Pit 2. Currently all waste rock from both Pit 1 and Pit 2 is now deposited in the new waste rock storage area. This new waste rock storage area is currently 16.4 acres in size. A 500 gallon diesel fuel tank is sited within the Pit 2 waste rock storage area.

Located at the south and southwest edge of Pit 2 are two explosive storage areas totaling approximately 1.2 acres in size. The explosives storage area to the southwest contains the ammonium nitrate. The storage area to the south contains separate facilities for storage of the explosives, such as blasting caps, detonator cords, primers, and dynamite.

Located south of Pit 2 is an equipment parking area. This area is used to park mine equipment when not in use or while awaiting repair. The equipment parking area is approximately 0.2 acres in size.

Directly south of the equipment parking area are two storage areas. Pallets loaded with flagstone awaiting transfer to the administrative and staging area are stored temporarily on a 0.5-acre area. Directly adjacent to the pallet and rock storage area is an area used to store topsoil that would be used for reclamation. The topsoil storage area is approximately 0.9 acres in size.

There are approximately 1.9 miles of quarry roads that have disturbed approximately 5.8 acres. The main access road extends from the administration and staging area up to the northeast side of Pit 1 (Figure 2.1-1). The access road to Pit 2 extends to the south from the main access road, passes through a small saddle, and then curves to the east. The main quarry access road is approximately 30 feet in width. Other mine roads are approximately 15 feet in width. There are several old quarry roads that have been recontoured and reseeded with BLM-approved native seed mixes that are still visible within the area of operations.

Additional areas of surface disturbance within the Proposed Project Area include approximately 9 acres consisting of “two-track” roads and reclaimed mining roads that are no longer needed for quarry operations. The Spar Canyon-South Butte 230 kilovolt (kV) Transmission Line crosses the southern portion of the Proposed Project Area. An unimproved, gated “two-track road parallels the transmission line and provides access to portions of the applicants mining claims as well as access to Spar Canyon located to the east of the Proposed Project Area. Other “two-track” roads exist on the site that provides limited access to areas south of Pit 2.

L&W Stone gets water for dust suppression from a permanent water right associated with an L&W Stone-owned property approximately 1 mile north of the administration area on State Highway 75 (SH-75). Water is obtained from a screened diversion on the Salmon River under Idaho Department of Water Resources (IDWR) water right 72-7247. In addition to water use on this privately-owned property, this property is used as an off-site office and for equipment storage associated with current operations of the Three Rivers Stone Quarry.

2.2 PROPOSED ACTION AND ALTERNATIVES TO THE PROPOSED ACTION

This Draft EIS considers four alternatives:

Alternative A:	The No Action Alternative
Alternative B:	Continuation of the Interim Mining Plan
Alternative C:	Preferred Alternative from the 2004 EA
Alternative D:	Proposed Action and BLM Preferred Alternative

These alternatives have been developed in accordance with CEQ regulations to provide decision-makers and the public with a clear basis for choice (40 CFR 1502.14). A detailed description of these alternatives is provided below. Whichever alternative is selected, L&W Stone would submit a Plan of Operations to the BLM as required by 43 CFR 3809 that is consistent with the alternative and contains engineered diagrams and details of the proposed operations. This Plan of Operations would become part of the Record of Decision.

2.2.1 Alternatives Considered and Eliminated from Detailed Study

Applicant’s 1992 Plan of Operations

A November 1992 Plan of Operations, which proposed a maximum of 16.3 acres of surface disturbance for the quarry was analyzed (EA #ID-040-3-4) and approved by the Challis Field Office on December 8, 1992. The 1992 Plan of Operations included an administration area and three separate pits. By August 2002 the operations had increased well beyond the approved 16.3 acres to over 50 acres in size. Implementation of the 1992 Plan of Operations is no longer feasible because the 16.3 acres proposed in the 1992 plan has been enveloped by the expanded operations. For this reason, this alterative is not carried forward or analyzed in detail in this EIS.

Applicant's Proposed Action from the 2004 EA

This alternative was developed by The Applicant as the Proposed Action in 2002 for analysis in the Environmental Assessment (EA) that was completed in 2004 (USDI-BLM 2004). This alternative was not selected as the Preferred Alternative in the 2004 EA because it did not include standard Best Management Practices (BMPs) and mitigating measures. For these reasons, this alternative is not carried forward or analyzed in detail in this EIS.

Complete Backfill of Pit 1

BLM's 43 CFR 3809 Regulations do not require that pits or quarries be backfilled as part of the Plan of Operations approval. The Regulations do require that reclamation be completed so as to prevent unnecessary or undue degradation of the public lands.

An analysis conducted by the BLM in 2005 indicated that it would cost over $6 million to move the waste rock that existed at that time from the Pit 1 waste rock storage area back into Pit 1. For these reasons, the total Pit 1 backfill alternative is not carried forward or analyzed in detail in this EIS.

Mining Deeper in Pit 1

A 40-foot thick flagstone unit exists beneath the flagstone unit that is currently being mined in Pit 1. It is possible that this unit could become economic to mine sometime in the future. However, mining the underlying unit would require extending Pit 1 further south into the East Fork Salmon River Bench Area of Critical Environmental Concern/Research Natural Area (ACEC/RNA) as well as to the north to the edge of SH-75. The footwall of Pit 1 would also be lowered substantially, making more of the operation visible from SH-75. The floor of Pit 1 would also be much closer to the surface water elevation of the East Fork Salmon and Salmon rivers. Because of the potential impacts associated with this alternative, the alternative is not carried forward or analyzed in detail in this EIS.

2.3 ALTERNATIVE A (NO ACTION)

Background: As required by NEPA, this Draft EIS includes Alternative A, a No Action Alternative, that serves as a baseline against which the action alternatives can be compared and is presented to provide the best possible reference condition against which to compare the Proposed Action and other alternatives. This baseline also discloses the effects of not authorizing expansion of and continuation of mining at the quarry.

Alternative A would result in the cessation of mining activities and the implementation of reclamation measures as outlined below.

2.3.1 Reclamation

The main objectives of the reclamation would be the following:

- Stabilize and protect surficial soils (minimize wind and water erosion);
- Protect public health by eliminating hazards;
- Protect surface and ground water resources;
- Meet post-mining land uses;
- Minimize view-shed issues (visual impacts);
- Remove operational structures and equipment and regrade, add topsoil, and reseed waste rock piles;
- Reclaim and revegetate operational roads and other disturbed areas;
- Establish a weed management program; and
- Color the Pit 1 footwall, highwall, and waste rock storage area to meet BLM VRM Class II Objectives.

All reclamation activities would be completed by L&W Stone within 2 years of cessation of mining operations.

All roads associated with the operations, except the power-line access road, would be ripped, recontoured to blend with the natural slope, and revegetated. The power-line access road, which includes a portion of the main mine access road beginning at SH-75, would be reclaimed to a single-lane road for future public access, and gates would be removed. The gravel covering the surface of the administrative-staging area would be removed to the extent necessary to create a plantable seedbed and placed in the Pit 2 waste rock storage area. The area would then be ripped and seeded.

Pit 1 and Pit 2 would be left in their final mining configurations. Pits would not be back filled. However, pit floors would be sloped to allow drainage from the pits and any berms for retaining water would be removed. Drainage would be directed toward natural drainages. All trenches, ditches, sediment traps, silt fences, and other sediment control structures, except those left as necessary for successful reclamation would be removed. Subsequent removal of sediment retention structures would occur as reclaimed areas are deemed stable by the BLM. The reclamation would not cause any surface disturbance, including rock fall, outside of the operation perimeter.

Reclamation of all areas disturbed by mining activities, with the exception of the pit walls, would occur during and following completion of specific mining operations. These areas would be reclaimed using soil stockpiled during operations and planted with BLM-approved seeds or container-grown species. The seed mix would represent a desired plant community appropriate for each ecological site description in the Proposed Project Area. The species mix would include, but not be limited to bluebunch wheatgrass (*Pseudoroegneria spicata*), Wyoming big sagebrush (*Artemisia tridentata sp. Wyomingensis*), Indian ricegrass (*Achnatherum hymenoides*), and bottlebrush squirreltail (*Sitanion hystrix*). Seed application procedures would follow established agency protocols and the best knowledge regarding reclamation of rocky mine sites. Vegetative reclamation would be considered successful when total vegetative cover of desired species reaches 15 to 25 percent foliar cover for 2 successive years on reclaimed areas.

If grazing occurs in the Split Hoof Allotment, and if revegetation efforts are hampered by cattle grazing, cattle would be restricted from the revegetated areas until vegetation is sufficiently established. If these restrictions are outside of the terms and conditions of the current grazing permit, modifications to the permit would be made.

Erosion control measures to reduce the potential for fines to enter fish bearing streams would include graveling selected roads and parking areas (equipment staging area) adjacent to SH-75, and runoff containment and control. Dust abatement and other activities along roads within the Proposed Project Area would be conducted consistent with requirements resulting from the consultation between the BLM and USFWS for road maintenance (USDI-FWS 2003).

The Applicant would be responsible for ensuring that invasive, non-native plant species associated with mining and exploration activities are not allowed to establish or spread at the quarry. The Project Site would be surveyed each spring by the Applicant for a period of 2 years following cessation of mining. The Applicant would employ a licensed herbicide applicator when herbicides are used to eradicate new weed infestations and treat Federal lands where weeds have spread from the quarry operations. Additional weed control could be completed using hand removal, or appropriate biological control. Weed treatments would be conducted consistent with the Challis BLM Field Office and the Custer County Noxious Weed Control Programs.

The Pit 1 waste rock storage area (waste dump) would be graded to match the contours of the adjacent naturally occurring talus slope (Figure 2.3-1). Straight lines on the waste rock storage area would be reduced to the extent possible. The talus slope and the waste rock storage area would be blended together to prevent distinct changes in rock form or color.

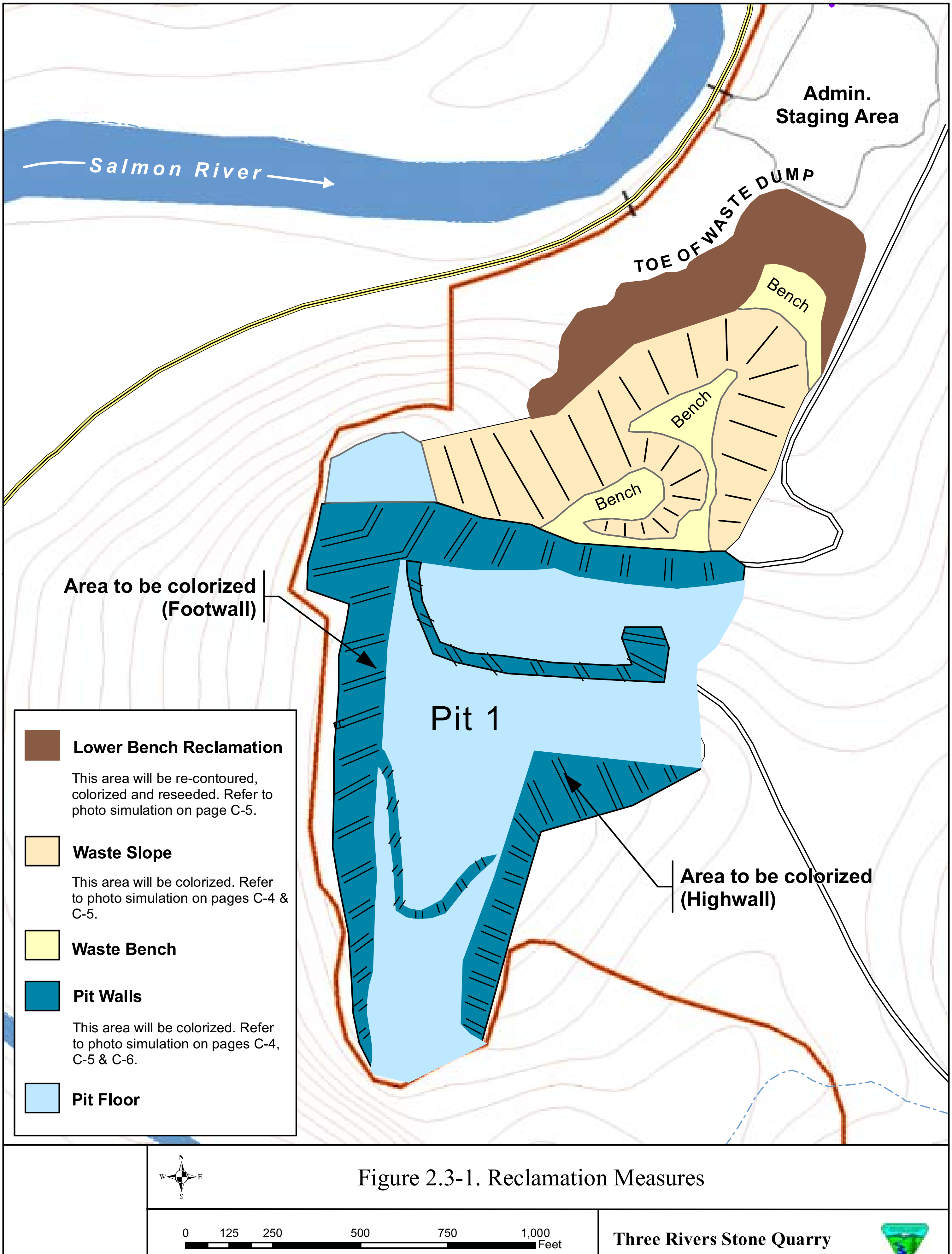


Figure 2.3-1. Reclamation Measures

Three Rivers Stone Quarry
L & W Stone

Waste rock would be allowed to be removed from a designated area of the Pit 1 waste rock storage area and used as rip rap following completion of reclamation activities. For a complete description of the community pit, see Section 2.4.12.

The portion of the Pit 1 footwall, highwall, and waste rock storage area visible from SH-75 and along the Salmon River corridor would be colored to help meet Visual Resource Management (VRM) Class II objectives (as required under the Interim Mining Plan; Figure 2.3-1). An exception would be for that portion of the waste rock storage area that would be designated as a community pit. As mining progresses downward in Pit 1 and more of the footwall becomes visible, no more than 50 feet of footwall height would remain uncolored. Coloration testing would be completed to meet the BLM VRM objectives, and the colors would be formulated to replicate the natural colors of the surrounding environment.

Waste rock deposited at the Pit 2 waste rock storage area would be constructed into 20-foot lifts. The face of the lifts would be contoured to a three-to-one slope, covered with the stockpiled topsoil and reseeded with a BLM-approved seed mixture (Appendix B).

2.4 PROPOSED PROJECT FEATURES COMMON TO ALL ACTION ALTERNATIVES (ALTERNATIVES B – D)

Mining operations would continue under Alternatives B, C and D at different levels of disturbance. However, these alternatives share many of the same project features; the common features are described below.

2.4.1 Administration and Staging Area

The administrative area and staging area for the mining operation would be approximately 5 acres in size. The area would consist of the administrative office (trailer), general supplies storage, and staging area for crated flagstone prior to shipping. All personnel or visitors entering the mine site would be required to check in at this location.

2.4.2 Transmission Line

A transmission line would be constructed into the administrative area to provide power to the office trailer. The transmission line would be constructed and operated by the Salmon River Electric Cooperative. The transmission line would be a single phase 14.4 kV line that would originate at the existing Salmon River Electric Cooperative Up River Line located approximately 0.5 miles north of the administrative and staging area. The line would consist of seven poles with an approximately 350-foot span between each pole. There would be two transmission lines on each pole. One line would be located at the top of the pole on an insulator. The second line would be located approximately 4 feet below the top of the pole on an insulator placed on the side of the pole. There would be no cross bars on the poles. The transmission line would run parallel to the east side of SH-75 for approximately 2,450 feet.

2.4.3. Fuel and Lubricant Storage

The Applicant would store various fuels and lubricants to support the mobile mining equipment used for mining activities. Fuels and lubricants would be stored at three separate locations to facilitate efficient fueling and maintenance of equipment. The fuel and lubricant storage areas would comply with the applicable regulations as described in 30 CFR 56.4101, 40 CFR Part 112, and IDL BMPs.

Fuel storage area #1 would be located in the administrative area. It would contain one 500-gallon diesel tank, a 250-gallon used oil tote and a 1,000-gallon tank for used oil.

Fuel storage area #2 would be located at the same location of the existing fuel storage area between Pit 1 and Pit 2. It would contain the following:

- One 3,000-gallon diesel fuel tank;
- One 250-gallon gasoline tote;
- One 250-gallon tote of motor oil;
- One 250-gallon tote of hydraulic oil;
- One 250-gallon antifreeze tote;
- Two 55-gallon rock drill oil drums, and
- One 250-gallon engine oil tote.

Fuel storage area #3 would be located in the Pit 2 waste rock area and would contain one 500-gallon diesel fuel tank

All fuel and lubricants would be stored within bermed containment areas lined with 10-millimeter plastic. The size of each containment area for fuel storage would vary depending on the volume of material stored at each location. The size of each containment area would be calculated according to the following formula:

> *Maximum volume of storage capacity + 10% + the 2 inches of potential precipitation from a 10-year, 24-hour storm event.*

2.4.4 Explosives Storage Areas

The proposed operations would include a storage silo for up to 40,000 pounds of ammonium nitrate delivered in bulk. The silo would be constructed in the administrative area on a concrete pad and foundation for better containment and effective material handling. The silo would be painted with BLM-approved colors to blend into the landscape. Ammonium nitrate is an oxidizer, in contrast to ammonium nitrate fuel oil (ANFO), which is a blasting agent. The ammonium nitrate would be transported from the silo to the blasting area by a bulk handling truck, in which the fuel oil would be mixed with the ammonium nitrate to produce ANFO.

Storage and usage of explosives would comply with Mine Safety and Health Administration (MSHA) regulations. The maximum quantity of ANFO that would be mixed and stored on site at one time is 15,000 pounds. Approximately 7,500 pounds of ammonium nitrate would be delivered twice per month, depending on actual production requirements. The ammonium nitrate would be bagged and in a pellet form.

Two explosives magazines would be used to store explosives per 30 CFR 56.6000 through 56.6201. The magazine on the west side of Pit 2 would contain ANFO. The magazine on the south side of Pit 2 would consist of two separate facilities for storage of the explosives. One would contain the blasting caps, detonator cords, and primers. The other would contain the dynamite. The magazines would be constructed and situated per 29 CFR 1910.109, i.e., highly secure, bullet-resistant, weather-resistant, fire-resistant, and sufficiently ventilated facilities surrounded by berms, with a 25-foot area cleared of flammable materials, and with the ground sloped away from the magazines. The magazines would be located in an area isolated from the view of any public roads or houses and painted with a BLM-approved color to minimize visual impacts. Warning signs would be located such that a bullet through the signs would not strike the magazines. The explosive magazines would be separated so that an explosion from either of the magazines would be unlikely to detonate the other or create a hazard to employees in the mine area (30 CFR 56.6131). In addition, the magazine locations would meet or exceed the setback requirements from public roads, mine haul roads, and magazine-to-magazine spacing. The magazines would be located so that downed power lines would not contact the magazines.

2.4.5 Drilling and Blasting

Rock would be loosened by drilling and blasting. Development rock (termed waste rock) is overburden, interburden, and lower grade flagstone (typically weakly-altered sedimentary rock) associated with the mining operation, which would not meet mine material specifications and must be removed to allow access to the defined zones of economic flagstone rock (ore).

Blast holes would be drilled with either a 4-inch diameter drill or a 6.75-inch diameter drill. The typical blasting pattern for flagstone would be 4-inch diameter drill holes approximately 12 feet deep on 10-foot centers. The typical blasting pattern for waste rock would be 6.75-inch diameter drill holes approximately 25 feet deep on 16-foot centers. There would be approximately 50 holes per pattern when blasting flagstone and 100 to 150 holes per pattern when blasting waste rock. Approximately 12 pounds of explosives would be used in each flagstone blast hole, and approximately 27 pounds of explosives would be used in each waste rock blast hole.

Blasts to remove overburden material typically use a powder factor of approximately 0.5 pounds per cubic yard. Typical powder factors for surface blasting range from 0.25 to 2.50 pounds per cubic yard depending on rock breakage difficulty.

If ground water is intercepted during drilling or blasting, all mining activity in the pit where water was encountered would be stopped. No dewatering would occur and mining operations for the given area would cease for the life of the project.

Only authorized personnel would be allowed in the vicinity of the blasting area. Employees and visitors would not be allowed to bring cigarettes, lighters, matches, or other highly flammable objects to the vicinity of the blasting area. Blasting would occur irregularly throughout the period of mining operation, with a maximum of two blasts on a given day. Blasting would occur approximately 4 times per week or could include several days of blasting followed by several days with no blasting. Number and schedule of monthly blasts would depend on production requirements and would vary depending upon alternative. The following steps would be taken before blasting:

1. The blasting area would be secured by barricades, and warning signs would be posted.
2. The blasting area would be inspected immediately prior to detonation.
3. The blasting area and a surrounding safety zone would be cleared of people prior to detonation.
4. A warning signal would be broadcast throughout the quarry area.
5. The blasting shot would be inspected.
6. When the blasting vicinity is clear of personnel and the shot has passed inspection criteria, detonation would occur.
7. After an inspection of the post-blast area, an “all clear” signal would be broadcast throughout the quarry area.
8. If a misfire occurs, the drill hole would be flagged. Once mining activities proceed to the location of the misfire, an excavator would carefully expose the

drill hole. If explosives are found, they would be "washed" from the hole and qualified personnel would attempt to find the detonation cord and/or primer. These would then be placed back into the magazine or detonated in place.

During the initial development of Pit 1 there were a few incidents of highwall instability above SH-75 as a result of blasting. This resulted in the movement of blocks in cliff faces to the north and west of the pit that required blasting to stabilize the highwall. Now that mining is occurring deeper in Pit 1, well below the top of the highwall, this is no longer occurring.

The project operations would continue to comply with all MSHA regulations (30 CFR Part 56) and all Bureau of Alcohol, Tobacco, Firearms, and Explosives regulations (27 CFR Part 55) concerning explosives storage, handling, and detonation.

2.4.6 Rock Handling

Waste rock would be removed after blasting by loaders and haul trucks, exposing the flagstone. The flagstone then would be removed from the ground by hand or with the assistance of a hydraulic excavator. Some flagstone would be further split by hand, and all flagstone would be placed by hand on pallets. The pallets would be loaded onto flatbed trucks and transported from the splitting areas to the administrative area. The pallets would be shipped from the quarry by highway-licensed, semi-trucks. The location of flagstone splitting activities would vary based on worker safety, available space, and efficiency; and would typically, but not always, occur in the pits or waste rock storage areas. Heated tents would be provided on site to allow a portion of the employees that split flagstone by hand to work through the winter.

The only manufacturing activities or chemical processing that would occur at the quarry site is the manufacturing of ANFO for blasting purposes. The Applicant has a flagstone processing, storage and shipping facility located in Idaho Falls where approximately 30 percent of the flagstone leaving the quarry would be sent. A portion of the material sent to this facility would be processed in a rock tumbler and then shipped to retail facilities across the western United States.

Supplies and flagstone would be stored in the administrative area. A semi-circular, gravel-covered, load-out driveway would be constructed in the administrative area to minimize mud and dirt tracked on the highway from semi-trucks leaving the area. Semi-trucks would enter the circular driveway where a forklift would load them. Trucks waiting to be loaded would be staged in the administrative area where ample parking is available.

2.4.7 Pit 1 and Pit 2 Waste Rock Storage Areas

Under all action alternatives, no additional waste rock material would be deposited into the Pit 1 waste rock storage area. A portion of the Pit 1 waste rock would be made available as a mineral material by sale or free-use permits in the form of a community pit (see Section 2.4.12). The Pit 1 waste rock storage area would be reclaimed as described under Alternative A (see Section 2.3.1).

The Pit 2 waste rock storage area is located in the upper portion of an ephemeral drainage above the administration area and to the east of Pit 2. The area has slopes that are approximately 10 percent in grade. The Pit 2 waste rock storage area would continue to accept waste rock material from Pit 1 and Pit 2. Topsoil would be stripped from the waste rock storage area and stockpiled nearby for use in reclamation. Reclamation at the Pit 2 waste rock storage area is and would continue to occur concurrently with mining activities at the quarry. Waste rock would be deposited and constructed into 20-foot lifts. The face of the lifts would be contoured to a three-to-one slope, covered with the stockpiled topsoil and reseeded with a BLM-approved seed mixture (Appendix B).

2.4.8 Topsoil Salvage and Storage

The proposed topsoil stockpile site would be on a flat area above the drainage to East Fork Salmon River. The topsoil stockpile would be graded and seeded to minimize erosion and soil loss by wind and water if not used within 6 weeks for reclamation. The proposed topsoil storage site would be approximately 0.9 acres in size and would be large enough to hold all stockpiled topsoil removed from the Pit 2 waste rock storage area and all other areas where topsoil is removed. Topsoil would be used in reclamation activities occurring as mining progresses (concurrent reclamation).

2.4.9 Quarry Access Roads

The main access road extends from the administration-staging area up a slope to the east side of Pit 1. The access road to Pit 2 would extend from the east side of Pit 1 around the southern edge of a low-lying knob and across a relatively flat area to Pit 2. The main access roads would be generally 30 feet in width with an outside berm constructed to at least mid-axle height of the largest self-propelled mobile equipment which usually travels the access road. Secondary quarry roads would generally be 15 feet in width.

2.4.10 Equipment and Vehicle Maintenance

The equipment used at the project site would be typical of surface mining operations and would include drill rigs, hydraulic excavators, front-end loaders, 30-ton and 40-ton haul trucks, dump trucks, water trucks, flat-bed trucks, bulldozers, service trucks, a grader, fork lifts, light trucks, and personnel transport vehicles. Each piece of equipment would be fitted with its required safety devices, and all equipment would be operated in compliance with all MSHA regulations concerning equipment operator safety, and the safety of other workers. Equipment speeds for the proposed operations would be consistent with the driving conditions and the type of equipment (30 CFR 56.9101).

The heavy equipment used primarily in the pits would be maintained and stored in the pits where it would not be visible from outside the project site. The more mobile equipment would be used and stored anywhere within the perimeter of the operations. Mine vehicles would be properly maintained at all times to minimize leaks of motor oils, hydraulic fluids, and fuels. The equipment would be serviced (oil changes, lubrication, minor repairs) by an equipment maintenance company.

The maintenance of equipment that is authorized for highway travel would be performed off-site at an appropriate facility. Equipment that is not highway-authorized would be serviced on the project site. Equipment would be fueled or maintained at one of the three fuel storage areas. Equipment that is immobilized due to break down during operation would be repaired at the location of break down. A Spill Prevention, Containment and Countermeasure Plan would be prepared for the Proposed Project and would contain information regarding training, equipment inspection and maintenance, and refueling for mine equipment, with an emphasis on preventing spills. The equipment maintenance company would be required to dispose of all oils, lubricants, and antifreezes offsite in accordance with State and Federal environmental requirements.

2.4.11 Public Access

Due to liability and safety concerns, the general public would not be allowed access to the quarry without first coordinating with personnel, and then, access would be restricted and only allowed if accompanied by a quarry employee. Gates are installed along the only public access route through the Proposed Project area. The gates are located at the entrance to the project site from SH-75 and on the existing power-line road to the south of the quarry. The south gate would remain locked at all times. The gate at SH-75 would be locked during periods of non-operation. Signs with a contact name and phone numbers for the Applicant and the BLM would be posted on all gates.

2.4.12 Mineral Material Disposal

The BLM may dispose of mineral materials by sale or free-use permits from areas designated as a community pit (43 CFR 3603). These pits are for noncommercial or small-scale collection. Mineral materials are some of the most basic natural resources, such as sand, gravel, dirt, and rock used in every day building and other construction uses. Adequate local supplies of these basic resources are vital to the economic life of any community. BLM policy is to make these materials available to the public and local governmental agencies whenever possible and wherever environmentally acceptable. BLM sells mineral materials to the public at fair market value, but provides them free to states, counties, or other government entities for public projects. Also, a limited amount may be provided free to non-profit organizations under a free-use permit.

Regulations which guide the BLM mineral materials program are found in 43 CFR 3600. Regulations governing sale contracts and free-use permits for mineral materials are contained in 43 CFR 3602 and 43 CFR 3604, respectively.

Under all action alternatives waste rock would be allowed to be removed from a designated area of the Pit 1 waste rock storage area. During the ongoing operation of the quarry, due to public safety considerations, only government entities or their representatives would be allowed access to the waste rock material. Following completion of quarry activities and during implementation of reclamation, a plan would be developed that would allow continued access to the waste rock by government entities and additionally allow access by the general public for obtaining rip rap and other construction material.

The amount of waste rock that would be removed as a mineral material from the Pit 1 waste rock storage area is estimated to be as much as 20,000 cubic yards per year. The volume of waste rock removed would be dependent upon the local need for the material and the distance to other sources of similar material from building or construction sites. The BLM would designate a portion of the waste rock storage area as a Community Pit under its 43 CFR 3600 Regulations. Due to the large quantities of waste rock currently on site it is likely that only a small portion of the total volume would be removed for mineral material uses in the next 40 years.

2.4.13 Sanitation

Sanitation facilities would consist of portable toilets for all personnel. The toilets would be distributed at the project site according to location of work being performed. The toilets would be provided and serviced by a licensed contractor.

2.4.14 Best Management Practices

All action alternatives would be implemented in accordance with State of Idaho Best Management Practices for Mining (Appendix B). The BMPs in Appendix B are designed to guide mining activities and to minimize potential environmental and public safety impacts. These include, but are not limited to dust abatement, erosion control, revegetation, hazardous materials, and noxious weed management.

2.4.15 Chemical Spill Prevention, Control and Countermeasures Plan

A Chemical Spill Prevention, Control, and Countermeasures Plan is currently in place and would continue to be implemented under all action alternatives. The plan has been prepared in compliance with guidelines established in 40 CFR Part 112 (oil pollution prevention requirements of the United States (US) Environmental Protection Agency (EPA) and Idaho Mining BMPs) (Idaho Department of Lands 1992). In Idaho, a spill is defined as any discharge of hazardous material, oil, or petroleum product into or adjacent to water that might have potentially harmful effects. The only chemicals that would be stored on site are petroleum products used in the fueling, lubrication and general maintenance of vehicles and equipment.

Valves on tanks would be designed so that any flow from the valve would be contained within the containment area. Tanks would be equipped with flexible hoses for draining the contents. The gravity-fed hosing would be assembled and maintained in a manner to minimize the potential for punctures and leaks. The hosing and associated fittings would be capable of the pressures and stresses of carrying the flammable liquid and material would be compatible with the contained liquid. All tanks would be labeled as to their contents. All tanks would be vented to prevent development of excessive pressure or vacuum. Both the tank and the vents would be isolated from ignition sources. Above-ground storage tanks would be securely mounted on firm foundations. Storage tanks for flammable or combustible liquids would be built to withstand the pressures and stresses of holding the liquid. The tank composition would be compatible with the liquid that is stored. Tanks would be maintained and handled in a manner that would minimize the potential for punctures and leaks.

All tanks with petroleum products would be stored above ground, allowing easy, rapid and thorough inspections. The tanks would be inspected by L&W Stone personnel weekly for any signs of weakness or deterioration. The tank inspection also would include checking for dents, drip marks, discoloration of tanks, puddles containing spilled or leaked material, corrosion, cracks, and localized dead vegetation or soil stains. The tank foundation and containment area would be inspected weekly for cracks, discoloration, puddles containing spilled or leaked material, settling, gaps between the tank and foundation, and damage caused by vegetation roots. Spill cleanup kits would be stored in the general vicinity of the chemical storage facilities. Mine personnel would be trained to report all spills, regardless of size or quantity, immediately to one of the site managers. The following information about the spill would be reported:

- The name of the substance that spilled or leaked,
- An estimate of the quantity that spilled or leaked,
- The time and duration of the release,
- Where the release was deposited,
- Why the release occurred, and
- Any immediate health and safety, or environmental threats or issues.

Spills that must be reported immediately to State and Federal agencies (including the BLM Challis Field Office) include the following:

- Spills of any petroleum hydrocarbon substance that exceeds 25 gallons,
- Spills that cannot be totally cleaned up within 24 hours, and
- Spills of any substance that reach a surface water body.

Trained mine personnel would respond immediately to contain the spill; with the first step, as in any emergency situation, being to ensure that personal safety is not threatened. The spill response procedures would be included in the Chemical Spill Prevention, Control, and Countermeasures Plan.

2.5 ALTERNATIVE B

Alternative B was developed as a result of the lawsuit brought by the Western Watershed Project. This alternative would be a continuation of the Interim Mining Plan that was developed by L&W Stone and approved by District Judge Winmill to enable mining activities at the Three Rivers Stone Quarry during the preparation of this EIS. The purpose of Alternative B is to allow the continuation of mining activities while minimizing the overall footprint of the quarry; no exploration activity would be allowed. All descriptions or aspects of mining listed above in Section 2.4, Proposed Project Features Common to all Action Alternatives, would be included in Alternative B. The proposed operations would consist of an administrative area on the valley floor and two open-pit (surface) mines on the adjacent ridge: Pit 1 and Pit 2 (Figure 2.5-1). In addition, development would include a waste rock storage area, haul roads, interceptor trenches, sediment traps, roll berms, roll ditches, explosives magazines, portable trailers, storage tanks, and a variety of transport vehicles and heavy equipment that would be used for mining activities. Proposed operational features of the quarry under Alternative B are summarized in Table 2.5-1 and described in the following sections.

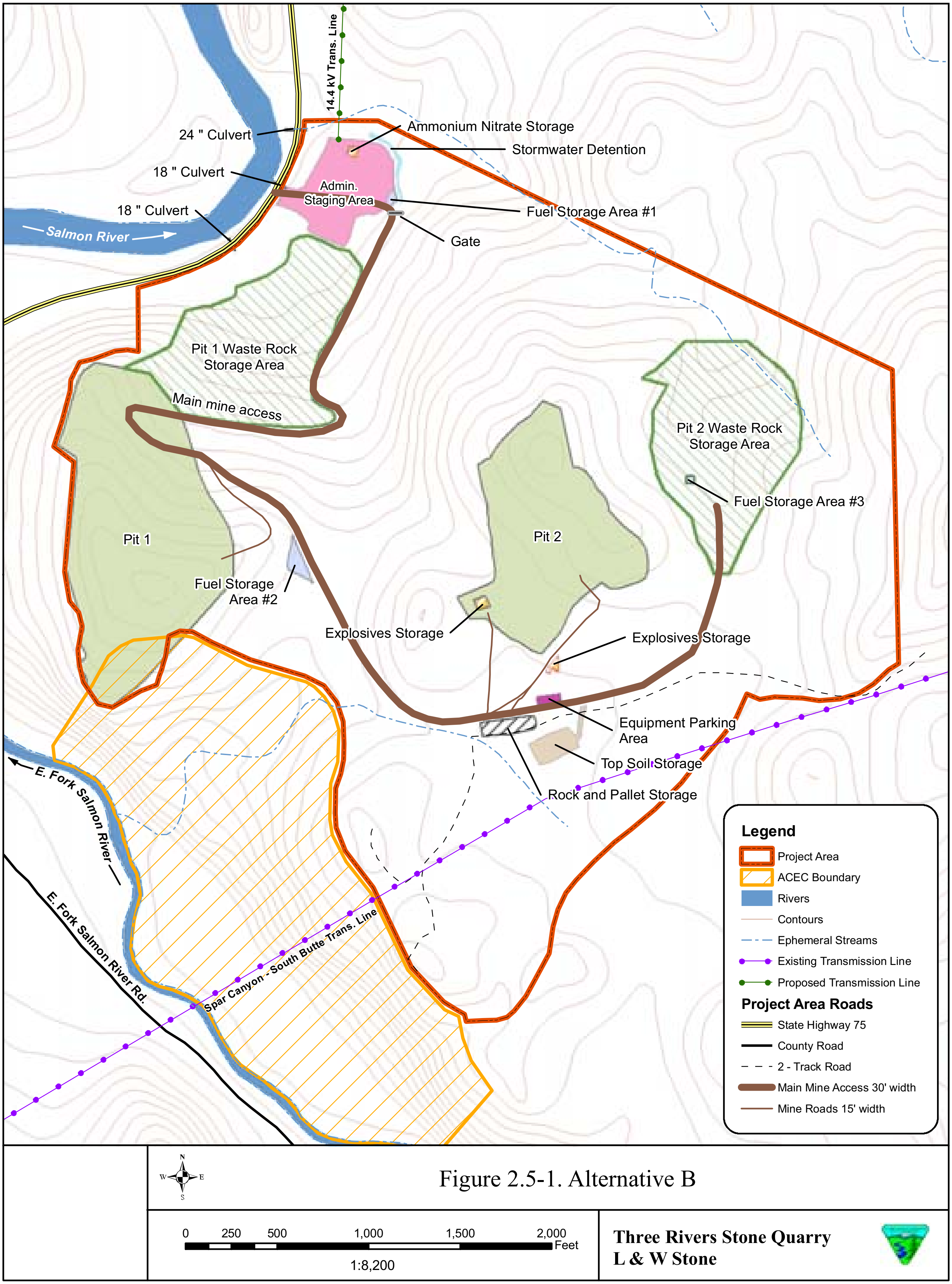


Figure 2.5-1. Alternative B

Three Rivers Stone Quarry
L & W Stone

Table 2.5-1. Alternative B Operational Features.

Period of Operation	3-5 years
Work Force	Year-round employees39* Seasonal employees 36*
Acres of surface disturbance	
Existing	92
Proposed New	8
Exploration	None
Total	100
Material removed per year (waste rock and flagstone)	100,000 tons**
Number of blasts per month	Overburden 10** Flagstone 6**
Truck loads of flagstone leaving the quarry per year	800 to 1,200 trucks**
Water source	Off-site surface
Water use	10 acre-feet per year (55,000 gallons, maximum daily use)

* The number of employees would be reduced to less than 50 once Pit 1 was mined out.

** Once Pit 1 is mined out the amount of material removed, the number of blasts needed to remove overburden, and the number of trucks trips needed to transport material would be substantially reduced.

2.5.1 Pits

Under Alternative B, mining would continue in Pit 1. According to the Interim Mining Plan, the highwall would be laid back at a maximum rate of 30 feet per year to expose additional flagstone deposits. This would result in Pit 1 being mined out in 3 to 5 years as the flagstone deposit becomes inaccessible. Mining activities in Pit 2 would be limited to mining 15 feet in depth and expanding the pit 15 feet to the southwest each year (Figure 2.5-1).

2.5.2 Mining Sequence

Under Alternative B, mining would continue concurrently in Pit 1 and Pit 2. Waste rock from both pits would be deposited at the Pit 2 waste rock storage area. Under Alternative B it is anticipated that Pit 1 would be mined out well in advance of Pit 2. Therefore, once mining activities at Pit 1 have been completed, waste rock from Pit 2 would no longer be deposited at the Pit 2 waste rock storage area, but would be diverted to Pit 1 and used as backfill. Mining would continue at Pit 2 until the flagstone deposits there were mined out in 3 to 5 years. Following the completion of mining in Pit 2, all remaining reclamation activities would be completed.

2.5.3 Work Schedule, Personnel and Mine Production

Based on the restrictions on expansion of Pit 1 that are imposed by the Interim Mining Plan, the Applicant estimates that mineable flagstone resources exist to support a mine life of 5 years under Alternative B. Under Alternative B mine production would occur in Pit 1 for 3 to 5 years and in Pit 2 for up to 5 years. Because of the reduced area of operation, mining activities would likely occur for 10 to 12 hours per day, 5 days per week. However, production would vary with market demand, mine logistics, quality of flagstone, and weather conditions.

Approximately 75 employees would be required at the peak of mine production. Approximately 39 year-round employees would be needed including truck drivers, heavy equipment operators (bulldozers, loaders, track hoes, drillers), explosive technicians, vehicle maintenance technicians, general maintenance staff, and rock splitters and handlers. A total of about 36 seasonal workers would be needed on a daily basis. These workers would consist primarily of rock splitters (the workers in the pits who actually split the flagstone into saleable pieces) who typically would work from April through December of each year.

2.5.4 Traffic

Workers would travel to the Three Rivers Stone Quarry site in personal vehicles. Many workers would carpool to the site, and this number would vary by season. For the purposes of analysis it is assumed that the carpool rate would be two individuals in each vehicle. The majority of workers, approximately 37 personal vehicles per day, would travel from Challis and back each day along SH-75 to the quarry.

The delivery of the quarried flagstone from the quarry to wholesale and retail markets would occur by commercial trucks hauling on county, state, and Federal roads and highways. Under Alternative B, approximately 800 to 1,200 truck trips per year would be required to transport the flagstone from the quarry to market. Trucks leaving the quarry would take one of two routes. Approximately 100 to 150 trucks (12%) per year would travel south on SH-75 passing through the towns of Stanley and Ketchum (Figure 2.5-2). The majority of trucks, approximately 700 to 1,050 (88%) per year, would travel north on SH-75 to the town of Challis and then travel south on US-93 to the town of Arco. From Arco, two routes would then be used. Approximately 200 to 300 trucks (30%) would travel east on US-20 to the Applicants processing, shipping and storage facility in Idaho Falls, and another 500 to 750 trucks (70%) would travel southwest on US-20/26/93. From these locations the trucks would further disperse to market locations throughout the western United States.

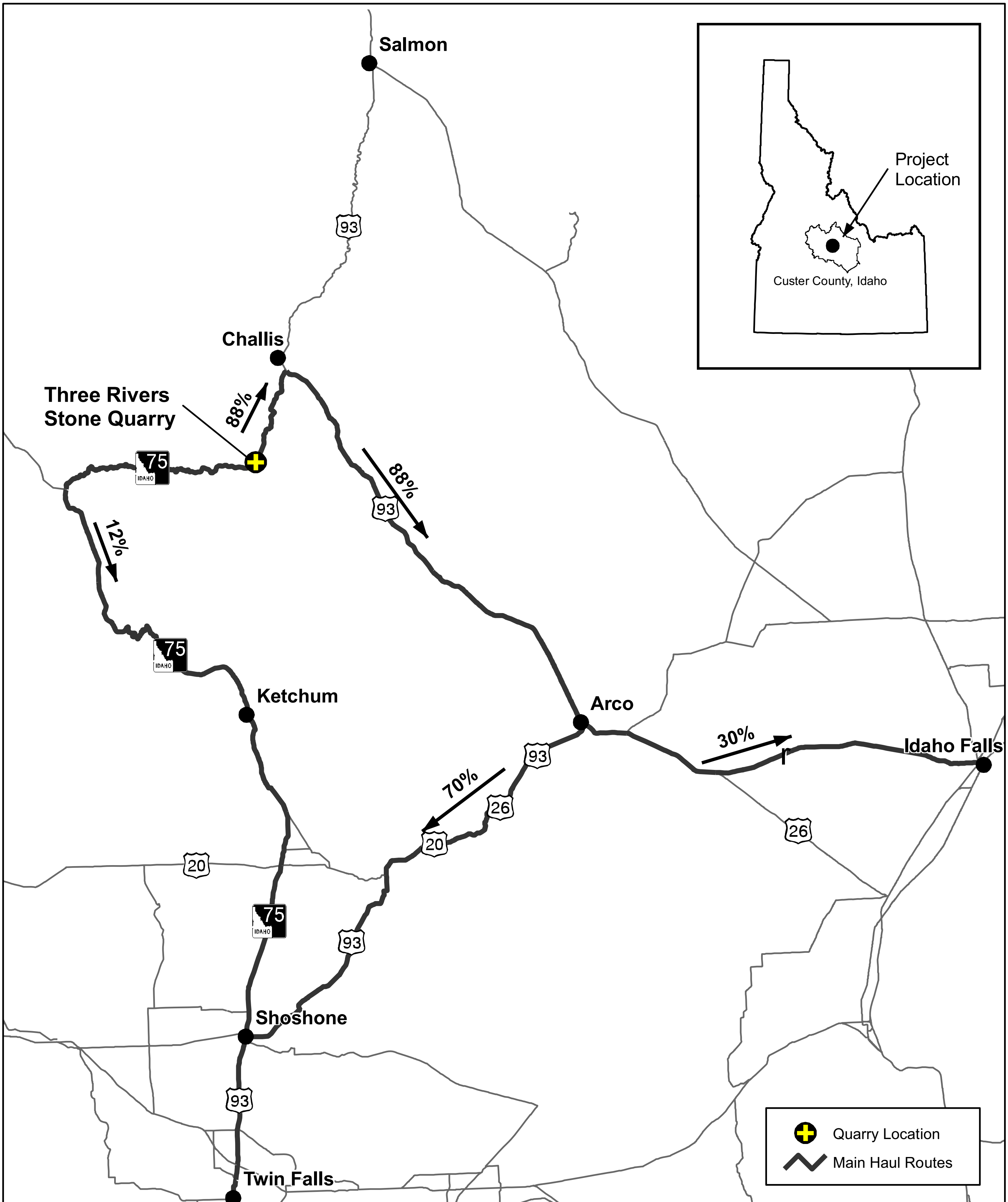


Figure 2.5-2. Truck Transportation of Rock

Three Rivers Stone Quarry
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2.5.5 Water Consumption

Water would be obtained from the existing screened diversion on the Salmon River located approximately 1 mile north of the administrative area under a permanent water use permit from the IDWR associated with property owned by L&W Stone. To comply with the IDWR water use permit, the pipe used to obtain water from the Salmon River would be screened with mesh size of 3/32 of an inch. In addition, water would only be drawn from the river between April and November of each year. Water would be drawn from river into an approximately 0.50-acre holding pond so that it would be available for use at the quarry throughout the spring and summer months.

It is estimated that approximately 10 acre-feet per year of water would be needed each year of operation, with maximum daily use estimated at 55,000 gallons. Nearly all of the water would be used for dust suppression on mine roads, pits and other areas of surface disturbance. Some additional water would be used for reclamation activities including compaction and irrigation of planted areas. A 3,500 gallon water truck fitted with front and rear spray booms would be used for dust suppression activities.

2.5.6 Sediment and Erosion Control and Stormwater Management

Under Alternative B, runoff from the project site flows either to an ephemeral drainage of the East Fork Salmon River or passes under SH-75 to the Salmon River through three corrugated metal pipe culverts (18 inches to 24 inches in diameter). Straw bales would continue to be placed upgradient of the culverts to trap sediment. The existing stormwater detention trench (interceptor trench) would border the northeast perimeter of the administrative area and end in a sediment trap (shallow pit) located just north of the administrative area (Figure 2.5-1). State of Idaho Mining BMPs would be used in an effort to minimize potential sediment delivery to the East Fork and Salmon rivers (IDAPA 20.03.02.140; IDL 1992; Appendix B).

2.5.7 Reclamation

Reclamation under Alternative B would be the same as described under Alternative A.

2.6 ALTERNATIVE C

Alternative C is the BLM Preferred Alternative from the 2004 EA. All descriptions or aspects listed above in Section 2.4, Proposed Project Features Common to all Action Alternatives, would be included in Alternative C. This alternative is similar to Alternative B in that mining would continue in Pit 1 and Pit 2 (Figure 2.6-1). However, the proposed operations would increase the amount of surface disturbance and could take place for up to

30 years. The expansion would occur by increasing the mine production in Pit 1. The east highwall of Pit 1 would be laid back up to 90 feet per year to expose more of the flagstone deposit that continues down into the bedrock below it. A portion of the existing Pit 1 waste rock storage area covers mineable flagstone. Therefore, a portion of this material would be moved to the Pit 2 waste rock storage area to allow the flagstone to be mined. It is estimated that 6 million tons would be moved from the Pit 1 waste rock storage area to the Pit 2 waste rock storage area.

Existing mining activities would continue at Pit 2. Alternative C also includes exploration of an approximately 31-acre area for additional flagstone deposits (Figure 2.6-1). Proposed operational features of the quarry under Alternative C are summarized in Table 2.6-1 and described in the following sections.

Table 2.6-1. Alternative C Operational Features.

Period of Operation	30 years
Work Force at the mine site	Year round employees 61 Seasonal employees 39
Acres of surface disturbance	
Existing	92
Proposed New	49
Exploration	31
Total	172
Material removed per year (waste rock and flagstone)	240,000 tons
Number of blasts per month	Overburden 10 Flagstone 6
Truck loads of flagstone leaving the quarry per year	1,200 to 1,500 trucks
Water source	On site well
Water use	87,000 gallons, maximum daily use

2.6.1 Pits

Two pits are proposed to be expanded under Alternative C (Figure 2.6-1). The proposed final configuration of Pit 1 would be approximately 2,000 feet long, 900 feet wide (at the widest point), and 500 feet deep (measured from the highest point) with a pit floor elevation of 5,425 feet amsl. The southern end of Pit 1 would remain intact as a visual barrier from the East Fork Salmon River.

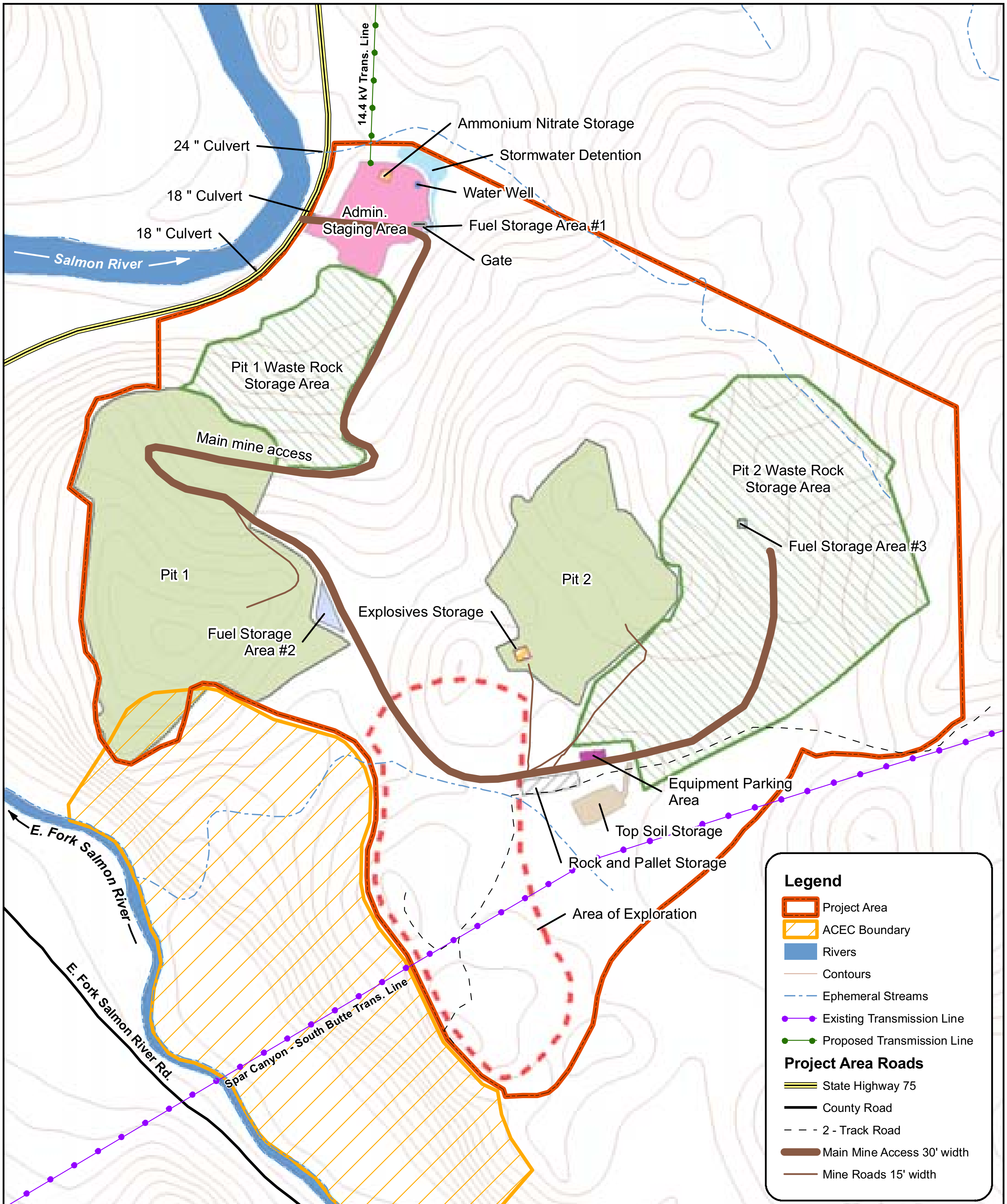

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Figure 2.6-1. Alternative C

0 250 500 1,000 1,500 2,000 Feet

1:8,200

Three Rivers Stone Quarry
L & W Stone

The proposed final configuration of Pit 2 would be approximately 1,000 feet long, 900 feet wide, and 100 feet deep with a pit floor elevation of 5,900 feet amsl. The walls of Pit 2 would have an overall slope of approximately 45 degrees. Portions of the highwall, approximately 100 feet high at its highest point, would remain to the north and northeast as a visual barrier. The southwest side would be open, coinciding with the present ground elevation.

2.6.2 Mining Sequence

For the purpose of analysis it is assumed that mining operation would occur concurrently in both Pit 1 and Pit 2. In an effort to allow the efficient and safe layback of the Pit 1 highwall, blasting and removal of waste rock in this area would be concentrated during the winter months (January through February) when seasonal employees are not present. At the time that either Pit 1 or Pit 2 is completed (all flagstone mined out), all waste rock from the remaining pit would be used to backfill the finished pit.

2.6.3 Work Schedule, Personnel and Mine Production

The mining activities could occur 24 hours per day, 7 days per week, and 12 months per year. However, production would vary with market demand, mine logistics, and weather conditions. The Applicant estimates sufficient mineral resources exist to support a mine life of up to 30 years.

Approximately 100 employees would be required at the peak of mine production. Approximately 61 year-round employees would be needed including truck drivers, heavy equipment operators, explosive technicians, vehicle maintenance technicians, general maintenance staff, and rock splitters and handlers. Up to 39 seasonal workers would be needed on a daily basis. These workers would consist primarily of rock splitters who typically would work from April through December of each year.

2.6.4 Traffic

Workers travel to the Three Rivers Stone Quarry site in personal vehicles. Many workers would carpool to the site. The majority of workers, approximately 50 personal vehicles per day, would travel from Challis and back each day along SH-75 to the quarry (at carpool rate of two individuals per vehicle).

Under Alternative C, approximately 1,200 to 1,500 commercial truck trips per year would be required to transport flagstone from the quarry to wholesale and retail markets throughout the western United States. The routes from the quarry and the proportion of trucks using each route would be the same as under Alternative B (Figure 2.5-2), but the truck volume would be greater. Approximately 150 to 190 trucks per year would travel south on SH-75 passing through the towns of Stanley and Ketchum, and approximately 1,050 to 1,300 trucks per year would travel north on SH-75 to the town of Challis and then travel south on US-93 to the town of Arco. From Arco, approximately 300 to 375 trucks would travel east on US-20 to Idaho Falls and another 750 to 940 trucks would travel southwest on US-20/26/93.

2.6.5 Exploration Activity

Exploration for additional flagstone deposits would occur under Alternative C within an area of approximately 31 acres (Figure 2.6-1), with a maximum of 15 acres unreclaimed at any one time. Exploration could include construction of roads, drill pads/drill holes, trenches, test pits, and local surface stripping. Exploration could occur throughout the entire 31-acre exploration area. Prior to additional exploration disturbance, L&W Stone would reclaim exploration disturbance sufficient to maintain the 15-acre maximum area disturbed. Reclamation would include plugging exploration drill holes and returning disturbed areas to their approximate original surface contour with the original surface composition, i.e., rock or soil and vegetation. Where the original surface composition is vegetation, seeds or container-grown plant species would be planted, as described in Section 2.3.1. No exploration activity would occur within 50 feet of the boundary of ACEC/RNA. If exploration identifies additional reserves outside the perimeter of Pit 1 or Pit 2, the Plan of Operations under this alternative would need to be amended and additional documentation and analysis under NEPA could be necessary. The seasonal restriction imposed on blasting in the Preferred Alternative from the 2004 EA would no longer be required, since the restriction was based on the location of a peregrine falcon nest that not longer exists.

2.6.6 Water Consumption

The expansion of mining activities under Alternative C would require an increase in the amount of water needed for dust control and irrigation of reclaimed areas. The IDWR has approved L&W Stone's application for a water right for a proposed well. The water right would be for a maximum rate of 211 gallons per minute and a maximum volume of 340 acre-feet per year. A licensed water well driller would drill the well, which would be located on the northeast side of the administrative area (Figure 2.6-1).

Two 8,000 gallon water trucks fitted with front and rear spray booms would be used for dust suppression activities. It is estimated that under Alternative C, a maximum of 87,000 gallons of water from the well would be used daily for dust suppression. The majority of use would occur during the frost-free and dry months, when dust becomes a problem. Nearly all of the water would be used for dust suppression on mine roads and areas with surface disturbance, and some would be used for drilling water. Additional water would be available for reclamation activities including compaction and irrigation of planted areas. Irrigation pipe, hoses and sprinklers would be used to water planted areas. Total water use would not exceed the annual 340 acre-feet per year water right.

2.6.7 Sediment and Erosion Control and Stormwater Management

Under Alternative C the western portion of the administration area would be built up using waste rock and screened material from the quarry. Then the entire administration area would be regraded to slope to the east and northeast and then regraveled. The existing stormwater detention trench along the northeastern edge of the administration area would be modified to capture surface runoff. The trench would be lined with either concrete or rock to prevent erosion. The captured water would be delivered through the trench to a new stormwater detention pond that would be located north of the administration area (Figure 2.6-1). Note that the modification to the existing stormwater detention trench and construction of the new detention pond was not part of the Preferred Alternative in the 2004 EA. However, they were determined necessary for the proposed operations since the current stormwater system is not functioning properly. These detention basins would be monitored to ensure that they function properly over the life of the project. State of Idaho Mining BMPs would also be applied in an effort to minimize potential sediment delivery to the East Fork and Salmon rivers, as under Alternative B (Appendix B).

2.6.8 Reclamation

Reclamation would be similar for Alternative C as described for Alternative A, with two differences. Once mining operations are completed (or upon expiration of the 30-year project period), the water well in the administrative area would be sealed. Also, if the BLM demonstrates that coloring the backwall is not meeting the VRM objectives, then an alternative proposal to coloration that would meet the VRM objectives would be considered.

2.7 ALTERNATIVE D (BLM PREFERRED ALTERNATIVE)

Alternative D is similar to Alternative C, in that mining would continue in Pits 1 and 2, but it also would include the exploration and future expansion of mining activities into two new prospects that contain unproven reserves of flagstone. These areas are identified as Pit 2-Expansion (Pit 2-E) and Pit 3 (Figure 2.7-1). Surface geologic reconnaissance was completed at the Proposed Project Area over several years and indicates that mineable flagstone deposits may exist in the proposed Pit 2-E and Pit 3 areas.

In both Pit 2-E and Pit 3, the flagstone is oriented similar to Pit 1, with the flagstone dipping steeply to the east and generally striking north-south. There is some deviation in strike and dip in flagstone orientation between the two areas. The pit boundaries developed for the new pits were based on Pit 1 design criteria using the outcrop measurements for Pit 2-E and Pit 3.

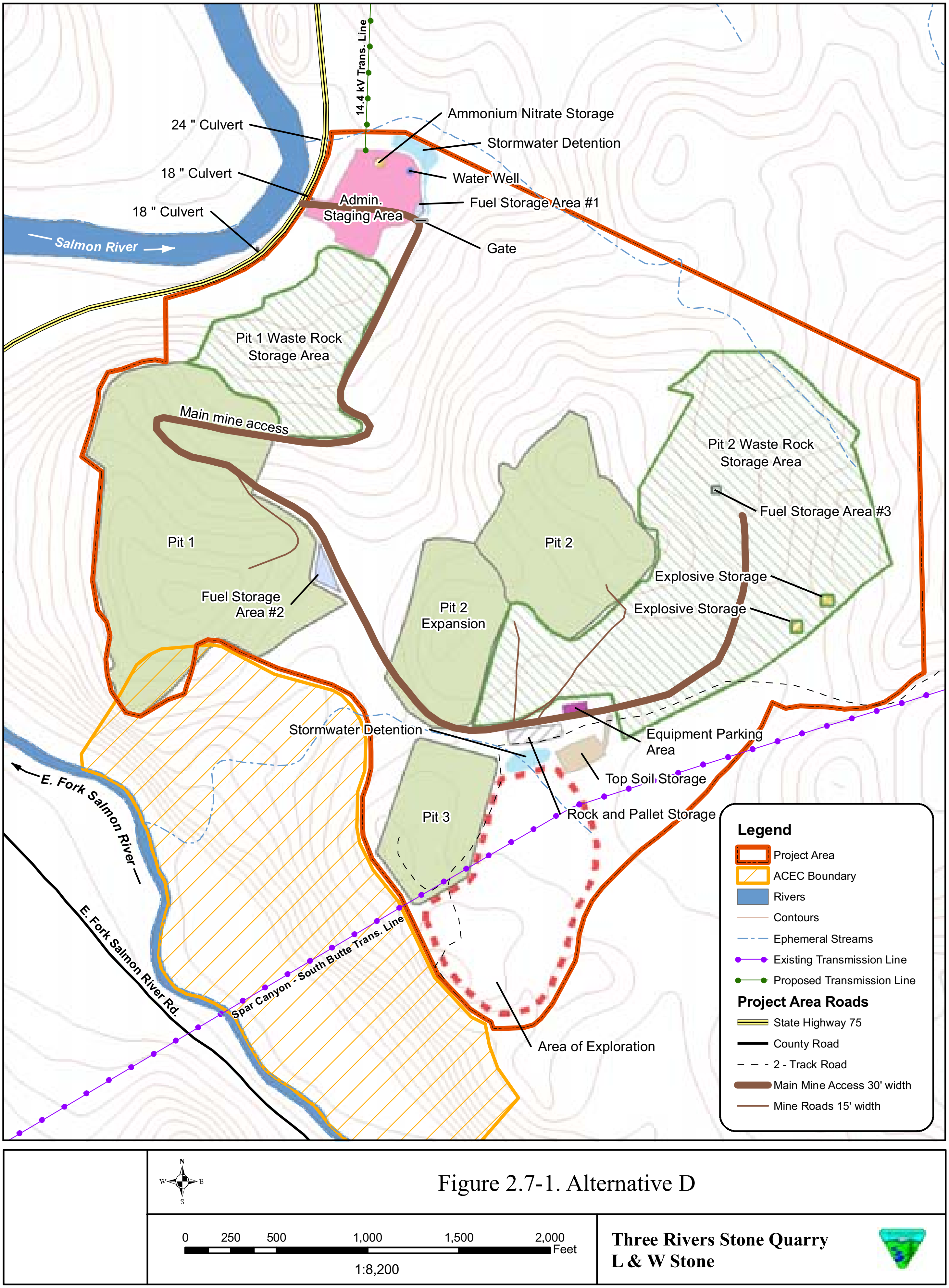

Figure 2.7-1. Alternative D

Three Rivers Stone Quarry
L & W Stone

No exploration drilling or trenching has occurred on these sites to fully delineate the potential size of the resource in each area. All decisions were based on outcrop exposures or lack of visual evidence for flagstone continuity across the area. Proposed operational features of the quarry under Alternative D are summarized in Table 2.7-1 and described in the following sections.

Table 2.7-1. Alternative D Operational Features.

Period of Operation	40 years
Work Force	Year round employees 66 Seasonal employees 46
Acres of surface disturbance	
Existing	92
Proposed New	73
Exploration	18
Total	183
Material removed per year (waste rock and flagstone)	300,000 tons
Number of blasts per month	Overburden 20 Flagstone 12
Truck loads of flagstone leaving the quarry per year	1,500 to 2,000 trucks
Water source	On site well
Water use	95,000 gallons, maximum daily use

2.7.1 Pits

Four pits are proposed to be mined for flagstone under Alternative D (Figure 2.7-1). Pit 1 and Pit 2 would be expanded to the same final configuration proposed for Alternative C. The following configuration of Pit 2-E and Pit 3 would be determined following exploration and preliminary mining of these areas for flagstone.

Pit 2-Expansion (Pit 2-E)

Topographically, Pit 2-E is located on a knob with the flagstone outcrop located on the upper western flank of the ridge extending to the top of the ridge (Figure 2.7-1). Mining of Pit 2-E would start at the top of the knob and would work easterly following the dip of the flagstone. An actual pit would not be formed until the knob was removed; however a pit highwall would be present. It is expected that the pit would be approximately 40 to 60 feet deep on the east side dependent on the orientation of the flagstone at depth. The highwall on the west side of the pit would be approximately 120 feet high and the elevation of the pit floor would be approximately 5,760 feet amsl. Figure 2.7-2 shows a generalized cross section.

Pit 2-E is anticipated to contain approximately 230,000 cubic yards of flagstone with approximately 50 percent recovery. The pit would generate approximately 1,000,000 cubic yards of waste rock.

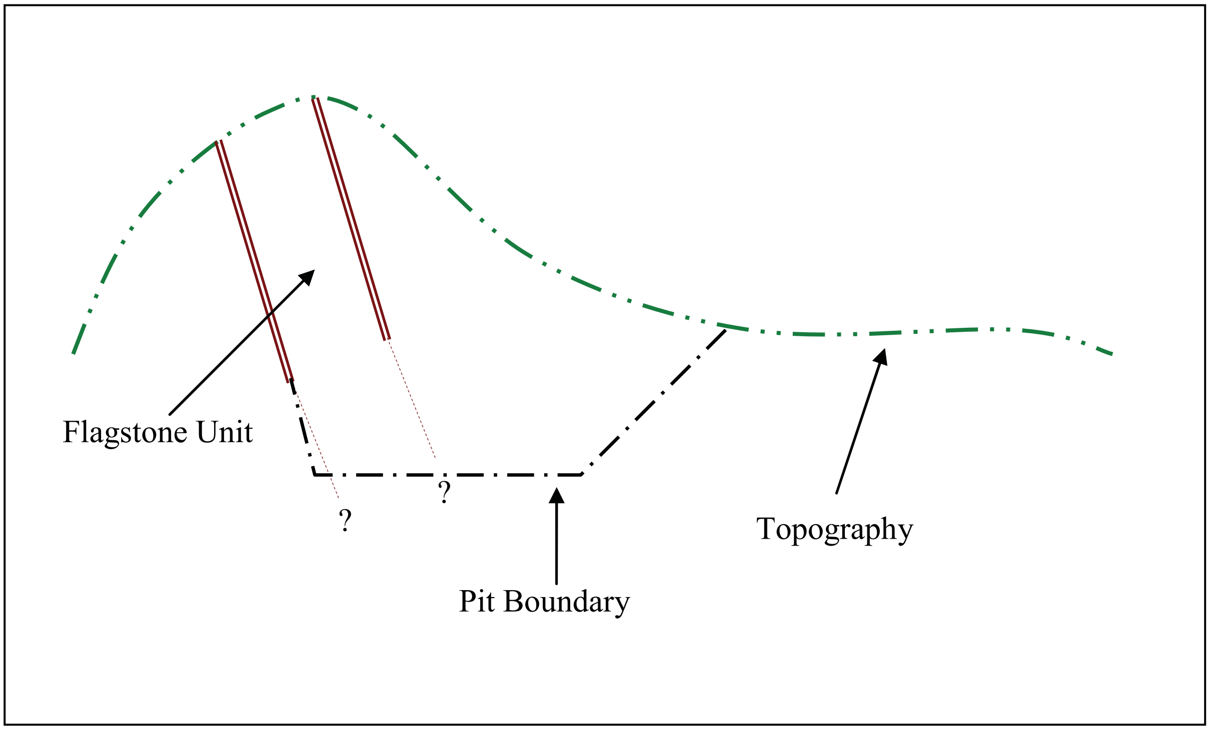

Figure 2.7-2. Pit 2 – Expansion Cross Section Looking North.

Pit 3

The proposed Pit 3 would be located on a rounded knob south of the proposed Pit 2-E area (Figure 2.7-1). Pit 3 sits lower topographically than the existing Pit 2 or the proposed Pit 2-E site. The flagstone outcrop is located on the upper western flank of the Pit 3 area. The mining of Pit 3 would start at the top of the knob and work easterly following the dip of the flagstone.

In Pit 3, the flagstone extends to the cliffs that are the boundary of the ACEC/RNA area. As with Pit 1, the Applicant proposes to leave a buffer zone of approximately 50 feet between the pit and the cliffs above the East Fork Salmon River to mitigate visual issues from that view shed and to prevent rockfall into the ACEC/RNA.

It is expected the pit would be approximately 40 feet deep with a total highwall height of 100 feet, and the elevation of the pit floor would be approximately 5,760 feet amsl. Figure 2.7-3 shows a generalized cross section. Pit 3 is anticipated to contain approximately 72,000 cubic yards of flagstone with another 300,000 cubic yards of waste rock. A 50 percent recovery of the flagstone is anticipated for this pit.

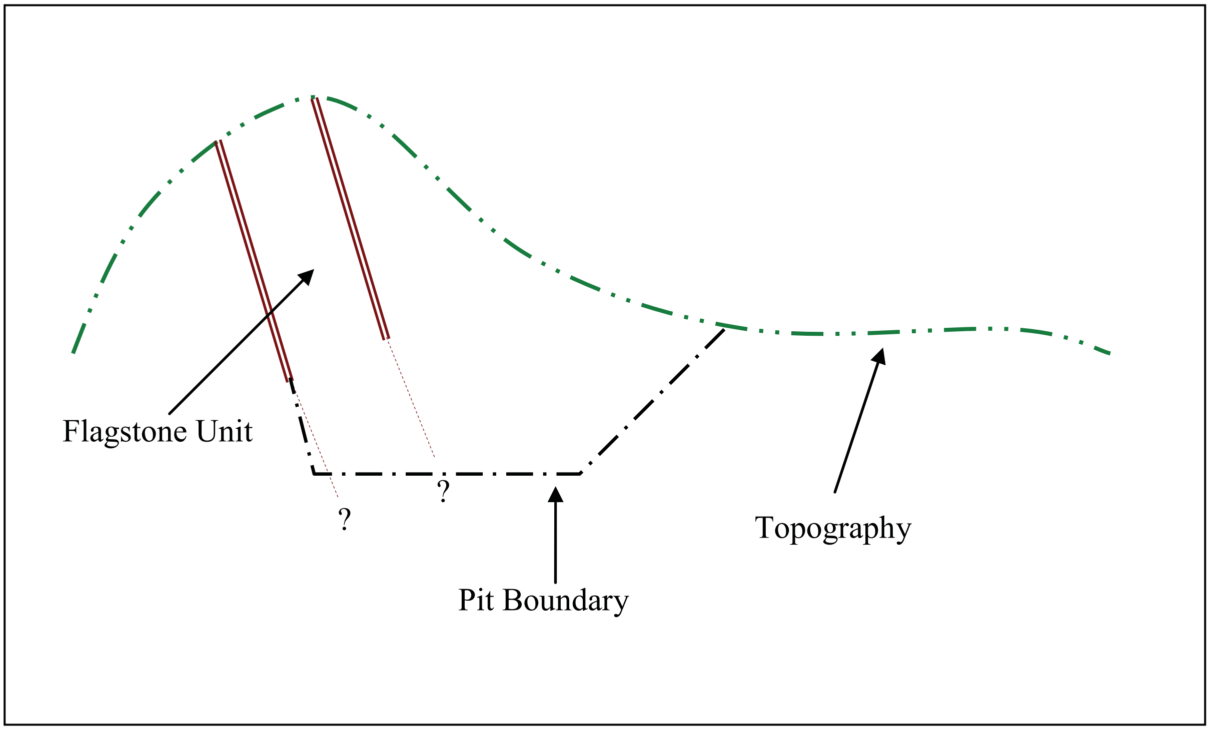

Figure 2.7-3. Pit 3 – Cross Section Looking North.

Both pits require approximately 100 feet of working room between the flagstone zone and the pit highwall (eastern side), which is the criterion that would determine how far the eastern pit boundary extends.

2.7.2 Mining Sequence

For the purpose of analysis it is assumed that mining in Pit 2-E would commence as mining in Pit 2 nears completion. In this event, waste rock generated from Pit 2-E would be placed into Pit 1 or Pit 2. Mining in Pit 3 would commence following completion of quarrying in Pit 2-E and would permit sequential backfilling of either Pit 1, Pit 2, or Pit 2-E with waste rock from Pit 3.

In the event mining would begin in Pit 2-E or Pit 3 prior to Pit 1 or Pit 2 completion, waste rock would be hauled to the Pit 2 waste rock storage area. The Pit 2 waste rock storage area would have sufficient capacity to hold all the waste generated in all four pits concurrently.

The mining sequence could be modified and Pit 2-E and Pit 3 mined in a different order, earlier than planned, or concurrently with Pit 1 and 2, depending on product demand, flagstone quality, flagstone availability, and other economic or technical issues. However, the BLM would require that L&W Stone maximize the backfilling of Pit 1 under any mining sequence approved.

All mining methods would be similar to that currently employed in Pit 1 and Pit 2. Modification of techniques may be necessary to meet site specific requirements. If needed, displaced areas (topsoil storage areas, explosive storage areas) would be relocated to existing disturbed areas and would not require additional disturbance acreage.

2.7.3 Work Schedule, Personnel and Mine Production

As stated under Alternative C, mining activities could occur 24 hours per day, 7 days per week, and 12 months per year, but production would vary with market demand, mine logistics, and weather conditions. The Applicant estimates sufficient mineral resources exist to support a mine life of up to 40 years.

Approximately 112 employees would be required at the peak of mine production. Approximately 66 year-round employees would be needed including truck drivers, heavy equipment operators, explosive technicians, vehicle maintenance technicians, general maintenance staff, and rock splitters and handlers. Up to 46 seasonal workers would be needed on a daily basis. These workers would consist primarily of rock splitters who typically would work from April through December of each year.

2.7.4 Traffic

Workers would travel to the Three Rivers Stone Quarry site in personal vehicles. Many workers would carpool to the site. The majority of workers, approximately 56 personal vehicles per day, would travel from Challis and back each day along SH-75 to the quarry (at a carpool rate of two individuals per vehicle).

Under Alternative D, approximately 1,500 to 2,000 truck trips per year would be required to transport the flagstone from the quarry to wholesale and retail markets. The routes from the quarry and the proportion of trucks using each route would be the same as under Alternative B (Figure 2.5-2), but the truck volume would be greater. Approximately 190 to 250 trucks per year would travel south on SH-75, passing through the towns of Stanley and Ketchum, and approximately 1,300 to 1,750 trucks per year would travel north on SH-75 to the town of Challis and then travel south on US-93 to the town of Arco. From Arco approximately 375 to 500 trucks would travel east on US-20 to Idaho Falls and another 940 to 1,250 trucks would travel southwest on US-20/26/93.

2.7.5 Exploration Activity

Exploration activity, as described for Alternative C, would occur in an approximately 18-acre area on both sides of, but primarily south of, the Spar Canyon South Butte transmission line (Figure 2.7-1). No exploration activity would occur within 50 feet of the boundary of the ACEC/RNA.

2.7.6 Water Consumption

As under Alternative C, a well would be drilled under the IDWR-approved water right application to provide a water source for dust control and irrigation (Figure 2.7-1). Two 8,000 gallon water trucks fitted with front and rear spray booms would be used for dust suppression activities. It is estimated that under Alternative D, a maximum of 95,000 gallons of water would be used daily for dust suppression. The majority of use would occur during the frost-free and dry months, when dust becomes a problem. Nearly all of the water would be used for dust suppression on mine roads, pits and other areas of surface disturbance, and some would be used for drilling water. Some additional water would be used for reclamation activities including compaction and irrigation of planted areas. Total water use would not exceed the annual 340 acre-feet per year water right.

2.7.7 Sediment and Erosion Control and Stormwater Management

Under Alternative D, in addition to the regrading of the administration area, modification to the existing stormwater detention trench and construction of a new stormwater detention pond as described under Alternative C, an additional stormwater detention pond would be constructed between Pit 2-E and Pit 3 (Figure 2.7-1). Pit 2-E and Pit 3 would be graded in such a way to allow water to be captured in lined ditches and delivered to the stormwater detention pond. Additional drainage ditches would be constructed to capture surface runoff from the main mine access road in the vicinity of Pit 2-E and Pit 3 and deliver runoff to the stormwater detention pond. The stormwater detention pond would be large enough to capture all surface water runoff from Pit 2-E, Pit 3, and the main mine access road, and would prevent mine generated runoff from flowing into the ACEC/RNA. These stormwater detention basins would be monitored to ensure that they function properly over the life of the project. State of Idaho Mining BMPs would also be applied in an effort to minimize potential sediment delivery to the East Fork and Salmon rivers, as under Alternative B (Appendix B).

2.7.8 Reclamation

Reclamation would be the same for Alternative D as described for Alternative C.

2.8 COMPARISON OF ALTERNATIVES

Table 2.8-1 provides a comparison of the alternatives by Proposed Project features. Table 2.8-2 provides a summary of potential resource impacts for Alternative A, Alternative B, Alternative C, and Alternative D. The reader should note that the numbers provided in Table 2.8-1 and Table 2.8-2 are approximate values and should be used for analysis purposes only.

Table 2.8-1. Comparison of Project Features of the Action Alternatives.

Project Features	Alt. B	Alt. C	Alt. D
Period of Operation (Years)	3-5	30	40
Total Work Force (yr-round/seasonal)	75 (39/36)	100 (61/39)	112 (66/46)
Acres of surface disturbance			
Existing	92	92	92
Proposed New	8	49	73
Exploration	None	31	18
Total	100	172	183
Pit Expansion			
Pit 1	30 feet per year	90 feet per year	90 feet per year
Pit 2	15 feet per year	15 feet per year	Expanded (Pit 2-E)
Pit 3	NA	NA	Excavated
Material removed per year (In tons; waste rock and flagstone)	100,000	240,000	300,000
Number of blasts per month	16	16	32
Truck loads of flagstone leaving the quarry per year	800-1,200	1,200-1,500	1,500-2,000
Water source	Off-site surface water	On-site well	On-site well
Water use (maximum daily use, gallons)	~55,000	~87,000	~95,000
Pits	2	2	3
Reclamation	Same for all alternatives		

Table 2.8-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
PHYSICAL				
Air Quality	Mining-related air pollution would be eliminated upon closure of the mine. Some dust and vehicle and equipment emissions would be generated during reclamation, although dust suppression techniques would reduce the levels of particulate matter in the air. After successful reclamation, the generation of coarse particulate matter and vehicle and equipment emissions from the quarry site would be similar to that generated prior to mining operations.	Emissions from heavy mine equipment, passenger vehicles, and trucks would be released at levels similar to current conditions, and dust would continue to be generated from blasting, excavation, and vehicle travel on unpaved roads for 3 to 5 years. Impacts to air quality would be temporary. Application of water during mining operations and reclamation would reduce dust in the air. Site reclamation would reduce long-term fugitive dust.	Sources of air pollution would be similar to Alternative B but levels would be increased due to the proposed expansion (increased use of heavy machinery, travel by employees, transport of materials, acres of surface disturbance) and by new exploration activities, and would be generated over a 30-year time period. Application of water during mining operations and reclamation would reduce fugitive dust. Reclamation of disturbed areas would reduce wind-generated fugitive dust over the long-term.	Same as Alternative C but levels of air pollution would be increased due to the proposed increase in excavation and associated release of vehicle and equipment emissions and dust, and generated over a 40-year period. Exploration activities and associated pollution would be less than under Alternative C. Application of water during mining operations and reclamation would reduce fugitive dust. Reclamation of disturbed areas would reduce amount of fugitive dust over the long-term.
Geology and Minerals (leaseable, locatable, saleable)	Locatable and saleable minerals would no longer be mined and exploration for locatable minerals would not occur. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.	About 100,000 tons of flagstone and waste rock would be removed annually from the quarry, for a maximum total of 500,000 tons. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.	About 240,000 tons of flagstone and waste rock would be removed annually from the quarry, for a total of 9.6 million tons. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.	About 300,000 tons of flagstone and waste rock would be removed annually from the quarry, for a total of 12 million tons. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.

Table 2.8-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Soils	Surface disturbance would be limited to previously disturbed areas during reclamation. A minor amount of soil loss would occur. Once vegetation becomes successfully established in reclaimed areas, there would be a decrease in the amount of soil loss from disturbed areas over current conditions.	There would be 8 new acres of surface disturbance over current conditions. Soil loss could occur during salvage and replacement operations and from the topsoil stockpile due to wind and water erosion. Water erosion of soil could also occur in disturbed areas during heavy rains. Reduced biological activity and structure of soil could also result. BMPs would be applied to minimize soil loss.	There would be 49 acres of new surface disturbance and a potential increase in the amount of topsoil stockpiled. This would result in an increase in the potential for soil loss from the topsoil stockpile and from disturbed areas. Potential impacts to biological activity and structure of soil would be greater than under Alternative B. BMPs would be applied to minimize soil loss.	There would be 73 acres of new surface disturbance and a potential increase in the amount of topsoil stockpiled. This would result in the greatest potential for soil loss of all alternatives. Potential impacts to biological activity and structure of soil would be greater than under alternatives B and C. BMPs would be applied to minimize soil loss.
Hazardous Substances and Petroleum Products	During cleanup and reclamation, there would be the potential for chemicals and petroleum products stored on site to leak or spill during removal and transport from the quarry. The risk would be reduced by implementing the Chemical Spill Prevention, Control, and Countermeasures Plan. The risk would be eliminated upon completion of reclamation.	There would be the potential for leaks and spills of chemicals and petroleum products, including fuel, to occur during storage and transport of materials and maintenance and operation of vehicles and heavy equipment. There would also be the potential for leaks and spills during the storage, transport, and mixing of ammonium nitrate and fuel oil. The risk would be reduced by implementing the Chemical Spill Prevention, Control, and Countermeasures Plan.	The risk of leaks or spills of chemicals and petroleum products would be increased and would exist over a longer time period than under Alternative B. The risk would be reduced by implementing the Chemical Spill Prevention, Control, and Countermeasures Plan.	The risk of leaks or spills of chemicals and petroleum products would exist over the longest time period of all alternatives. The risk would be reduced by implementing the Chemical Spill Prevention, Control, and Countermeasures Plan.

Table 2.8-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Water Quality	The potential for impacts to water quality would cease upon successful reclamation of the quarry. During reclamation, there would be short-term potential for fuel spills and erosion and potential subsequent fuel and sediment delivery to the Salmon and East Fork Salmon rivers. This risk would be reduced by implementing a Chemical Spill Prevention, Control, and Countermeasures Plan and BMPs.	There would be a minor increase over existing conditions for the potential risk for spills of fuel, petroleum products, and other chemicals, and erosion and the potential subsequent delivery of fuel and petroleum products and sediment to the Salmon and East Fork Salmon rivers. This risk would be reduced by implementing a Chemical Spill Prevention, Control, and Countermeasures Plan and BMPs.	The risk and the levels of fine sediment and fuel, petroleum products, and other chemicals potentially reaching the Salmon and East Fork Salmon rivers would be increased over Alternative B and would occur over a longer period of time. Improvements to the existing detention basin and addition of one new detention pond along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan. BMPs would reduce this risk.	The risk and the levels of fine sediment and fuel, petroleum products, and other chemicals potentially reaching the Salmon and East Fork Salmon rivers would be the greatest of all alternatives and would occur over the longest period of time. However, improvements to the existing detention basin and construction of a two new detention basins, along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan. BMPs would reduce this risk.
Noise	Noise would be generated by reclamation activities at sound levels acceptable for residential land use. Upon completion of reclamation, daytime noise impacts from the quarry would be insignificant. Noise generated from reclamation activities in the vicinity of raptor perch and nest sites would not exceed the 65 dBA hourly Leq threshold.	Noise would be generated by mining operations and reclamation activities at sound levels acceptable for residential land use. Noise generated in the vicinity of raptor perch and nest sites from mining operations and reclamation activities would not exceed the 65 dBA hourly Leq threshold.	Noise levels from mining operations at the closest residence to the quarry would approach the 55 dBA sound level limit recommended by the EPA for determining acceptable sound levels for residential land use and could possibly be exceeded if additional blasting is used for exploration. Noise generated in the vicinity of raptor perch and nest sites from mining and reclamation activities would not exceed the 65 dBA hourly Leq threshold.	Noise levels from mining operations at the closest residence to the quarry would exceed the 55 dBA sound level threshold recommended by the EPA for determining acceptable sound levels for residential land use. Noise generated in the vicinity of raptor perch and nest sites from mining and reclamation activities would not exceed the 65 dBA hourly Leq threshold.

Table 2.8-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
BIOLOGICAL				
Vegetation	Reclamation would increase the number of vegetated acres within the Proposed Project Area, but vegetation composition of the reclaimed acres could differ from pre-mining conditions. A weed management plan would be implemented under all alternatives to control weeds.	Approximately 2 acres of shrublands would be disturbed over a period of 3 to 5 years. Surface disturbance would create potential habitat for invasive species.	Approximately 32 acres of shrublands, 3 acres of grassland, and 2 acres of rock outcrop (with associated vegetation) would be disturbed over a period of 30 years. There would be a greater likelihood for establishment and spread of invasive plants than for Alternative B.	Approximately 51 acres of shrublands, 3 acres of grassland, and 5 acres of rock outcrop would be disturbed over a period of 40 years. The likelihood of establishment and spread of invasive plants would be greatest under this alternative.
Special Status Plants	No impacts to special status plants.	No special status plant species are known to occur at the quarry. Up to 4 acres of potentially suitable habitat for special status plant species would be disturbed.	Up to 68 acres of potentially suitable habitat for special status plant species would be disturbed (37 from mining and 31 from exploration).	Up to 77 acres of potentially suitable habitat for special status plant species would be disturbed (59 from mining and 18 from exploration).

Table 2.8-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Fish and Wildlife	Potential impacts to wildlife from noise, visual disturbance, and human/wildlife encounters from mining operations would cease upon closure of the mine, once reclamation activities are completed. Reseeding would improve vegetative cover and associated habitat and food sources for wildlife at the quarry site. Potential impacts to fish habitat from mining operations would be eliminated following completion of successful reclamation.	Removal of vegetation would potentially impact habitat for big game, upland bird, furbearer, non-game bird, and small mammal species. Mining activities would create a potential visual disturbance to wildlife and could increase the chance of human/wildlife encounters. Noise from blasting and heavy equipment use could impact noise-sensitive wildlife species and could lead to displacement. Fragmentation of habitat could lead to displacement from or avoidance of the Proposed Project Area. Disturbance from mining during severe winters could lead to reduced reproduction or increased winter mortality of mule deer. Impacts to habitat quality for game- and non-game fish species could result from the potential delivery of sediment and chemicals and petroleum products to the East Fork Salmon and Salmon rivers.	Types of potential impacts to wildlife would the same as Alternative B, but the potential for occurrence and level of severity would be greater due to the increased surface disturbance, number of employees, heavy equipment use, passenger vehicle and truck traffic. Potential impacts to fish habitat would be similar to Alternative B, but risk of impact would be greater. Improvements to the existing detention basin and addition of one new detention pond along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan. BMPs would reduce this risk.	Types of potential impacts to wildlife would the same as Alternatives B and C but the potential for occurrence and level of severity would be greater due to the increased surface disturbance, number of employees, heavy equipment use, blasting, and passenger vehicle and truck traffic. Potential impacts to fish habitat would be similar to Alternatives B and C, but risk of impact would be greater. Improvements to the existing detention basin and construction of a two new detention basins, along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan. BMPs would reduce this risk.

Table 2.8-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Special Status Fish and Wildlife	Potential impacts of noise, visual disturbance, and human/wildlife encounters from mining operations would cease upon closure of the mine, once reclamation activities are completed. Reseeding would improve vegetative cover and associated forage and browse for wolf prey species and habitat for sage-grouse at the quarry site. Potential impacts to aquatic biota, special status fish, and fisheries habitat from mining operations would be eliminated following completion of reclamation.	Potential disruption of bald eagle foraging and perching behavior during the winter. Potential increase in prey availability to wolves from potential displacement of mule deer. Minor reduction in and fragmentation of potential habitat for sage-grouse. Potential disruption of peregrine falcon foraging activities during the breeding season. Canada lynx and pygmy rabbits would not be impacted. Potential impacts to aquatic biota, special status fish, and fisheries habitat could result from the potential delivery of sediment and chemicals and petroleum products to the East Fork Salmon and Salmon rivers. Implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan and BMPs would reduce this risk.	Types of potential impact to the behavior or habitat of the bald eagle, gray wolf, sage-grouse, and peregrine falcon would be the same as under Alternative B, but the potential for occurrence and level of severity would be greater due to the increased amount of surface disturbance, number of employees, heavy equipment use, and passenger vehicle and truck traffic. Potential impacts to aquatic biota, special status fish, and fisheries habitat would be similar to Alternative B, but risk of impact would be greater. Improvements to the existing detention basin and addition of one new detention pond along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan and BMPs would reduce this risk.	Types of potential impact to the behavior and habitat of the bald eagle, gray wolf, sage-grouse, and peregrine falcon would be the same as under Alternatives B and C, but the potential for occurrence and level of severity would be greater due to the increased amount of surface disturbance, number of employees, heavy equipment use, blasting, and passenger vehicle and truck traffic. Potential impacts to aquatic biota, special status fish, and fisheries habitat would be similar to Alternatives B and C, but risk of impact would be greater. Improvements to the existing detention basin and construction of two new detention basins, along with implementation of a Chemical Spill Prevention, Control, and Countermeasures Plan and BMPs would reduce this risk.
Wild Horses and Burros	Upon successful reclamation, there would be the potential for increased use of the project site by wild horses in the Challis HMA. There are no burros in the Challis HMA.	Use of the mine by wild horses would be expected to continue at its current low level. Mining activities should not impact retention of the management level in the HMA.	Use of the mine by wild horses during the period of operation could potentially decline over current conditions. Activities should not impact retention of the management level in the HMA.	Same as Alternative C.

Table 2.8-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
OTHER RESOURCES				
Cultural Resources	Cultural resources eligible for the National Register would not be affected.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
Tribal Rights and Interests	There would be no negative impacts to Tribal rights and interests.	Access limitations in the active quarry area could impact tribal treaty rights. The BLM would work with the Shoshone-Bannock Tribal members regarding access needs so that treaty rights are honored.	Same as Alternative B.	Same as Alternative B.
Social and Economic Conditions	Loss of 75 jobs and a 100% decrease in earnings and industrial output associated directly with the mine. A 12% reduction of total employment in the Challis area and about a $5.4 million loss in annual income. Potential population reduction of up to 307 people over the long-term, depending on the employment base in the area.	The mine would continue to employ approximately 75 workers for up to 5 years. Social and economic conditions would stay the same as current conditions. After 5 years, the impacts to the number of jobs and the changes to the population and economy of the Challis area would be similar to Alternative A.	Gain of 25 jobs relative to existing conditions and a 32% and 33% increase in earnings and industrial output associated directly with the mine, respectively. A 3% increase in total employment in the Challis area and about a $1.5 million annual increase in new income. Population in the area could increase by about 87 people.	Gain of 37 jobs relative to existing conditions and a 48% and 50% increase in earnings and industrial output associated directly with the mine, respectively. A 6% increase in total employment in the Challis area and about a $2.7 million annual increase in new income. Population in the area could increase by about 145 people.

Table 2.8-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Visual Resources	Long-term visual contrasts would move from strong to moderate at KOP 6, from weak to none at KOP 3, and from moderate to weak at KOP 1 and KOP 2. Reclamation would diminish visual contrasts at the site and it could begin to resemble the surrounding landscape after approximately 5 years. VRM Class II objectives would be met over the short-term when viewed from KOP 1, KOP 3, KOP 4, and KOP 5 but would not be met when viewed from KOP 2 and KOP 6. Upon completion of reclamation, VRM Class II objectives would be met from all KOPs.	There would be strong visual contrasts apparent from KOP 6, weak contrasts visible from KOP 3, and moderate contrasts from KOP 1 and KOP 2 until reclamation was complete. Reclamation would diminish some visual contrast. Long-term visual contrasts would be the same as Alternative A. Naturalness would return to the site after approximately 10 years. VRM Class II objectives would be met over the short-term when viewed from KOP 1, KOP 3, KOP 4, and KOP 5 but would not be met when viewed from KOP 2 and KOP 6. Upon completion of reclamation, VRM Class II objectives would be met from all KOPs.	There would be strong visual contrasts apparent from KOP 6 and moderate contrasts from KOP 1 and KOP 2 until reclamation was complete. There would be a long-term weak increase in landscape form contrast at KOP 4. After reclamation, contrasts could move from strong to moderate at KOP 6, and from moderate to weak at KOP 1 and KOP 2. Reclamation at the site would be concurrent with operations and would diminish contrasts once completed. Naturalness would return to the site after approximately 35 years. VRM Class II objectives would be met over the short-term when viewed from KOP 1, KOP 3, KOP 4, and KOP 5 but would not be met when viewed from KOP 2 and KOP 6. Upon completion of reclamation, VRM Class II objectives would be met from all KOPs.	There would be strong visual contrasts apparent from KOP 6 and KOP 2 and moderate contrasts from KOP 1 until reclamation was complete. There would be a long-term weak increase in landscape form contrast at KOP 4. After reclamation, contrasts could move from moderate to weak at KOP 1, and from strong to moderate at KOP 6 and KOP 2. Reclamation at the site would be concurrent with operations and would diminish contrasts once completed. Naturalness would return to the site after approximately 45 years. VRM Class II objectives would be met over the short-term when viewed from KOP 1, KOP 3, KOP 4, and KOP 5 but would not be met when viewed from KOP 2 and KOP 6. Upon completion of reclamation, VRM Class II objectives would be met from all KOPs.

Table 2.8-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Transportation, Access, and Public Safety	Daily traffic on SH-75 would be reduced by about 7%. Gates would be removed from mine access roads, allowing public access.	Daily traffic on SH-75 associated with the quarry would continue at the current rate. Access roads would continue to be used and constructed, as needed, to facilitate mining. Access to the quarry would continue to be restricted for public safety purposes.	Daily vehicle use associated with the quarry would increase traffic volume on SH-75 by about 3% over Alternative B. Access roads would continue to be used and constructed, as needed, to facilitate mining and additional small, two-track roads would be constructed to facilitate exploration activities. Impacts to public access and safety would be the same as Alternative B.	Daily vehicle use associated with the quarry would increase traffic volume on SH-75 by about 5% over Alternative B. Access roads would continue to be used and constructed, as needed, to facilitate mining, including construction of a new road to access Pit 3. Additional small, two-track roads would be constructed to facilitate exploration activities, but less than under Alternative C. Impacts to public access and safety would be the same as Alternative B.
Lands Uses and Private Property	Mining operations would cease. All other existing land uses (cattle grazing and right-of-way (ROW) agreements) would continue. Recreation would no longer be restricted in the quarry site by locked gates and mining operations.	All existing land uses would continue. A ROW application for the proposed 14.4 kV transmission line would be submitted by L&W Stone to the BLM. Access to the quarry would continue to be restricted for public safety purposes by locked gates and land would not be available for other uses or other ROW applications.	Same as Alternative B, but additional areas, specifically those proposed for exploration, would have access restricted for public safety purposes.	Same as Alternative B, but additional areas, specifically Pit 2-E and Pit 3 and the area proposed for exploration, would have access restricted for public safety purposes.

Table 2.8-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Recreation	Recreational use of the quarry site would likely increase upon removal of access gates and upon completion of reclamation. Recreational values of the Upper Salmon River Special Recreation Management Area (SRMA) would increase.	Recreational use of the Proposed Project Area would continue to be restricted in operating areas and access to the mine would continue to be closed to the public for up to 5 years. Minor impacts to the scenic values of the SRMA would result, but the objectives of the SRMA would still be met. Potential impacts to the SRMA from quarry operations would occur in an area consisting of less than 1% of the entire SRMA.	Increased restrictions of the Proposed Project Area to recreational use over Alternative B due to quarry expansion and exploration. If mining operations were to occur at night, the lights could potentially alter the ambient evening light level at the East Fork Campground and be visible to travelers on SH-75. Objectives of the SRMA would still be met; however, the scenic values would be reduced to some degree over Alternative B because of the longer duration of the proposed operations.	Same as Alternative C, but areas where restrictions would apply could be different. Objectives of the SRMA would still be met; however, the scenic values would be reduced over Alternative B and C because of the increase in visual impacts and longer duration of the proposed operations.
Livestock Grazing	Potential increase of 4 to 5 animal unit months (AUMs) after successful reclamation of the quarry.	Reduction in available cattle forage in the Split Hoof Allotment by less than 1 AUM. The Split Hoof Allotment would likely continue to be ungrazed.	Reduction in available cattle forage in the Split Hoof Allotment by less than 3 AUMs. Otherwise, same as under Alternative B.	Reduction in available cattle forage in the Split Hoof Allotment by less than 5 AUMs. Otherwise, same as under Alternative B.

Table 2.8-2. Summary Comparison of Resource Impacts for All Alternatives.

Resource	Alternatives			
	A	B	C	D
Special Designations (Wild and Scenic Rivers, ACEC/RNA)	The outstandingly remarkable values of the Salmon River (recreational, fisheries, and geologic) and East Fork Salmon River (scenic, recreational, and fisheries) would be maintained. Following reclamation activities the Proposed Project Area would appear less altered and would mostly blend in with the surrounding landscape. The free-flowing characteristics of the rivers would not be affected. The portion of Pit 1 that overlaps the East Fork Salmon River Bench ACEC/RNA would not be reclaimed. An appropriate buffer would be maintained during reclamation activities to prevent any rockfall into, or disturbance of, the ACEC/RNA.	Short-term impacts to fisheries habitat in the Salmon and East Fork Salmon rivers and alterations in geology in the vicinity of the Salmon River due to the removal of flagstone. However, no degradation of the outstandingly remarkable values of these rivers would result. Following reclamation activities, the quarry would appear less altered and would mostly blend in with the surrounding landscape, reducing the potential for any impacts to the geologic quality of the Salmon River. The free-flowing characteristics of the Salmon and East Fork Salmon rivers would not be affected. The southern end of Pit 1 would continue to be located in, but would not be expanded further into, the ACEC/RNA. Measures would be in place to prevent and contain potential fuel spills. A weed management plan would be implemented to monitor and control the potential spread and establishment of invasive weeds from the quarry site to the ACEC/RNA. Reclamation impacts would be the same as under Alternative A.	No degradation of the outstandingly remarkable values of the Salmon and East Fork Salmon rivers, as under Alternative B. Impacts to geology would be realized through expanded mining under Alternative C to a greater degree than under Alternative B but would not result in degradation of the overall geology along the Salmon River. Pit 1 would continue to be located in the ACEC/RNA as under Alternative B. Pit 1 would be expanded, but not into the ACEC/RNA. A 50-foot buffer zone would be maintained between the proposed exploration area and the cliffs to minimize potential rockfall into the ACEC/RNA. Otherwise, same as under Alternative B.	No degradation of the outstandingly remarkable values of the Salmon and East Fork Salmon rivers, as under Alternative C. Potential impacts to the ACEC/RNA would be the same as under Alternative C, except that Pit 3 would be excavated adjacent to a portion of the ACEC/RNA, increasing the potential risk of weeds spreading and rocks rolling into the ACEC/RNA. A 50-foot buffer zone would also be maintained between Pit 3 and the cliffs to protect the plant communities in the ACEC/RNA from potential rockfall.

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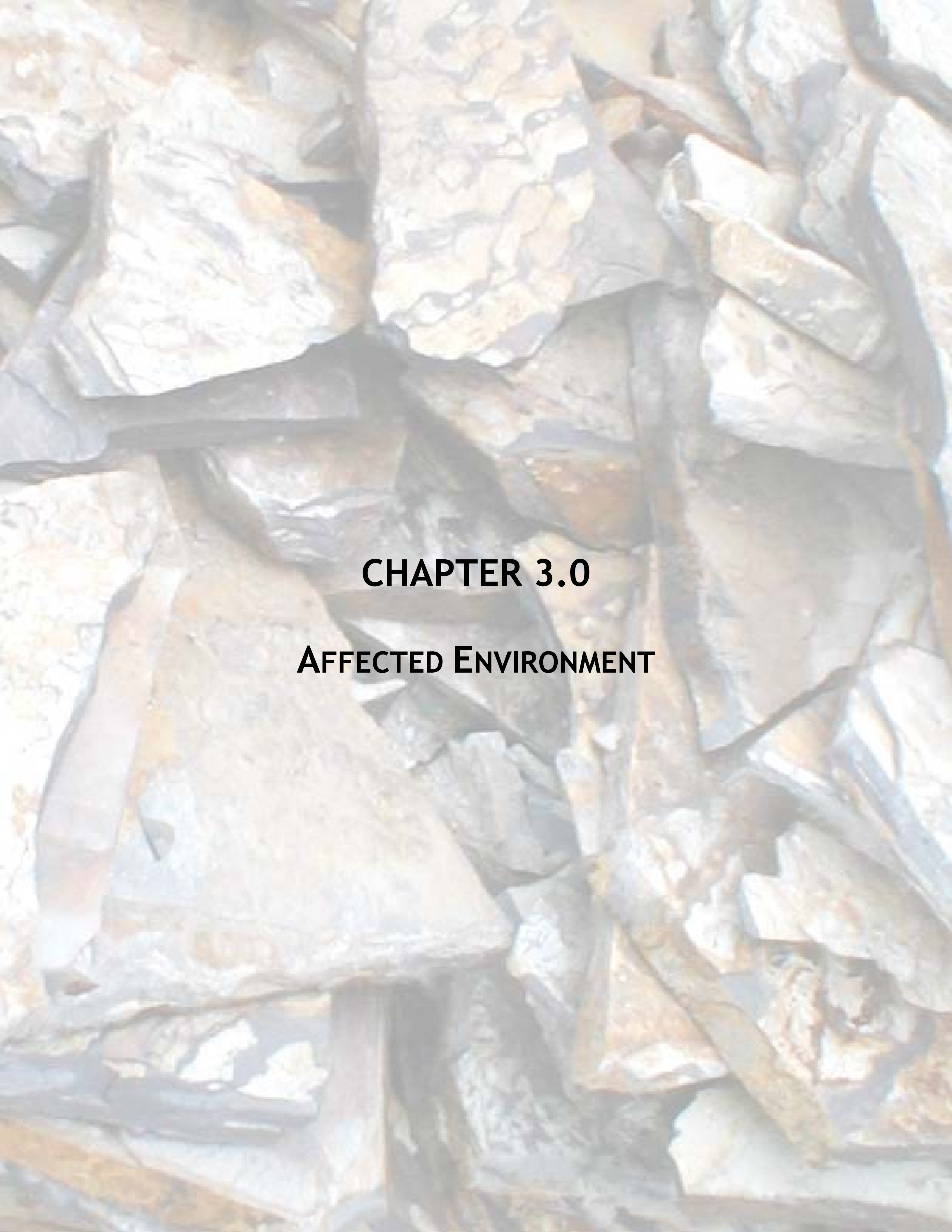


CHAPTER 3.0

AFFECTED ENVIRONMENT

The purpose of this chapter is to describe the existing or affected environment, including conditions and trends that could be affected by the alternatives described in Chapter 2. The affected environment also sets the foundation for understanding and evaluating the alternatives discussed in Chapter 2 and the environmental consequences discussed in Chapter 4. This chapter presents information about the landscape, cultural, natural, and human environment as either a resource, or a resource use.

This chapter focuses on those portions of the environment that are directly related to the conditions and resource categories being addressed by the alternatives. The description is not meant to be a complete portrait of the study area, but is intended to portray the conditions and trends of most concern to the public and the Bureau of Land Management (BLM). Indicators for the impact assessment have been established by resource to better assess the consequences of each alternative.

BLM is directed to use available data when preparing the Environmental Impact Statement (EIS) and does not use the EIS process to generate substantial amounts of original (new) data. The majority of the data that are used to characterize the affected environment were collected from the Challis Field Office of the BLM; Federal, state, county, and local agencies including but not limited to the U.S. Fish and Wildlife Service (USFWS), U.S. Geologic Survey (USGS), Idaho Department of Fish and Game (IDFG), and the Idaho Department of Environmental Quality (IDEQ). The data include published and unpublished reports, maps, and data in digital format.

In accordance with the National Environmental Policy Act (NEPA) regulations codified in Title 40 Code of Federal Regulations (CFR) 1502.15 (40 CFR 1502.15), the affected environment section discusses the existing condition of the human and natural environment that potentially could be affected, beneficially or adversely, by the alternatives. The affected environment is characterized by the following:

3.0.1 Critical Elements Not Affected or Present Within the Proposed Project Area

Wetlands

There are no wetlands within the Proposed Project Area.

Wilderness

There are no wilderness areas within or adjacent to the Proposed Project Area.

Farmlands

There are no prime or unique farmlands located within the Proposed Project Area boundaries, and no impacts to adjacent farmlands would occur under any of the Proposed Project alternatives.

3.1 PHYSICAL RESOURCES

3.1.1 Air Quality

The three types of air pollutants that occur at the quarry site are 1) vehicle emission from gasoline-powered and diesel-powered vehicles and equipment, 2) dust created by mining activities and use of dirt roads, and 3) releases of Carbon Monoxide, Nitrogen Oxide, Sulfur Dioxide, and course particulate matter (dust) during blasting.

All land administered by the BLM has a Prevention of Significant Deterioration Class II status (Clean Air Act Amendments of 1977), for which moderate air quality deterioration associated with moderate, well-controlled industrial and population growth is allowed (USDI 1998). Idaho air quality is under the jurisdiction of the U.S. Environmental Protection Agency (EPA) Region 10, but monitoring and enforcement of air quality regulations are conducted by the IDEQ, which routinely measures ambient air criteria pollutants, including carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Custer County is designated as an attainment area and does not currently have any air quality areas of concern (IDEQ 2006a). In addition, the Idaho Administrative Procedures Act (IDAPA) requires that all reasonable precautions be taken to prevent particulate matter from becoming airborne (IDAPA 58.01.01.651). The potential for particulate matter levels to be elevated by the mining operations was raised as an issue of concern by the public. To address this issue, the baseline data on particulate matter in the region is described below.

IDEQ monitors air quality at selected locations throughout the State. The closest air quality monitoring station to the Proposed Project Area is located in Salmon, Idaho, approximately 65 miles northeast of the Proposed Project Area. "Fine" particulate matter (PM 2.5; particles less than 2.5 micrometers in diameter such as those found in smoke and haze) was sampled every hour at this location for a 12-month period from October 2004 through September 2005. The data was averaged over monthly intervals and are displayed below in Table 3.1-1 (IDEQ 2006b). Although this station is located a significant distance from the quarry, the data are still somewhat representative and provide an understanding of the air quality characteristics, as the climate and vegetation are relatively similar at the Proposed Project Area.

Table 3.1-1. Average Monthly Particulate Matter (PM 2.5), Salmon, Idaho, October 2004 – September 2005.

Month	Average (PM2.5 ug/m^3)
OCT (2004)	5.25
NOV	10.37
DEC	12.56
JAN (2005)	15.35
FEB	17.10
MAR	9.32
APR	6.46
MAY	4.04
JUN	3.54
JUL	5.39
AUG	15.95
SEP	14.08

Note: Monthly data is the average (mean) calculated from hourly samples taken over a 12-month period using a Tapered-Element Oscillating Microbalance sampler.

Source: IDEQ 2006b

PM 2.5 in 2004 was relatively higher in the late summer and winter months. Particulate matter generated by wildfire and agricultural burning is generally greatest in the late summer. High particulate matter in the winter in Salmon may be attributed to inversion conditions that tend to promote stagnant air masses in valleys. This trend is not seen in the Challis area due to the low population. Data on "coarse" particulate matter (PM 10; particles larger than 2.5 micrometers and less than 10 micrometers in diameter) were measured in Salmon in a Hi-volume sampler from October 6 through December 29, 2004 (PM 10 are not available for a full year from this area). Measurements averaged 24.6 ug/m^3 over this time period.

All areas throughout the United States are assigned to one of three different classes of air quality protection. These are called Prevention of Significant Deterioration (PSD) Classes I, II, and III. Essentially, they help to insure that the air quality in clean air areas remains clean and does not deteriorate to the level of the National Ambient Air Quality Standards (NAAQS). The mechanism created by Congress to meet this goal is the establishment of "PSD increments." These increments define the maximum allowable increases over baseline concentrations that are allowed in a clean air area for a particular pollutant. These increments are promulgated in the EPA PSD regulations at 40 CFR 52.21(c). Idaho has adopted these increments as state regulation in IDAPA 58.01.01.577.

In the 1977 Clean Air Act Amendments, Congress designated all international parks, national wilderness areas, and national memorial parks, which exceed 5,000 acres in size, and all national parks, which exceed 6,000 acres in size as mandatory PSD Class I areas. Class I areas are to receive special protection from degradation of air quality, and the most stringent PSD increments apply in these areas. The Class I areas closest to the Proposed Project area are the Frank Church River of No Return Wilderness located 21 miles to the west of the quarry, the Sawtooth National Recreation Area located 30 miles southwest of the quarry, and the Craters of the Moon National Monument, located 65 miles south of the proposed area. All of Custer County and the remainder of Idaho are designated as PSD Class II. PSD Class II areas are those that need reasonably or moderately good air quality protection. Most proposed development projects can be accommodated within the increments set for PSD Class II areas. There are no Class III areas in Idaho.

Pollution sources in the vicinity of the quarry site are generally non-point and temporary. Smoke haze may occur for a few days in the Challis area during the spring and summer months when forest or farmland fires are burning locally and during the winter when residents are using wood-burning stoves. Smoke haze may occur for a few days to several weeks when smoke from large forest or brush fires in Idaho, Montana, Nevada, or California is carried by prevailing winds into the Challis area. Dust pollution (PM 10) can be locally quite severe on more frequently traveled unpaved roads. Such dust pollution is rapidly dispersed by prevailing winds (USDI BLM 1998, p. 193). Wind-generated dust can also occur across the landscape, and can be especially dust-laden during the late summer and other dry periods, such as during drought. Dust pollution is also created by mining operations at the Three Rivers Stone Quarry and during high winds it is sometimes visible from areas inside and outside of the Proposed Project area. However, dust suppression is implemented on mining roads, pits, and other areas of surface disturbance, thus reducing the amount, spread, and duration of fugitive dust in the area.

3.1.2 Geology

The following section explains the geologic phenomena and defines geologic terms used for the flagstone excavated at the Three Rivers Stone quarry. This section also summarizes the previous geologic work in the immediate area, and then briefly discusses the rock exposed in Pit 1 at the quarry.

Background

In the area, much of the rock was initially deposited as sediment or once-living organisms, both of which accumulated on a sea floor during the Ordovician Period (about 570 to 460 million years ago; geologic ages from Palmer and Geissman 1999). Mineral-laden water then percolated through the open pore space of the sediment. The spaces gradually filled with minerals that precipitated from the water and eventually cemented (“lithified”) the grains into horizontal layers of sedimentary rock. The individual layers are called beds, or, if quite thin, laminae. They are distinguished from each other by differences in grain size or lithologic (rock type) composition, such as the difference between shale (created from mud) and quartz sandstone (created from sand-size quartz grains). Horizontal beds are a type of sedimentary structure that is common in the rocks at the Three Rivers Stone quarry. Simple horizontal beds form in practically all sedimentary environments. They often represent rapid sediment deposition, usually by a single hydrodynamic event. Rocks in the quarry generally have a far less common sedimentary structure called ripples, the subparallel ridges and hollows formed by waves and currents. Ripples form from slight water turbulence in all types of sedimentary environments, but they are rarely preserved in sedimentary rock (Ashley 1990).

In the region, the Ordovician sedimentary rocks are partly covered by the Eocene Challis Volcanic rocks, which were deposited about 40 million years ago. The surface between the Ordovician sedimentary rocks and the Eocene volcanic rocks represents a gap in time of about 400 million years. In many places, the Ordovician and Eocene rocks are overlain by unlithified Quaternary alluvial deposits of variable thickness. These alluvial deposits are mostly pre-Pleistocene, Pleistocene, or Holocene stream deposits (Fisher and Johnson 1995).

Personnel at L&W Stone refer to rock excavated at the quarry as flagstone, shale, argillite, and quartzite. Flagstone is a generic term for any stratified stone that splits into pieces that are suitable for use as paving stones. Like a “flag”, a flagstone is much thinner than it is wide or long. The Three Rivers flagstone is quarried from argillite layers and hand-split into individual slabs ranging in thickness from less than 1 inch to about 5 inches, and ranging in length-to-width from less than 1 foot by 1 foot to 5 feet by 8 feet.

The “shale” at the quarry is a silicified mudrock. Shale is a type of mudrock. Mudrock (or mudstone) refers to all silica-rich clastic sedimentary rocks composed predominantly of silt-size or clay-size particles regardless of their mineral composition. Mud-size particles are generally too small to be distinguished without a microscope. A mudrock composed mostly of silt is called a siltstone, while a mudrock composed mostly of clay is called a claystone. Shale is any mudrock that exhibits the ability to split along very thin layers. This property is called fissility. Fissility is caused by the alignment of the plate-like clay minerals that form parallel layering once the clay-rich mud becomes compacted. The lack of fissility or layering in mudstone may be due either to original texture, or to the disruption of the original texture by organisms burrowing in the sediment prior to lithification.

Following deposition and lithification, the sedimentary rock at the quarry was subjected to pressure, heat, and chemically-active fluids in a process called metamorphism. Metamorphism permanently altered the sedimentary rock at the quarry. Argillite and slate are mudrocks that were subjected to low-grade metamorphism. Both will "ring" when struck by a hammer, whereas shale will "thud" from a hammer blow. Slate, like shale, can be split along planes, but thin pieces of slate are not nearly as crumbly as shale. Slate is defined by its hardness, and by possessing slaty cleavage. Slaty cleavage is created by increased pressure and temperature during metamorphism, which aligns and recrystallizes the platey clay minerals into parallel layering along which the rock readily splits. At the quarry, slaty cleavage is parallel to horizontal beds and laminae. It is the physical property of the flagstone that allows it to be cleaved into thin plates or sheets. Argillite is sometimes considered intermediate between shale and slate because argillite does not possess true slaty cleavage.

The term "quartzite" historically has been applied to all rocks in the quarry area that consist of sand-size grains of quartz that have been lithified by quartz cement. In modern geologic usage, quartz-cemented quartz-rich sand would be called quartz sandstone. Quartz sandstone could also contain minor amounts of other mineral grains, such as feldspar. The term "quartzite" should be reserved for metamorphosed quartz-rich sandstone. A field determination between a sandstone and quartzite can be made by observing if a hammer blow fractures the rock around individual sand grains (a sandstone) or through some or all of the individual grains (a quartzite). At the quarry, the quartzite consists of both quartz sandstone, quartzitic sandstone, and quartzite.

Geologists commonly refer to a vertical stack of beds and laminae as sedimentary strata. Strata and other rocks with distinctive characteristics that cover a large area are called geologic formations. A formation is the fundamental unit in rock stratigraphic classification. It is a body of rock characterized by lithologic similarity; it is generally tabular and mappable at the earth's surface or traceable in the subsurface (ACSN 1961). Geologists map and describe a formation in an area where it is well exposed. Typically, the formation is assigned a name based on the area where it is well exposed. At the Three Rivers Stone quarry, the two Paleozoic formations are:

- The Clayton Mine Quartzite, deposited during the Ordovician Period (438 to 505 million years ago); and

- The Ramshorn Slate, also deposited during the Ordovician Period, but before the Clayton Mine Quartzite (Hobbs and Hays 1990; geologic ages from Palmer and Geissman 1999).

During and following metamorphism, these and other Paleozoic formations in the area were also compressed and fractured. During compression, the strata responded in both a ductile ("bendable") and brittle fashion. The compressing of the strata created folds called anticlines and synclines. Anticlines are upward-curving (convex) folds that resemble an arch. The central part contains the oldest rock formation. Synclines are downward-curving (concave) folds that resemble a “U”. The central part contains the youngest rock formation. An anticline and adjacent syncline share a common limb between the crest of the anticline and the trough of the syncline. The major “megascopic” folds in the Three Rivers Stone quarry area are huge: the horizontal distance between the crest of one anticline and the trough of its adjacent syncline is about 2,000 to 4,000 feet (as measured from the geologic map[1] of Hobbs *et al.* 1991).

During brittle-type folding, fractures develop in fine-grained rock. Certain fractures develop perpendicular to the compression direction that creates anticlines and synclines. These fractures are called axial plane cleavage. At Pit 1 in the quarry, axial plane cleavage in the argillite flagstone is essentially perpendicular to sub-perpendicular to bedding. The axial plane cleavage, the slaty cleavage, and the bedding surfaces allow the argillite to cleave into individual slabs of marketable flagstone.

Also during folding, some strata were broken (faulted) by compression. Some layers were forced on top of adjacent layers. These faults are called thrust faults, which are low-angle reverse faults that emplace older rocks on top of younger rocks. Later, the entire region was pulled apart, and the rocks once again were faulted. These “extensional” or “normal” faults caused large blocks of rock to move downward relative to adjacent blocks of rocks.

Previous Geological Work

Interest in the geology of the area began with the discovery of mineral deposits in the Bayhorse mining district, located about 10 miles to the north of the Three Rivers Stone quarry. The first comprehensive work on the Bayhorse area was by Ross (1937) who described the general rock types and mapped the geology in a reconnaissance fashion. Rocks at the quarry were mapped by Ross (1937) as Ordovician Kinnikinic Quartzite. Hobbs *et al.* (1991) mapped the quarry and surrounding area. They produced a geologic map at a scale of 1:62,500 (1 inch on the map equals about 1 mile on the ground) which shows two geologic formations in the quarry area: the Ordovician Ramshorn Slate, and the Ordovician Clayton

[1]Geologic maps graphically communicate vast amounts of geologic information. A geologic map represents the projection on a flat piece of paper of the intersection between geological three-dimensional features with the surface topography. In addition, geologic maps depict the relative age, composition, and relationships among rocks and sediments at and near the earth’s surface. Geologic maps normally include cross sections or block diagrams that reveal the structure or arrangement of rocks below the Earth’s surface. Such diagrams give map users a glimpse below the ground surface and a better understanding of the three-dimensional arrangement of the rocks (Powell 1992).

Mine Quartzite, along with thrust faults and folds. On their geologic map, many of the contacts between the Ordovician formations are shown as thrust faults. However, the thrust faults mapped by Hobbs *et al.* (1991) emplace younger rocks on older rocks. The geologic map by Hobbs *et al.* (1991) also shows that Ordovician strata are folded; the largest fold is named the Bayhorse anticline. The trace of its axial surface (the plane that cuts the fold in half) is located about 2 miles west of the quarry. From west to east, strata in the quarry dip steeply east, then flatten out, then dip west, and then back to the east, forming a series of synclines and anticlines along the east limb of the megascopic Bayhorse anticline. At the quarry, the geologic map (Hobbs *et al.* 1991) shows the Ordovician Clayton Mine Quartzite to be in depositional contact with the older Ordovician Ramshorn Slate, but the Clayton Mine Quartzite dips under the Ramshorn Slate. No additional geologic mapping has occurred in the quarry area. Later publications (Fisher and Johnson 1995) simply compiled and generalized this earlier work.

In a companion paper to the geologic map, Hobbs and Hays (1990) described the Ordovician and older rocks of the Bayhorse area, and attempted an interpretation of the temporal and stratigraphic relations between these geologic formations. About 1.2 miles east, northeast of the quarry, they described a generalized composite columnar stratigraphic section of the Ordovician Clayton Mine Quartzite. Hobbs and Hays (1990) described the Ordovician Ramshorn Slate by essentially paraphrasing the work of Ross (1937). Both of these Ordovician formations contain rock types that are similar to the quartzite, shale, and argillite exposed in Pit 1 of the quarry. Pit 2 also contains lithologically similar rocks, but their geometric and structural relationship to similar rocks in Pit 1 is not known.

Geology Exposed in Pit 1

Pit 1 provides a superb exposure of the flagstone argillite, shale, and quartzite (Figure 3.1-1). In Pit 1, these strata essentially strike to the north and dip steeply to the east and compose part of the east limb of the megascopic Bayhorse anticline. Along the south wall of Pit 1, the argillite and shale dip an average of 50 degrees to the east. The upper portion of the shale dips about 30 degrees to the east, and the quartzite dips about 20 degrees to the east. The following short description is based on rock exposed along the south wall of Pit 1 and from rock exposed in the cut slope of the quarry road by the fuel storage area. The stratigraphic succession consists of argillite overlain by shale, which is overlain by quartzite. The short rock description includes field descriptions to estimated rock strength of the shale and argillite as defined by Santi (2006). The rock descriptions are followed by a summary of rock and soil samples taken in the quarry area that were geochemically analyzed to determine the abundance of a limited number of metals.

Figure 3.1-1. Flagstone Argillite, Shale, and Quartzite Exposure in Pit 1.

Flagstone Argillite

The color of the argillite, based on a rock color chart, is purple-grey to reddish-purple to grayish-green, with minor light brown-to-buff colors (Goddard and others 1948) (Figure 3.1-2). Rare exposures of the purple argillite show green ellipses. Bedding is generally thickly laminated to thinly bedded. Ripple forms, where preserved, include both symmetric and asymmetric geometries (Figure 3.1-3). The argillite contains poorly-developed slaty cleavage that is essentially parallel to bed forms, and a well-developed cleavage that is perpendicular to sub-perpendicular to bed forms. Based on limited field work, this cleavage may be axial plane cleavage created during the folding. The rock outcrop mostly “rings” when struck by hammer blows. The flagstone argillite has a Weathering Grade of I to II (fresh to slightly decomposed), a Corestone Strength of 1, a Strength Value of 9 to 10, a Discontinuity Value of 0 to 2, and a Jar Slake Value of 6.

Figure 3.1-2. Flagstone Argillite in Pit 1.

Figure 3.1-3. Flagstone Argillite with Ripple Formations in Pit 1.

Shale (Siliceous Mudstone)

The "shale" is more appropriately called a siliceous mudstone. It is generally purple-grey and faintly to distinctly laminated to thinly-bedded, and has a strong slaty cleavage. Bed surfaces show gold-colored sericite (recrystallized biotite). Some bed surfaces show bed-parallel shear. The rock outcrop mostly "thuds" when struck by hammer blows. The siliceous mudstone has a Weathering Grade of II (slightly decomposed), a Corestone Strength of 2, a Strength Value of 8 to 9, a Discontinuity Value of 1 to 3, and a Jar Slake Value of 5.

Quartzite

The quartzite exposed adjacent to the quarry fuel storage area is fine-to-course grain quartz-cemented quartz sandstone to quartzite, with rare grains of feldspar. The quartzite is light grey to light pink, and weathers to a light yellowish-orange. It is generally medium-bedded to very thickly bedded.

Geochemistry of Rock and Soil

Mines may generate highly acidic discharges if sulfide-rich rock is processed. Sulfide-rich rock can produce sulfuric acid when exposed to oxygen and water. However, it is not the acid that is of environmental concern, but the metals that are dissolved from the rock by the acidic water. The BLM determined that the waste rock at the Three Rivers Stone Quarry contains no visible sulfide minerals, and only trace amounts of oxidized iron minerals (Gardner 2006). In addition, there is no visible evidence of acidic drainage from the waste rock, such as dead vegetation, color stains, or sulfurous odors (Gardner 2006). Consequently, the waste rock cannot produce acid-rock drainage.

The BLM also evaluated the waste rock at the quarry for elevated levels of specific metals that may be of environmental concern. For evaluating mining activities on public land, the BLM developed Risk Management Criteria (RMC) for specific metals of concern in soil, sediment, and water (Ford 1996; 1998). The concept behind the RMC is that people and wildlife will not experience adverse health effects from metal contamination on BLM-administered lands if exposure is limited to soil, sediment, and water with concentrations at or less than the specific RMC (Ford 1996).

As a first screen, the BLM took two composite samples in April 2006 from each of the three rock types for laboratory analysis of arsenic (As), cadmium (Cd), copper (Cu), selenium (Se), and zinc (Zn). These six samples were taken from quarry waste rock piles and analyzed by inductively coupled plasma-atomic emission spectrometry (ICP-AES).

Additional sampling was then performed in November 2006 to assess potential human and ecological risk associated with excavating rock at the quarry. Argillite, shale, and quartzite were sampled from fresh outcrop. Each sample (Rock A, Rock M, Rock Q) was a composite of 20 to 50 chips of rock taken along a stratigraphic profile. In addition, very fine particles of rock (“soil”) were sampled from fractures and bedding surfaces within the argillite (Soil A), shale (Soil M), and quartzite (Soil Q). A composite soil sample was taken from the floor of

Pit 1 (Soil PF). The soil sample consisted of finely crushed rock particles that typically cover the pit floor. Finally, two "background" samples were taken from undisturbed areas where soil supporting vegetation had developed on rock (Soil 1, Soil 2).

All of the samples collected in November were analyzed for As, Cd, Cu, and Zn by ICP-AES. In addition, the six soil samples were analyzed for selenium using hydride generation atomic absorption spectrometry (Hydride-AA). This procedure provides lower analytical detection limits for selenium than previously used during the first screening.

Table 3.1-2 shows all of the laboratory analytical results and compares the results from the soil to the BLM RMC for human and ecological risk from soil. The exposure scenarios for soil are empirically determined based on inhalation of dust and ingestion of soil (Ford 1996). The initial screening samples from waste rock (sample ID LW-2006-0X) and from Pit 1 rock (URS-06-A, -M, -Q) are not comparable to soil RMC values. However, all but one rock sample showed low levels of analyzed metals. One shale waste rock sample (LW-2006-05) recorded cadmium at 113 milligrams per kilogram (mg/Kg). However, the Pit 1 rock "chip" sample from shale (URS-06-M) and Pit 1 soil sample from shale (URS-06-Soil M) both had cadmium concentrations below laboratory detection limits (less than 0.20 mg/Kg).

For soil, Ford (1996; 1998) advised using the following guidelines to assess the potential human and ecological risk:

- Less than or equal to the soil constituent value: low risk;
- One to ten times soil constituent value: moderate risk;
- Ten to 100 times the soil constituent value: high risk; and
- Greater than 100 times the soil constituent value: extremely high risk.

Soil samples showed low or no human risk from arsenic, cadmium, copper, selenium, and zinc. Both selenium and zinc represented a low or no risk to wildlife. Five of six waste rock samples showed values for arsenic below laboratory detection limits (Table 3.1-2). Therefore, soil samples were not analyzed for arsenic. Pit 1 soil samples for cadmium were all below laboratory detection limits, while both background soil samples registered low cadmium values. One background soil sample (URS-06-02) contained cadmium at a level that represents a moderate risk to American robins (*Turdus migratorius*) (Ford 1998). Six of seven soil samples, including disturbed and undisturbed sample points, contained copper at levels that represent a moderate risk to American robins (Ford 1998). It should be noted that elevated metal concentrations in rock pose far less risk than those in soil because the metals are encapsulated in the rock.

Table 3.1-2. Summary of Laboratory Analytical Data from the Three Rivers Stone Quarry. NA = Not Analyzed.

MINE	LOCATION	SAMPLE ID	Arsenic (mg/Kg)	Cadmium (mg/Kg)	Copper (mg/Kg)	Selenium (mg/Kg)	Zinc (mg/Kg)
BACKGROUND SOIL	East of Pit 1	URS-06- Soil 1	NA	0.22	9.4	0.110	NA
	Southeast of Pit 1	URS-06- Soil 2	NA	0.4	19.7	0.119	NA
WASTE ROCK	Argillite	LW-2006-01	4.6	0.41	5.7	<4.0	6.6
	Argillite	LW-2006-04	<2.5	15.8	10.3	<4.0	4.9
	Shale	LW-2006-02	<2.5	113	3.6	<4.0	5.1
	Shale	LW-2006-05	<2.5	0.21	7.8	<4.0	4.2
	Quartzite	LW-2006-03	<2.5	<0.20	3.7	<4.0	2.2
	Quartzite	LW-2006-06	<2.5	18.2	6.4	<4.0	1.4
PIT 1 ROCK	Argillite	URS-06-A	NA	<0.20	4.1	NA	NA
	Shale	URS-06-M	NA	<0.20	1.2	NA	NA
	Quartzite	URS-06-Q	NA	<0.20	2.8	NA	NA
PIT 1 SOIL	Argillite Soil From Fractures	URS-06-Soil A	NA	<0.20	32.4	0.109	NA
	Argillite Soil From Fractures (duplicate)	URS-06-Soil X	NA	<0.20	33.1	NA	NA
	Shale Soil From Fractures	URS-06-Soil M	NA	<0.20	7.3	<0.100	NA
	Quartzite Soil From Fractures	URS-06-Soil Q	NA	<0.20	6.1	<0.100	NA
	Soil From Pit Floor	URS-06-Soil PF	NA	<0.20	19.9	<0.100	NA
RISK MANAGEMENT CRITERIA*	Ford 1996	Worker	12	100	7,400	2,000	60,000
		Camper	20	70	5,000	1,000	40,000
		ATV Driver	300	950	70,000	1,000	550,000
	Ford 1998	American Robin	4	0.3	7	6	43
		Deer Mouse	230	7.0	640	142	419
		Mule Deer	200	3	102	106	222

*Risk Management Criteria: One to 10 times the constituent value = moderate risk; 10-100 times = high risk; >100 times = extremely high risk.

The chemical analyses of samples of soil and rock from both the quarry and background sites demonstrate that the mining operations do not cause increased exposure to metals to humans or wildlife relative to the natural levels of metals in the environment. This is to be expected because the rock in the quarry area is not highly mineralized. For comparison, similar rock types at the Thompson Creek Tungsten Mine in Custer County are highly mineralized; this has resulted in elevated levels of metals in soil, in mine waste dumps, and in stream sediments (Van Gosen *et al.* 2000).

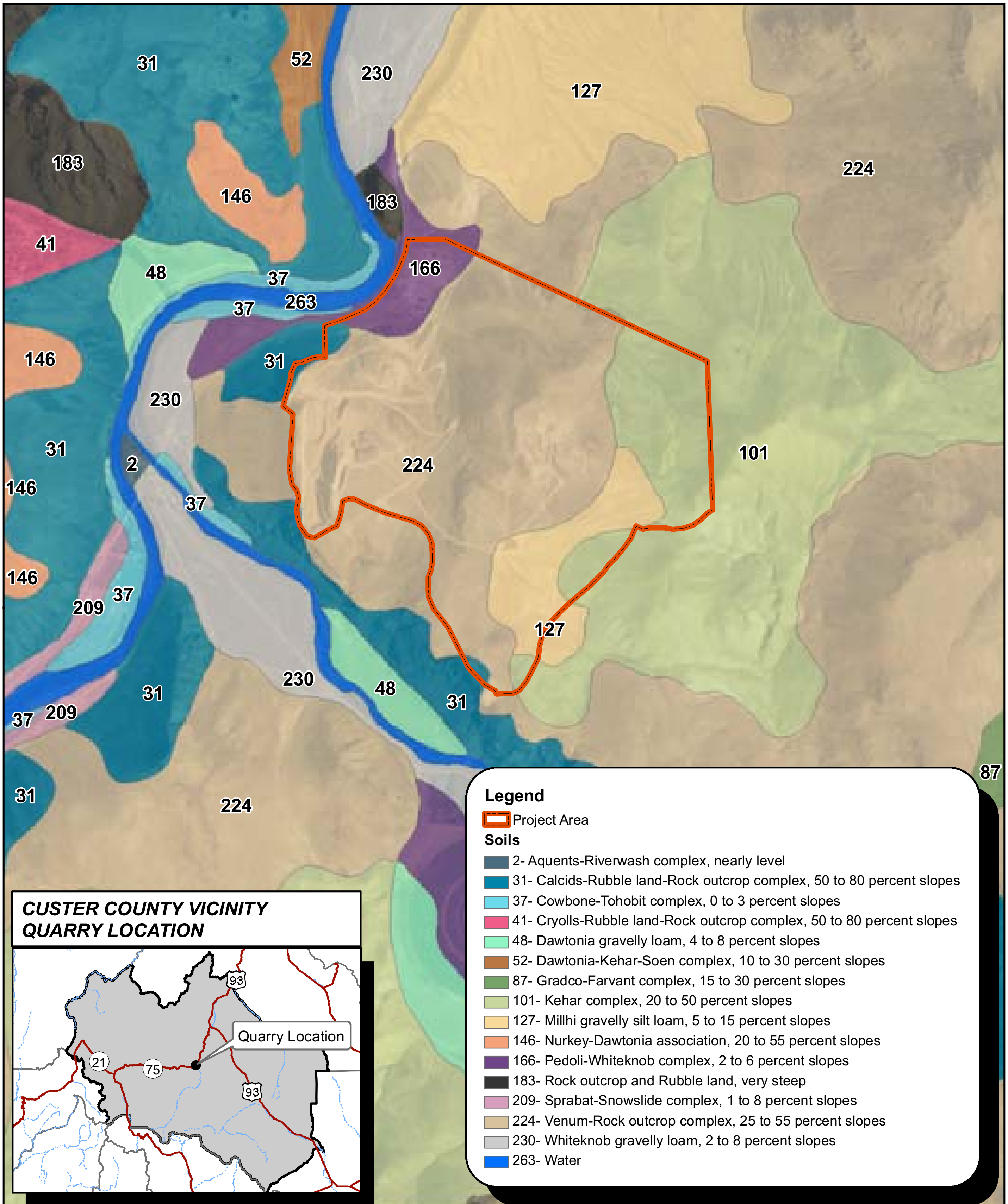
3.1.3 Minerals (Leaseable, Locatable, Saleable)

The Federal Government recognizes three categories of minerals: locatable, leasable, and saleable. Locatable minerals are appropriated under the General Mining Laws of 1872. Leasable commodities comprise minerals such as oil, gas, coal and phosphate that may be obtained from the United States only by lease. Saleable minerals are disposed under the Mineral Material Act of 1947 and the Multiple Surface Use Act of 1955. These minerals include common varieties of sand, stone, gravel, and clay. The flagstone mined at the quarry is considered to be a locatable mineral by the BLM. All other rock at the quarry is considered to be saleable.

The BLM determined that the argillite flagstone mined at the L&W Stone quarry is an uncommon variety of building stone with a unique combination of physical properties such as cleavability, hardness, strength, durability, low absorption rate, greater density, stain and abrasion resistance, and unusual intermixing of colors and surface textures. Therefore, the argillite is a rock deposit locatable under the General Mining Law of 1872 (Lewis and Gardner 2004). Other rock in the quarry area contains no known deposits of locatable, leasable, or saleable mineral resources. The site geology indicates little probability of discovering other mineral deposits at the quarry area. To date, approximately 200,000 tons of argillite flagstone have been removed from the quarry.

3.1.4 Soils

The quarry area contains rock outcrops and bedrock-derived soils. The rock outcrops are classified as the Calcids-Rubble land-Rock outcrop complex. The soil types are classified as the: Kehar series, Millhi series, Pedoli-Whiteknob complex, and Venum series. All four soil types are neutral to strongly alkaline (USDA-NRCS 2006). Figure 3.1-4 shows the soil types mapped by the Natural Resources Conservation Service (USDA-NRCS 2006) in and adjacent to the Proposed Project Area.



N
W E
S

Figure 3.1-4. Soils Map

0 375 750 1,500 2,250 3,000 Feet

1:17,500

Three Rivers Stone Quarry
L & W Stone

The soils at the quarry area may be erodible due to sparse vegetation, fine soil particle size (abundant silt and clay), and generally low soil moisture content. Generally, the fine-textured soils on site are located where slope gradients are less than 10 percent. Soil thickness in most of the quarry area is less than 6 inches, with rock (no soil) exposed in many areas. Some topographic depressions may contain thicker soils.

3.1.5 Hazardous Substances and Petroleum Products

No acutely hazardous waste or "listed wastes" as defined by the EPA are used or stored at the project site. Chemicals and petroleum products stored on site include antifreeze, brake fluid, radiator flushing fluids, hydraulic fluid, fuel de-icing additives, degreasing solvents, packaging material from explosives, ammonium nitrate, fuel oil, premixed ammonium nitrate fuel oil (ANFO), diesel fuel and fuel. Quantities stored on site are relatively small, with the exception of diesel fuel. Mobile equipment is serviced onsite by an equipment maintenance company. This includes oil changes and lubrication. Used oils and other fluids are temporarily stored onsite and then disposed offsite in compliance with State and Federal environmental requirements (40 CFR 239-374; IDAPA 58.01.05.000 *et seq.*). The size and location of storage tanks are described in Section 2.1, Historical and Current Operations.

3.1.6 Water Quality

Current Conditions

The Proposed Project Area straddles a ridge that drains north to the Bradshaw Basin Subwatershed[2] and south to the Main (Lower) East Fork Subwatershed, which both drain to the Upper Salmon Subbasin[3]. The Proposed Project Area drains directly toward the mainstem Salmon River and East Fork Salmon River (Figure 3.1-5). Water quality has been an issue of concern in the Upper Salmon River Subbasin. Water quality has been degraded cumulatively by historic management and land uses such as mining, warm-season grazing, over-utilization of riparian areas by grazing, timber harvest and associated roads, and recreational development (IDEQ 2003).

[2] subwatershed = sixth field level of division in the hydrologic unit code (HUC) system
[3] subbasin = fourth field level of division in the HUC system

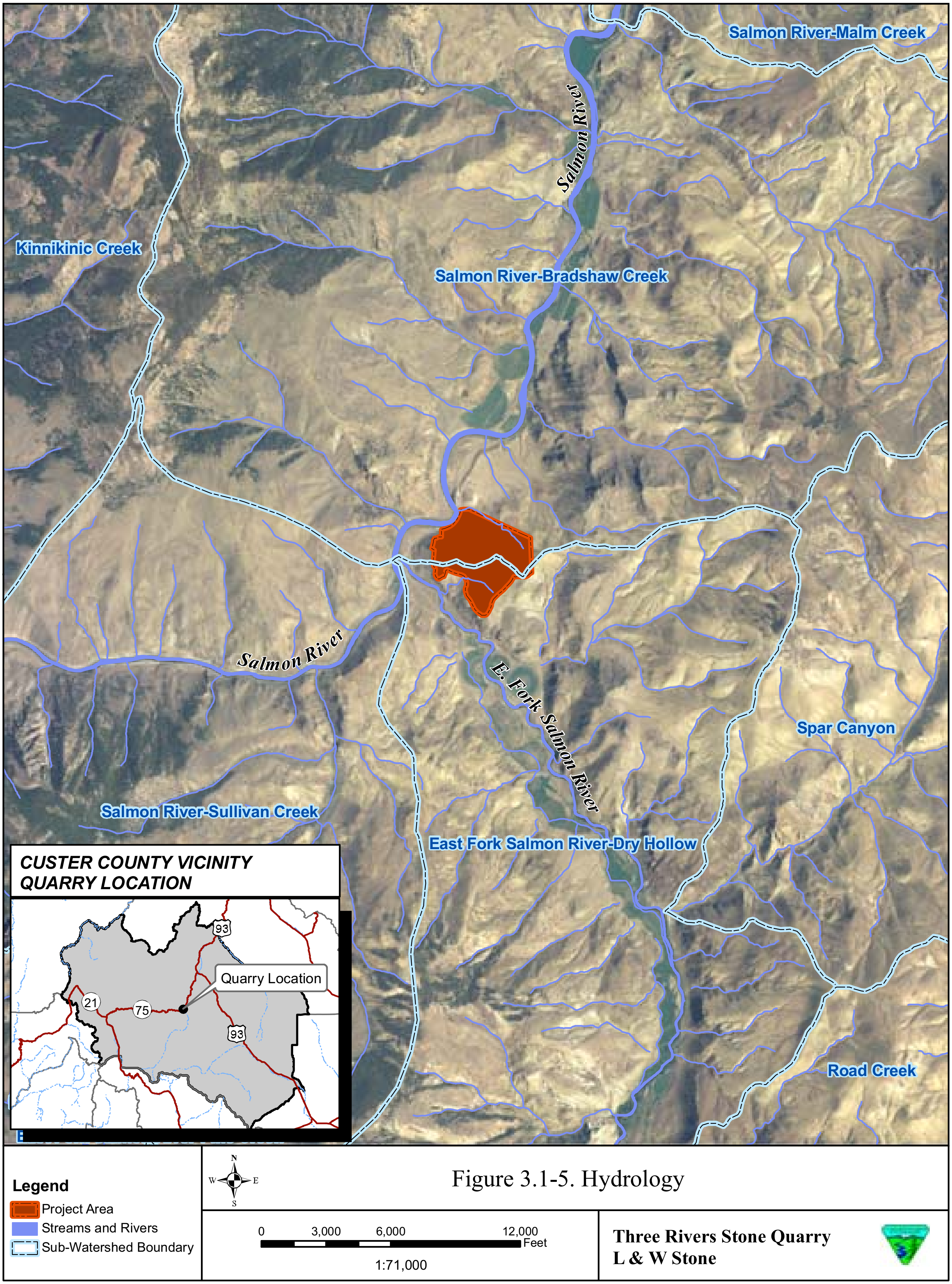


Figure 3.1-5. Hydrology

Three Rivers Stone Quarry
L & W Stone

The Salmon River is listed in Section 303(d) of the Clean Water Act as impaired for water temperature and sediment from approximately Hell Roaring Creek downstream to the East Fork Salmon River. This section of river was retained on the 1998 303(d) list from the EPAs 1994 listing because of a lack of information at that time (IDEQ 2003). In 2003, IDEQ issued the Upper Salmon River Subbasin Assessment and Total Maximum Daily Load (TMDL). The mainstem Salmon River, from Redfish Lake to the East Fork of the Salmon River was found to be in full support of aquatic life beneficial uses, and no TMDL was developed for this reach (IDEQ 2003). The reach of the Salmon River below the East Fork Salmon River was not included on either the 1998 or the 2002/2003 303(d) list, nor was a load allocation developed for this reach. Further, the Salmon River, from Squaw Creek to Pennal Gulch, which includes the stretch below the quarry site was not listed in the 2002/2003 Integrated 303(d)/305 (b) report as impaired by pollutants (IDEQ 2002).

The Large River Beneficial Use Reconnaissance Project (BURP) process has sampled three sites on the Salmon River in the vicinity of the Upper Salmon River Subbasin for Fish River Index of Biotic Integrity (IBI). Fish River IBI values range from 0 to 100, and can be an indirect indicator of water quality and physical habitat as it relates to the native fish assemblage. A low IBI value indicates the fish community is substantially different from a minimally disturbed stream in the same geographic area and a high IBI value indicates the fish community is similar to a minimally disturbed stream in the same geographic region. The Salmon River at the Yankee Fork near Clayton and the Salmon River at the Pahsimeroi River near Challis produced some of the highest Fish River IBI scores (95 and 93, respectively), and are considered of reference quality for large rivers (IDEQ 2003). These scores indicate that the reaches of the Salmon River up and downstream of the Proposed Project Area fully support aquatic life beneficial uses and fisheries values. The Salmon River at Obsidian, substantially upriver from the quarry site, produced a slightly lower IBI of 87, though still considered a number that indicates full support of fisheries values. The two listed reaches of the Upper Salmon River do not require TMDLs because they fully support beneficial uses (IDEQ 2003).

Sediment monitoring completed by Environmental Science and Research Foundation at two sites on the Upper Salmon River show elevated depth of fine sediment on the 303(d) listed reach below the confluence of Hell Roaring Creek and below the confluence of Redfish Lake Creek. The percentage of depth fines less than 6.35 mm was recorded as 42 percent and 51 percent at the upper and lower sites respectively (IDEQ 2003). These reaches of the Salmon River are 59 and 45 miles upstream of the Project Area, respectively. Elevated levels of sediment in these reaches could be due to activities such as past logging, mining, road construction and use, farming, and livestock grazing. Land management techniques including riparian fencing and managed grazing have reduced the impacts to streambanks from grazing, resulting in a reduction in sedimentation (IDEQ 2003). There is no sediment monitoring data for the reach of the Salmon River below the Proposed Project Area. However, during a site visit in November 2006 that coincided with a high rain event, sediment was observed entering the river via the quarry by the consultant.

No perennial streams occur within the perimeter of the proposed operations. The East Fork Salmon River is 320 feet from the southern edge of the existing Pit 1. The Salmon River is 800 feet from the northern end of Pit 1 and 60 feet from the entrance to the administrative area. There are two unnamed ephemeral streams at the quarry site, one along the northern side of the quarry near the administrative area and the other along the southern side of the quarry near the East Fork Salmon River Bench Area of Critical Environmental Concern /Research Natural Area (ACEC/RNA) (Figure 3.1-5). These streams drain water from the site during high intensity precipitation events (i.e., >0.5 inches/hour), as was observed by the consultant during the November 2006 site visit. The water table in the vicinity of the proposed operations intersects the ground surface in the valley floors at the Salmon and East Fork Salmon rivers at approximately 5,360 feet above mean sea level (amsl). There are no springs at the project site, and Pit 1 has not intercepted ground water to date.

Although rainfall is generally scant in this area, storms can be severe but of short duration when they occur. Because of the topography and low-density scattered vegetation, intense rainstorms of long duration have led to sediment delivery to the Salmon River. Drainage from the Proposed Project Area is generally contained before it passes under State Highway 75 (SH-75) through three, 18- to 24-inch culverts. However, during severe rain events, water also drains across the highway and runoff that passes through these culverts is often laden with sediment. An interceptor trench, straw bales, and a shallow sediment trap are currently in place on the border of the administrative area to contain sediment from runoff, but are not operating effectively and permit delivery of sediment to the Salmon River. Sediment is also delivered to the East Fork Salmon River during large rain events from the hard-packed mining roads in the quarry via the drainage in the East Fork Salmon River Bench ACEC/RNA.

3.1.7 Noise

Background

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise and its appropriateness in the setting, the time of day, and the type of activity during which the noise occurs, and the sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations, which travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by a number of variables including frequency and intensity. Frequency describes the sound's pitch and is measured in Hertz (Hz), while intensity describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale. A sound level of zero dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above about 120 dB begin to be felt inside the human ear as discomfort and eventually pain at still higher levels. The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. An increase (or decrease) in sound level of about 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness, and this relation holds true for loud sounds and for quieter sounds.

Because of the logarithmic nature of the dB unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. However, some simple rules of thumb are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example: 60 dB + 60 dB = 63 dB, and 80 dB + 80 dB = 83 dB.

Hertz is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a number of times per second. A particular tone, which makes the drum skin vibrate 100 times per second, generates a sound pressure wave that is oscillating at 100 Hz, and this pressure oscillation is perceived as a tonal pitch of 100 Hz. Sound frequencies between 20 Hz and 20,000 Hz are within the range of sensitivity of the best human ear.

Sound from a tuning fork (a pure tone) contains a single frequency. In contrast, most sounds one hears in the environment do not consist of a single frequency, but rather a broad band of frequencies differing in sound level. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound according to a weighting system that reflects that human hearing is less sensitive at low frequencies and extremely high frequencies than at the mid-range frequencies. This is called "A" weighting, and the dB level measured is called the A-weighted sound level (dBA). In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources that creates a relatively steady background noise in which no particular source is identifiable. A single descriptor called the equivalent sound level (Leq) is used. Leq is the energy-mean A-weighted sound level during a measured time interval. It is the "equivalent" constant sound level that would have to be produced by a given source to equal the fluctuating level measured.

Finally, another sound measure known as the Day-Night Average Noise Level (Ldn) is defined as the A weighted average sound level for a 24 hour day. It is calculated by adding a 10 dB penalty to sound levels in the night (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours. The Community Noise Equivalent Level (CNEL) is also defined as the A-weighted average sound level for a 24-hour day. It is calculated by adding a 5 dB penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.) and a 10 dB penalty to sound levels in the night (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours. The CNEL is used by various agencies to define acceptable land use compatibility with respect to vehicular traffic noise. Sound levels of typical noise sources and environments are provided in Table 3.1-3 to provide a frame of reference.

Table 3.1-3. Sound Levels of Typical Noise Sources and Noise Environments (A-Weighted Sound Levels).

Example Noise Source (at a Given Distance)	Scale of A-Weighted Sound Level in Decibels (from highest to lowest)	Example Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels*)
Military Jet Take-off with After-burner (50 ft)	140	Carrier Flight Deck	
Civil Defense Siren (100 ft)	130		
Commercial Jet Take-off (200 ft)	120		Threshold of Pain *32 times as loud
Pile Driver (50 ft)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 ft)	100		Very Loud
Newspaper Press (5 ft)			*8 times as loud
Power Lawn Mower (3 ft)			
Motorcycle (25 ft)	90	Boiler Room	*4 times as loud
Propeller Plane Flyover (1,000 ft)		Printing Press Plant	
Diesel Truck, 40 mph (50 ft)			
Garbage Disposal (3 ft)	80	High Urban Ambient Sound	*2 times as loud
Passenger Car, 65 mph (25 ft)			Moderately Loud

Table 3.1-3. Sound Levels of Typical Noise Sources and Noise Environments (A-Weighted Sound Levels).

Example Noise Source (at a Given Distance)	Scale of A-Weighted Sound Level in Decibels (from highest to lowest)	Example Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels*)
Living Room Stereo (15 ft)	70		(*Reference Loudness)
Vacuum Cleaner (3 ft)	70		(*Reference Loudness)
Electronic Typewriter (10 ft)			
Normal Conversation (5 ft)	60	Data Processing Center	*1/2 as loud
Air Conditioning Unit (100 ft)		Department Store	
Light Traffic (100 ft)	50	Private Business Office	*1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	Quiet *1/8 as loud
Soft Whisper (5 ft)	30	Quiet Bedroom	
	20	Recording Studio	Just Audible
	10		Threshold of Hearing

Sound Level in the Project Area Vicinity

Long-term sound level measurements were taken on November 28 and 29, 2005, at the closest residences to the quarry to quantify the existing noise environment near the quarry site (Figure 3.1-6). The data were gathered at Monitoring Location 1 (ML1) using a Larson Davis Model 820 American National Standards Institute (ANSI) Type 1 Integrating Sound Level Meter and at Monitoring Location 2 (ML2) using a Larson Davis Model 720 ANSI Type 2 Integrating Sound Level Meter. The meters were calibrated before and after each measurement period with a Larson Davis Model CAL150B acoustic calibrator. The meters were enclosed in a watertight container and the microphone was securely mounted on a fence or bush at a height of 5 feet above the ground to simulate the average height of the human ear. The measurements consisted of consecutive 10-minute averages. The following details the measurement locations. Figures 3.1-7 and 3.1-8 graphically represent the data collected.

ML1 A 19-hour sound level measurement was conducted at the residence to the south of the quarry (Figures 3.1-6 and 3.1-7). The residence is in a valley surrounded by mountains on all sides. The residence is approximately 1,350 feet south of the southern quarry boundary and does not have a direct line-of-sight to the quarry due to a ridgeline. The measurement was taken between 2:30 p.m. on November 28, 2005 and 9:50 a.m. on November 29, 2005. Daytime noise sources consisted of birds vocalizing, the East Fork of the Salmon River to the north, equipment noise from the quarry (loaders, dozers, back-up beepers, trucks), vehicular traffic on Highway 75, and people talking. A test blast was also conducted at the quarry on November 29, 2005 between 9:20 and 9:30 a.m. Nighttime noise sources consisted of noise from the Salmon River, crickets, and vehicular traffic on SH-75. The 10-minute L_{eq} ranged from 37.4 to 44.4 dBA (average = 39.4 dBA).

ML2 A 19-hour sound-level measurement was conducted at the west property line of a residence to the northwest with a direct line-of-sight to the quarry (Figures 3.1-6 and 3.1-8). The residence is near the Salmon River in a valley and is surrounded by mountains on all sides. The sound measurement was taken approximately 3,480 feet from the closest quarry boundary. The measurement was taken between 4:00 p.m. on November 28, 2005 and 11:40 a.m. on November 29, 2005. Daytime noise sources consisted of the Salmon River to the south, birds vocalizing, equipment noise from the quarry, and vehicular traffic on Highway 75. A test blast was also conducted at the quarry between 9:20 and 9:30 a.m. on November 29, 2005. Nighttime noise sources consisted of noise from the Salmon River and vehicular traffic on Highway 75. The 10-minute Leq ranged from 36.2 to 38.9 dBA (average = 36.4 dBA).

Activities at the Three Rivers Stone Quarry that were audible at ML1 and ML2 included noise from the diesel engines and back-up alarms on the heavy equipment, particularly when the equipment was operating near the top of the pits. Other activities that were audible on occasion included the metal scraping of the loader bucket on the rocks, trucks entering/leaving the site, and “thumps” during blasting.

Octave band sound level measurements were also taken at ML1 November 29, 2005 during the test blast. The data were gathered by a Larson Davis Model 824 ANSI Type 1 Integrating Sound Level Meter. The meter was calibrated before and after each measurement period with a Larson Davis Model CAL150B acoustic calibrator. The meter was mounted on a tripod at a height of 5 feet above the ground to simulate the average height of the human ear. The data gathered include: Leq, minimum sound pressure (Lmin), maximum sound pressure (Lmax), and peak in short and fast modes for A-weighting, C-weighting, and flat response. The spectrum was obtained in 1/3 octave band and center frequency octave band in dB (Table 3.1-4). The graphic comparison of sound levels before the blast and during the blast is shown in Figure 3.1-9**.**

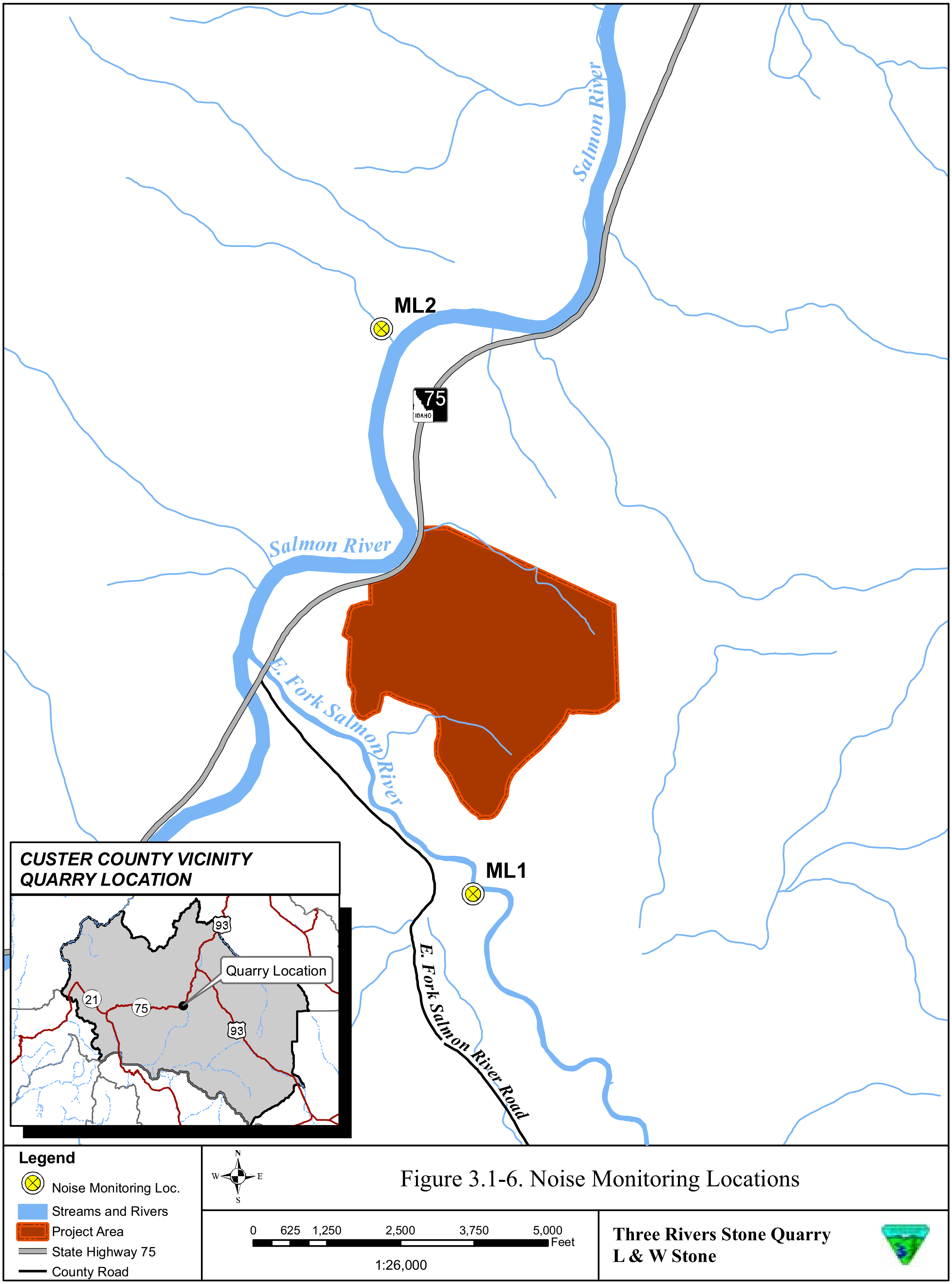


Figure 3.1-6. Noise Monitoring Locations

Three Rivers Stone Quarry
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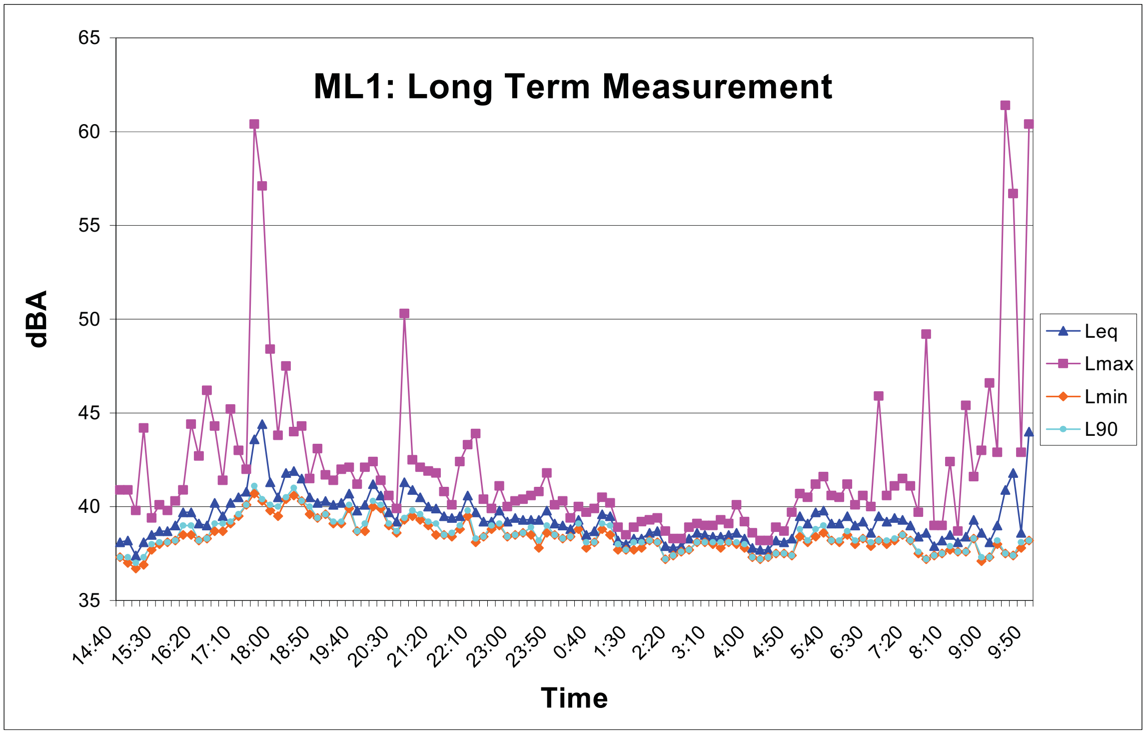


Figure 3.1-7. ML1: Long-Term Measurement.

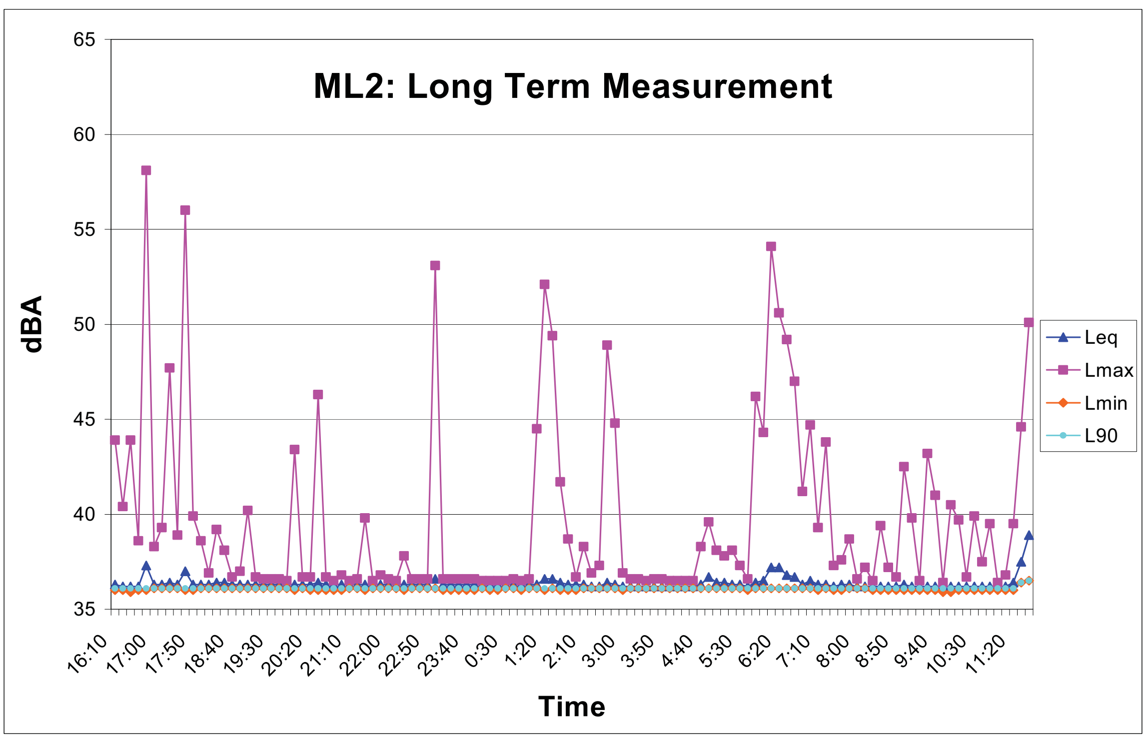


Figure 3.1-8. ML2: Long-Term Measurement.

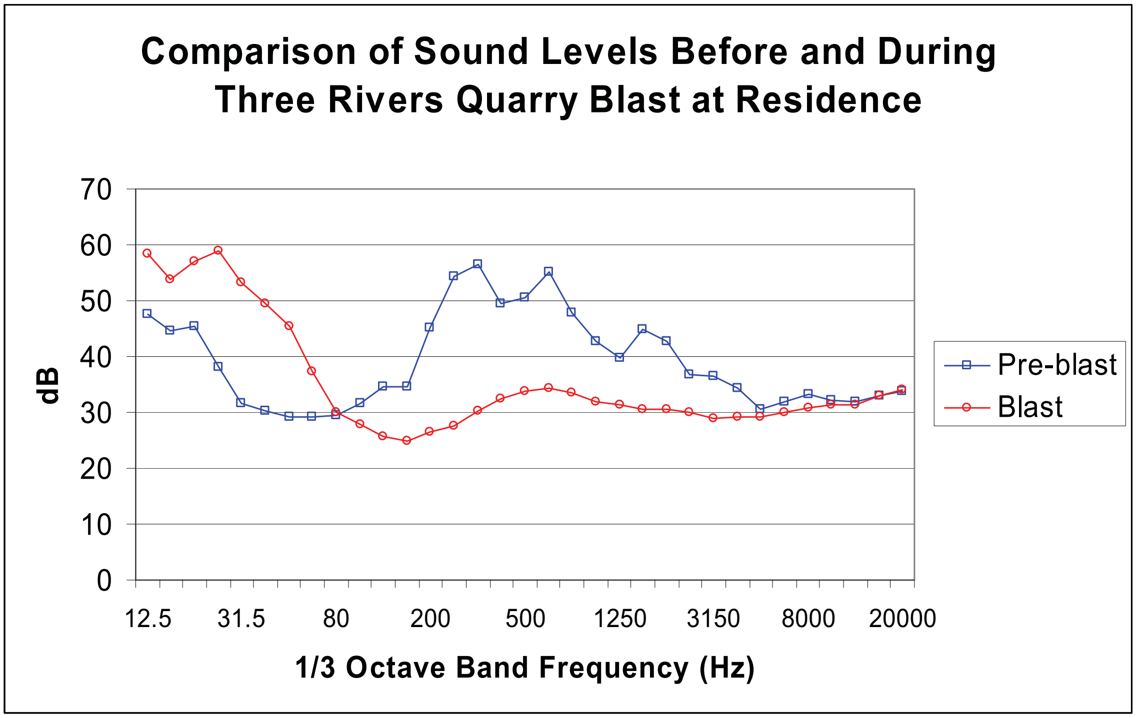


Figure 3.1-9. Comparison of Sound Levels Before and During Three Rivers Quarry Blast at Residence.

As illustrated in Figure 3.1-9, more energy was present during the blast in the lower frequencies (below 90 Hz), as is typical of blast noise. However, levels did not exceed 60 dB during either condition. The peaks in mid-frequencies (250 – 3500 Hz) that were present during the pre-blast measurement were not present in the blast measurement due to people talking at approximately 50 feet from the meter. The primary noise sources during both measurement periods consisted of birds vocalizing, the East Fork of the Salmon River, and some vehicular traffic on Highway 75. The blast was audible at the residence but overall sound levels were not perceived to vary during the blast. The following Table (3.1-4) summarizes the measurements.

Table 3.1-4. Sound Level Data Before and During Blast.

Noise Descriptor	Pre-blast			Blast		
	A Weighting (dB)	C Weighting (dB)	No Weighting (dB)	A Weighting (dB)	C Weighting (dB)	No Weighting (dB)
Leq	57.5	61.4	61.7	50.2	57.4	61.3
SEL	75.5	79.4	79.7	64.8	71.9	75.8
Peak	89.8	94.1	94.3	86.8	84.4	86.0
Lmax (slow)	72.5	76.2	76.2	62.9	67.9	72.5
Lmin (slow)	44.2	43.9	45.4	44.1	44.0	46.6
Lmax (fast)	79.7	83.2	83.2	70.5	74.4	79.7
Lmin (fast)	44.0	43.7	45.1	43.5	43.6	45.2
Lmax (impulse)	82.3	85.6	85.6	73.1	76.5	82.3
Lmin (impulse)	44.1	43.9	45.2	43.7	43.7	47.5

3.2 BIOLOGICAL RESOURCES

3.2.1 Vegetation

The vegetation type present in the Proposed Project Area and vicinity is sagebrush steppe. This vegetation type is characterized by sagebrush (*Artemisia tridentata*) and other low growing shrubs and short bunchgrasses and typically occurs in dry environments.

The Natural Resource Conservation Service has differentiated two plant community types on four soil complexes in the Proposed Project Area (USDA-NRCS 2006). The dominant plant community is Wyoming big sagebrush (*Artemisia tridentata sp. Wyomingensis*)/bluebunch wheatgrass (*Pseudoroegneria spicata*). Curlleaf mountain mahogany (*Cercocarpus ledifolius*)/bluebunch wheatgrass is the second classified community type but is rare in the Proposed Project Area, being restricted to a few isolated patches on rock outcrops. These plant communities combined comprise 57 percent of the quarry site and are referred to here as shrublands (Table 3.2-1 and Figure 3.2-1). Vegetative cover is sparse and consists of low growing sagebrush, grasses and forbs. Species present on site in the shrublands include, but are not limited to: Wyoming big sagebrush, mountain sagebrush (*Artemisia tridentata vaseyana*), mountain mahogany, bluebunch wheatgrass, Indian ricegrass (*Achnatherum hymenoides*), bluegrass (*Poa secunda.)*, phlox (*Phlox hoodii*), spiny hopsage (*Atriplex spinosa*), cutleaf daisy (*Erigeron compositus*), and prickly pear (*Opuntia* spp.). Grasslands are an additional, but minor plant community in the Proposed Project Area, occurring on approximately 5 percent of the quarry site (Table 3.2-1 and Figure 3.2-1). Grasslands are comprised of a mix of native and non-native perennial grass species such as bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail (*Sitanion hystrix*), and bluegrass. Growth and establishment of vegetation is inhibited in much of the area within these plant communities due to the abundance of platy rock blanketing the surface. The remainder of the

Proposed Project Area does not support much, if any, vegetation due to the presence of talus slopes (platy rock blankets the surface and inhibits growth of vegetation; <1% of the quarry site), rock outcrops (contains an occasional plant; 7% of the quarry site), bare ground (alkali soils; <1% of the quarry site), and disturbed areas (mined, primarily non-vegetated; 30% of the quarry site). Acres by vegetation/cover type are summarized in Table 3.2-1 and depicted in Figure 3.2-1.

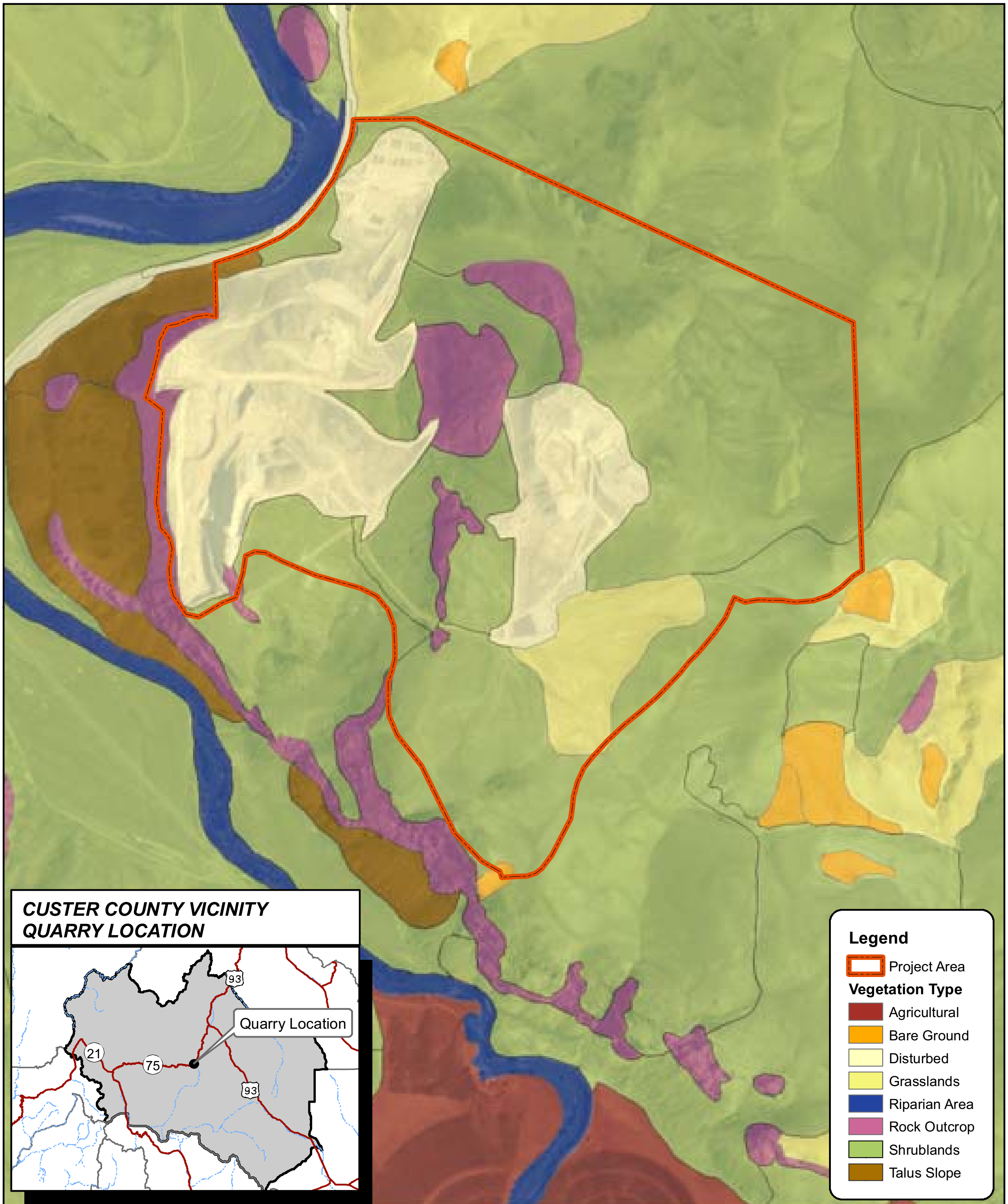
Table 3.2-1. Existing Vegetation at the Three Rivers Stone Quarry.

Plant Community/Cover Type	Acres
Shrubland	178
Grassland	16
Disturbed	92
Rock Outcrop	23
Talus Slope	<1
Bare Ground	<1
Total	**~310**

Vegetative communities at the Proposed Project Area have been slightly impacted by invasive species. Cheatgrass (*Bromus tectorum*) is present but sparse. Overall the native plant community is still intact and has been able to recover from small-scale disturbances (e.g., grazing). Due to current mining activities, the general lack of recreational activities that take place at the site (see Section 3.3.7, Recreation), and the limited amount of livestock grazing on site (see Section 3.3.8, Livestock Grazing), the state of the vegetative community has remained static with a slight upward trend in isolated areas. The East Fork Salmon River Bench ACEC/RNA contains a plant community exemplary of the native state of the sagebrush/bluebunch wheatgrass association and is considered to be at potential (see Section 3.3.9, Special Designations).

Surface disturbance and vehicle traffic associated with road building has led to an increase of noxious weeds at the site. Isolated patches of spotted knapweed *(Centaurea maculosa)* occur in the administrative area. Surface disturbance has also led to the establishment and spread of other invasive plants. Other invasive weed species observed along roadways at the quarry include (*Halogeton glomeratus*), common ryegrass (*Secale cereale*), yellow alyssum (*Alyssum alyssoides*), prostrate pigweed (*Amaranthus blitoides*), russian thistle (*Salsola iberica*), and kochia (*Kochia scoparia*) (USDI-BLM 2002).

There are no permits or sales for vegetation in the vicinity of the project site. No such permits or sales are anticipated for the project site in the foreseeable future.



*Data source is the Idaho Vegetation and Land Cover Classification 9/21/98.

Figure 3.2-1. Vegetation

0 250 500 1,000 1,500 2,000 Feet

1:10,500

Three Rivers Stone Quarry
L & W Stone

3.2.2 Special Status Plant Species

The BLM conducted several project-specific special status plant inventories at the quarry between 1988 and 2002. No Idaho BLM special status plant species were found during these surveys. However, populations of special status plants occur near the quarry, and potentially in the Proposed Project Area (see Table 3.2-2). Due to ongoing mining activity at the quarry and the increase in surface areas covered by waste rock, it is unlikely that any special status plant species have become established in the expansion area since the inventories were completed. An additional survey of areas that have not been previously disturbed and that are proposed for mining (mineral exploration, new pits, roads, etc.) will be completed in spring of 2008, prior to the release of the Final EIS.

Table 3.2-2. Special Status Plant Species Potentially Occurring Within or In the Vicinity of the Project Area.

Common Name	Scientific Name	Status[1]	Habitat Requirements/ Associations	Likelihood of Occurrence
Lemhi milkvetch	*Astragalus aquilonius*	BLM Type 2	Most abundant on gentle slopes near Challis, ID, but also on steep erosive slopes and in washes; generally south-facing and dry.	High likelihood of occurrence within or near the Proposed Project Area (Elzinga 2006)
Wavy-leaf thelypody	*Thelypodium repandum*	BLM Type 3	Moderate to steep, unstable rocky south-facing slopes with sparse associated vegetation (bunchgrass and perennial forbs) or in washes between 4,900 and 7,000 feet.	High likelihood of occurrence within or near the Proposed Project Area (Elzinga 2002 and 2006)
Challis crazyweed	*Oxytropis besseyi var. salmonis*	BLM Type 3	Sagebrush and salt desert shrub in sandy washes or open slopes of rocky volcanic soil.	High likelihood of occurrence within or near the Proposed Project Area (Elzinga 2006)
Challis milkvetch	*Astragalus amblytropis*	BLM Type 3	Steep erosive slopes, sparsely vegetated, south-facing, and dry. Along the Salmon River from Clayton to Salmon, Idaho.	Good chance of occurrence within or near the Proposed Project Area (Elzinga 2002 and 2006)
White eatonella	*Eatonella nivea*	BLM Type 4	Sparsely vegetated grasslands, mid-elevation desert.	Could occur, but little is known about this wide-ranging species due to survey difficulty (Elzinga 2006). Historical records in the Salmon Area.

Table 3.2-2. Special Status Plant Species Potentially Occurring Within or In the Vicinity of the Project Area.

[1] BLM special status species. (Source: Idaho BLM Special Status Plant Species list for Districts and Field Offices (from BLM website [http://www.id.blm.gov/information/sss/FINAL PLANT LIST.pdf], accessed 10/10/06])).

– BLM Type 2: Range wide/global imperilment species: includes species that are experiencing significant declines throughout their range with a high likelihood of being listed under the Endangered Species Act in the foreseeable future due to their rarity and/or significant endangerment factors.

– BLM Type 3: Regional/state imperilment species: includes species that are experiencing significant declines in population or habitat and are in danger of regional or local extinctions in Idaho in the foreseeable future.

– BLM Type 4: Species of Concern: includes species that are generally rare in Idaho with currently low endangerment threats.

3.2.3 Fish and Wildlife

This section summarizes fish and wildlife resources in the vicinity of the Proposed Project Area. The sources of information includes published literature, unpublished IDFG data on big game and game birds, the BLM sensitive species list from the Challis Field Office (CFO), BLM Wildlife Database, and interviews with BLM and IDFG biologists familiar with the area. Fish and wildlife are divided into the following subsections: big game, upland game, furbearers, non-game birds, small mammals, and fish.

Big Game

Big game species such as mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), and American pronghorn antelope (*Antilocapra americana*) are present seasonally in the vicinity of the Proposed Project Area. The quarry is located within BLM designated mule deer crucial winter range (USDI-BLM 1999). Crucial winter range is seasonal habitat that is a determining factor in a population's ability to maintain and reproduce itself at a certain level (theoretically at or above population objectives).

<u>Mule Deer</u>

Mule deer are widespread and abundant throughout the state, occupying nearly all habitats in Idaho from dry, open country to dense forests. They prefer rocky, dense brush areas, open meadows, open pine forests, and wildfire burned areas (Brown 1992). Mule deer also can be found in coniferous forests, shrub steppe, chaparral, and grasslands with shrubs. Mule deer are often associated with early successional vegetation or vegetation resulting from disturbance, especially near agricultural lands.

Mule deer migrate from high mountainous country to lower valleys and foothills during late fall to avoid heavy snow. Big game winter habitat in western North America is defined as south facing areas on mild to medium slopes (Thomas 1979, Hoover and Willis 1987). Lower elevation habitat becomes very important during severe winters when deer try to avoid deeper snow, which can hamper their abilities to find forage and can quickly deplete their necessary fat reserves.

During winter months, mule deer browse on a wide variety of woody plants when snow covers many grasses and forbs. Common browse plants include bitterbrush (*Purshia tridentate*), sagebrush, aspen (*Populus tremuloides*), dogwood (*Cornus spp.*), juniper (*Juniperus spp.*) and Douglas-fir (*Pseudotsuga menziesii*). They graze on various grasses and forbs heavily during spring, summer and fall, and to a lesser extent, on woody browse. They also forage in irrigated fields during winter and spring.

The existing quarry and the proposed expansion area are located within mule deer "crucial" winter range, as defined in the 1999 Challis Resource Management Plan (RMP; USDI-BLM 1999) (Figure 3.2-2). The Proposed Project Area makes up less than 1 percent of the crucial winter range along the Salmon River and East Fork Salmon River, as mapped in the RMP (Map 32). Mule deer sign was observed by the consultant during a site visit in November 2006. The quarry is within IDFG Hunt Unit 36A. Mule deer harvest statistics for this Hunt Unit between 2000 and 2005 are shown in Table 3.2-3.

Table 3.2-3. Total Mule Deer Harvest in Hunt Unit 36A (any weapon) Between 2000 and 2005.

	2000	2001	2002	2003	2004	2005
Total Harvest	103	330	493	71	110	174

Source: IDFG

Trend data is not collected for deer in Hunt Unit 36A. However, trends of mule deer populations in IDFG Analysis Area 5 (includes Hunt Units 21, 21A, 28, and 36B) are analyzed, which are relevant and adjacent to this unit. In Analysis Area 5, mule deer populations decreased from 1998 to 2002 and then increased from 2002 to 2005. Management objectives for Analysis Area 5 are $\geq$15 bucks:100 does in post-season surveys and $\geq$30% $\geq$4-point bucks in the harvest. These objectives were met and exceeded in the 2005 hunting season (Painter 2006).

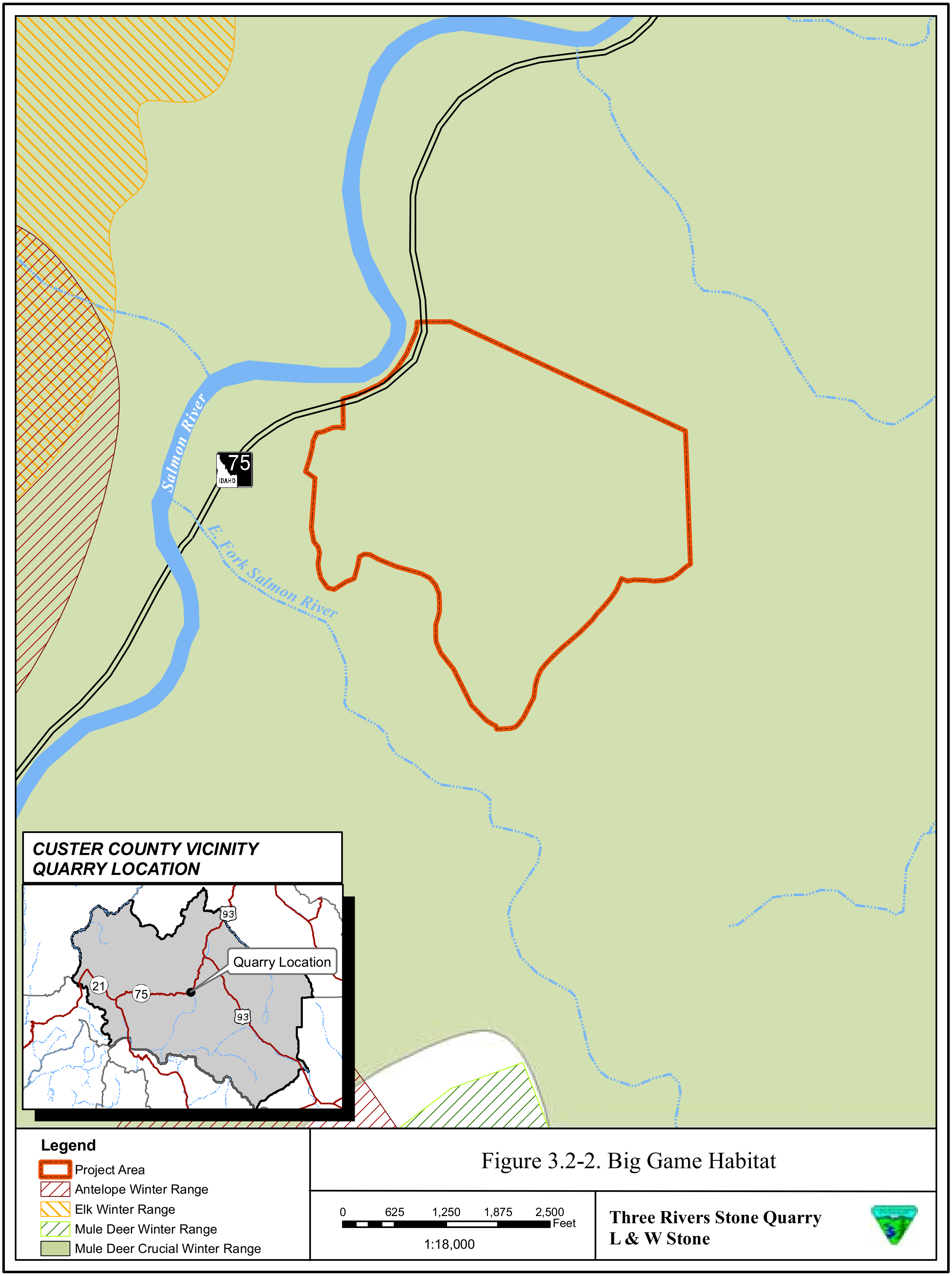


Figure 3.2-2. Big Game Habitat

Elk

Elk are widespread and abundant throughout Idaho and prefer mountainous country with mixed open, grassy meadows, marshy meadows, river flats, and aspen parkland, as well as coniferous forests, brushy clearcuts, forest edges, and shrub steppe. Some populations live year-round in sagebrush desert. Elk use grass-shrublands for feeding and tall shrubs or pole timber for resting in the spring; they feed in clearcuts and shrub fields and rest in pole timber in the summer; and remain in mesic (moderate moisture) pole timber in the autumn (Streubel 2000). Elk habitat varies greatly according to location. They are primarily a grazing species, relying on grasses for most of the year, but they also consume forbs in summer, and may browse on woody plants where grass availability is low, especially during winter months.

In Idaho, and throughout the northern Rockies, herds move to lower elevations in winter to feed. Individuals exhibit a high fidelity to their home range, but may abandon it if they are excessively disturbed (Streubel 2000). The quarry does not contain elk winter or summer range. Elk winter range (as defined in the 1999 RMP) occurs about 0.5 mile west of the Proposed Project Area on the west side of the Salmon River (Figure 3.2-2). The closest "crucial" elk winter range on BLM land is over 15 miles to the east of the quarry. Elk harvest statistics for Hunt Unit 36A between 2000 and 2005 are shown in Table 3.2-4.

Table 3.2-4. Total Elk Harvest in Hunt Unit 36A (any weapon) Between 2000 and 2005.

	2000	2001	2002	2003	2004	2005
Total Harvest	63	64	45	24	65	13

Source: IDFG

Trend data collected for elk in Hunt Unit 36A indicate that the population remained relatively stable from 2000 to 2004, with slightly more cows reported in 2000 than 2004 and more bulls reported in 2004 than 2000. Management objectives for Hunt Unit 36A are: 1050-1550 cows and 300-500 bulls, of which 200-300 are adults. These objectives were exceeded in 2004 (Painter 2006; data for 2005 and 2006 are not currently available).

Pronghorn Antelope

Pronghorn antelope are common throughout Idaho and are generally found on grasslands, shrub steppe, and foothills. They prefer rangeland with vegetation less than 2 feet in height and wide open, expansive range. They are often found in low shrubs such as sagebrush and grassy vegetation in arid regions with less than 10 to 12 inches of snow on the ground in the winter. This may lead them to upper, wind-swept slopes in the winter, or fairly long migrations between summer and winter range. Sagebrush browse is prominent in the diet of antelope throughout the year and is heavily relied on during the winter in southern Idaho, when forbs are scarce. Forbs are an important component of the spring diet for pregnant and lactating pronghorn.

Small numbers of pronghorn antelope may pass through the Proposed Project Area and its vicinity or use it seasonally, but the quarry site does not contain pronghorn winter or summer range. A small amount of antelope winter range is present approximately 0.4 mile west of the quarry, on the west side of the Salmon River (Figure 3.2-2). Data on pronghorn population trends are sparse; however, harvest data (and the associated number or hunting permits issued) indicates that populations are down (Painter 2006).

Upland Game Birds

Chukar (*Alectoris chukar*) and Greater sage-grouse (*Centrocerus urophasianus*) are upland game bird species potentially present in the Proposed Project Area or in the near vicinity. Greater sage-grouse inhabit sagebrush communities and chukars use steep, rocky, semi-arid slopes in rabbitbrush, sagebrush, saltbush, and cheatgrass vegetative associations. Greater sage-grouse are a BLM Special Status Species, and sage-grouse scat has been identified in the area surrounding the project site (see Section 3.2.4, Special Status Fish and Wildlife Species for more details).

Furbearers

<u>Bobcat (Felis rufus)</u>

Bobcats are solitary, except during breeding, and typically forage on rabbits. When rabbit numbers decline, bobcat populations subsequently follow (Knick 1990). Although bobcats are not rare in Idaho, there is cause for long-term population concerns. The estimated bobcat population near the Proposed Project Area is unknown; however, suitable habitat features do exist in the region, such as rocks and crevices for shelter as well as a productive rabbit population. Within the Salmon Region (Custer and Lemhi counties) a total of 152 bobcats, 8 percent of total harvest in the state of Idaho, were harvested in the 2004/2005 season (IDFG 2005).

Other furbearer species that may occur within or near the Proposed Project Area include red fox (*Vulpes vulpes*), coyote (*Canis latrans*), mountain cottontail rabbits (*Sylvilagus nuttalli*), and black-tailed jackrabbit (*Lepus californicus*). Other furbearer species that are found throughout the Salmon Region include badger (*Taxidea taxus*), mink (*Mustela vison*), marten (*Martes americana*), muskrat (*Ondatra zibethicus*), river otter (*Lontra canadensis*), and beaver (*Castor canadensis*) however, preferred habitat for these species does not occur within the Proposed Project Area.

Non-game Birds (including Migratory Birds)

Executive Order 13186, signed January 10, 2001, lists several responsibilities of Federal agencies for the conservation of migratory birds and their habitats. A draft Memorandum of Understanding (MOU) between the BLM and USFWS defines BLM responsibilities under the Migratory Bird Treaty Act. The MOU directs the BLM to avoid or minimize the unintentional take of migratory birds to the extent practicable.

The Idaho Bird Conservation Plan (BCP) (ID PIF 2000) identifies 60 species of breeding birds as high priority species in Idaho. This prioritization is based on an assessment of the status of 243 species of breeding birds in Idaho, including waterfowl, shorebirds, waterbirds, and neotropical migrants. The 60 species are organized by 12 habitat types, including the sagebrush/salt desert scrub found within the Proposed Project Area. The predominant habitat type at the quarry site is sagebrush; therefore, the following discussion is restricted to high priority bird species potentially occupying this habitat type. Note that several of the high priority species identified as using sagebrush habitat are also classified as BLM Special Status Species. Riparian habitat along the Salmon and East Fork Salmon rivers provides habitat for numerous bird species, such as the Lewis's woodpecker (an Idaho Species of Greatest Conservation Need and a BLM Special Status Species). Since this habitat would not be removed or altered under the project action alternatives, bird species associated with riparian areas are not further addressed. An exception is made for some bird species with additional protective status, such as the bald eagle (see Section 3.2.4, Special Status Fish and Wildlife Species).

The BCP identified 49 bird species that use sagebrush/salt desert scrub, of which 19 use this habitat type as primary breeding habitat. Nine of these are high priority species in Idaho, including Swainson's hawk, greater sage-grouse, short-eared owl, loggerhead shrike, rock wren, sage thrasher, Brewer's sparrow, lark sparrow, and sage sparrow. Of these, the Proposed Project Area is out of the known range for the loggerhead shrike, sage sparrow, and short-eared owl. Portions of the quarry site provide potentially suitable habitat for the other six high priority species, specifically the undisturbed areas with higher cover and stature of sagebrush, however, nesting habitat is absent for Swainson's hawk. Rocky slopes or cliffs may be used for nesting by rock wren. Brewer's sparrows are expected to be a year-round resident of sagebrush-steppe habitats in the vicinity of the quarry. Additional high priority bird species that use sagebrush habitats as secondary breeding or foraging habitat include the ferruginous hawk, prairie falcon, sharp-tailed grouse, mountain quail, long-billed curlew, black-chinned hummingbird, gray flycatcher, black-billed magpie, and western meadowlark. Of these, the golden eagle, prairie falcon, black-billed magpie, and western meadowlark likely use habitat in the vicinity of the quarry. A golden eagle nest occurs approximately 2 miles northeast of the quarry site, thus the Proposed Project Area is likely within the foraging area for this pair. However, because of the distance of the nest from the quarry site, this species is not further discussed.

Small Mammals

Bats

Site-specific surveys have not been completed for bats in the Proposed Project Area or its vicinity. However, suitable/predicted habitat is present for the following bat species: Silver-haired bat (*Lasionycteris noctivagans*), little brown myotis (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), Townsend's big-eared bat (*Plecotus townsendii*; Idaho species of concern and BLM Special Status Species Type 3), yuma myotis (*Myotis yumanensis*), long-eared myotis (*Myotis evotis*), long-legged myotis (*Myotis volans*), and western small-footed myotis (*Myotis leibii*). These bats utilize several habitat types including desert shrub and sagebrush-grassland. They typically roost in rock crevices, in caves, in abandoned mine portals, and/or in trees. For those that winter in Idaho, hibernation occurs in caves and abandoned mines. The undisturbed cliff faces and rocky slopes at the quarry site and its vicinity therefore provide potential roosting habitat for many of these species, with the south-facing cliffs on the southwest side of the quarry being potentially important. The cliffs that have been exposed from quarrying activities do not currently provide potential habitat for bats.

Other Mammals

Undeveloped portions of the quarry containing sagebrush communities provide potential habitat for other small mammal species such as Merriam's shrew (*Sorex merriami*), least chipmunk (*Tamias minimus*), Wyoming ground squirrel (*Spermophilus elegans*), North American porcupine (*Erethizon dorsatum*), western harvest mouse (*Reithrodontomys megalotis*), northern grasshopper mouse (*Onychomys leucogaster*), bushy-tailed woodrats (*Neotoma cinerea*), long-tailed vole (*Microtus longicaudus*), sagebrush vole (*Lemmiscus curtatus*), and Great Basin pocket mouse (*Perognathus parvus*).

Fish

Game fish

Common game fish in the Salmon River and East Fork Salmon River include, but are not limited to, bass (largemouth, *Micropterus salmoides* and smallmouth, *Micropterus dolomieu*) and rainbow trout (*Oncorhynchus mykiss*). Mountain whitefish (*Prosopium williamsoni*) also occupy these rivers. Wild, anadromous forms of Snake River sockeye salmon (*Oncorhynchus nerka*), Snake River spring/summer Chinook salmon (*Oncorhynchus tshawytscha*), and

Snake River Basin steelhead trout (*Oncorhynchus mykiss*) and resident Columbia River Basin bull trout (*Salvelinus confluentus*) occur in these rivers but are listed under the Endangered Species Act (ESA) of 1973, as amended. Hatchery forms of steelhead and salmon may be harvested according to IDFG regulations. Westslope Cutthroat trout (*Oncorhynchus clarki lewisi*), a State of Idaho species of special concern and an Idaho BLM sensitive species, is also known to occur and is sport-fished near the quarry. Refer to Table 3.2.5 for the list of special status fish species and Section 3.2.4, Special Status Fish and Wildlife Species, for further discussion of these species.

<u>Non-game fish</u>

Non-game fish species in the East Fork Salmon River and Salmon River include Pacific lamprey (*Lampetra tridentate*), large scale, finescale, and bridgelip suckers (*Catostomus macrocheilus*, *C. Catostomus* and *C. columbianus*.), Northern pikeminnow (*Ptychocheilus oregonensis*), long nose and speckled dace (*Rhinichthys cataractae* and *R. osculus*), shorthead, Piute, and mottled sculpin (*Cottus confusus*, *C. beldingi*, and *C. bairdi*); and redside shiner (*Richardsonius balteatus*). The Pacific lamprey is ranked as a state imperiled species, but rangewide secure. However, it is not currently on the State of Idaho or BLM sensitive species lists. Although none of these non-game fish species are currently listed under the ESA, they are an important aspect of the Salmon River ecosystem and provide a valuable food source for salmonids in the area.

3.2.4 Special Status Fish and Wildlife Species

Special status species described in this document include those that are (1) Federally listed as threatened or endangered under the ESA, (2) proposed or candidates for listing, and (3) designated as BLM Sensitive species. The following sub-headings detail the current conditions and trends (when available) for special status animal species that could potentially occur in the vicinity of the Proposed Project Area. Special status animal species that potentially occur within or in the vicinity of the Proposed Project Area and habitat requirements for these species are summarized in Table 3.2-5. Note that some of the special status bird species are described instead in Section 3.2.3, Fish and Wildlife, under the non-game birds (including migratory birds) sub-heading.

Table 3.2-5. Special Status Fish and Wildlife Species Potentially Occurring Within or In the Vicinity of the Project Area.

Common Name	Scientific Name	Status[1]	Habitat Requirements/ Associations	Likelihood of Occurrence
Wildlife				
Bald eagle	*Haliaeetus leucocephalus*	Delisted (formerly Federally threatened); BLM Sensitive	Rivers and lakes used during the breeding and wintering seasons; nests built in large trees in close proximity to a food source; snags and trees near open bodies of water used as winter daytime roost sites; forages on fish, waterfowl, and carrion.	Known occurrence of wintering bald eagles near the confluence of the Salmon and East Fork Salmon rivers.
Gray wolf	*Canis lupus*	Federal, nonessential, experimental population	Requires large home range which may include a number of different topographic features; distribution appears to be prey- (ungulate) dependent.	Likely passes through area. Some pack activity in region. Have not been observed denning in vicinity of quarry site.
Canada lynx	*Lynx canadensis*	Federally Threatened	Primarily occurs in coniferous forests above 4,000 feet in elevation that support stable populations of snowshoe hare. They will on occasion disperse through areas of non-habitat.	Presence unlikely but travel could occur along the East Fork Salmon River and main Salmon River; no denning habitat is in close proximity to quarry.
Pygmy rabbit	*Brachylagus idahoensis*	BLM Type 2	Sagebrush endemic; occupies sagebrush dominated landscapes supporting tall, dense stands of sagebrush and deep, alluvial soils.	Presence unlikely due to the rocky shallow, soils. Known occurrence east of the quarry in Spar Canyon and Bradshaw Basin.
Greater sage-grouse	*Centrocercus urophasianus*	BLM Type 2	Sagebrush obligate, used for all life stages; riparian meadows, springs, and streams also used for brood-rearing; exposure of sagebrush above the snow is critical during winter; breeds at communal display sites (leks).	Some sign observed locally. No leks in the quarry site. Potential nesting and wintering habitat is present. Brood-rearing habitat may be present in the riparian areas adjacent to the quarry along the East Fork and main Salmon River.
Peregrine falcon	*Falco peregrinus anatum*	BLM Type 3	Nests on cliffs, forages over open habitats.	Known occurrence; nesting territory in the vicinity of the quarry.

Table 3.2-5. Special Status Fish and Wildlife Species Potentially Occurring Within or In the Vicinity of the Project Area.

Common Name	Scientific Name	Status[1]	Habitat Requirements/ Associations	Likelihood of Occurrence
Fish				
Snake River Sockeye Salmon	*Oncorhynchus nerka*	Federally Threatened/ Critical Habitat	Streams and lake environments for early rearing; spawn in lake inlet streams, and sometimes in lake shoal and outlets.	Occurs in Salmon River adjacent to Proposed Project Area.
Snake River Spring/Summer Chinook	*Oncorhynchus tshawytscha*	Federally Threatened/ Critical Habitat	Sites with a combination of gravel and coarse sand, adequate depth, and good water flow to provide oxygen for eggs are used for spawning.	Occurs in Salmon and East Fork Salmon rivers adjacent to Proposed Project Area.
Snake River Basin Steelhead Trout	*Onchorhynchus mykiss*	Federally Threatened/ Critical Habitat	Streams with gravel substrates and cool, clear flowing water free of heavy sedimentation are used for spawning. Escape cover such as logs, undercut banks, and deep pools for spawning adults is also important.	Occurs in Salmon and East Fork Salmon rivers adjacent to Proposed Project Area.
Columbia River Basin Bull Trout	*Salvelinus confluentus*	Federally Threatened	Cool, low gradient streams with loose, clean gravel relatively free of fine sediments are used for spawning. Complex forms of cover, including large woody debris, undercut banks, boulders, and pools, important for all life stages.	Occurs in Salmon and East Fork Salmon rivers adjacent to Proposed Project Area.
Westslope Cutthroat Trout	*Onchorhynchus clarki lewisi*	BLM Type 2	Gravel substrates in riffles and pool crests in small, cold tributary streams used for spawning.	Occurs in Salmon and East Fork Salmon rivers adjacent to Proposed Project Area.

[1] Federally listed and BLM special status species. (Source: Quarterly Species List Update for BLM lands in Idaho (File #1002.0000 2007-SL-0688; USDI-FWS 2007b) and Idaho BLM Special Status Animal Species list for Districts and Field Offices (from BLM website [http://www.id.blm.gov/information/sss/Animal_List_FINAL.pdf], accessed 10/10/06; USDI-BLM 2006)).

– Federally threatened: Species that are listed as threatened under the ESA.

– Federal, nonessential, experimental population: Applies under the ESA only to gray wolves south of Interstate 90.

– BLM Type 2: Range wide/global imperilment species: includes species that are experiencing significant declines throughout their range with a high likelihood of being listed under the ESA in the foreseeable future due to their rarity and/or significant endangerment factors.

– BLM Type 3: Regional/state imperilment species: includes species that are experiencing significant declines in population or habitat and are in danger of regional or local extinctions in Idaho in the foreseeable future.

Bald Eagle

The first protection for the bald eagle resulted in the Bald Eagle Protection Act of 1940. The bald eagle was first listed as endangered on March 11, 1967 under the Endangered Species Preservation Act of 1966 (32 FR 4001). The ESA was passed in 1973, and the bald eagle's status as endangered continued in the lower 48 states, listed on February 14, 1978. In 1986, the Pacific States Bald Eagle Recovery Plan (USDI-FWS 1986) outlined the delisting goals for bald eagle recovery. In Idaho and most of the continental United States, bald eagle status was upgraded to threatened on August 12, 1995, resulting from successful efforts towards recovery. On July 9, 2007 a Final Rule was issued by the USFWS that removed (delisted) the bald eagle in the lower 48 states from the Federal List of Endangered and Threatened Wildlife (USDI-FWS 2007a). This species is still considered a special status species by the BLM and remains protected under the Bald and Golden Eagle Protection Act of 1962 and Migratory Bird Treaty Act of 1972.

Bald eagles occupy riparian and lacustrine habitat almost exclusively during the breeding season, but occasionally use upland areas for food and roost sites. Large stick nests are commonly built in large trees with sturdy branches in close proximity to an adequate food source. Bald eagle winter range usually includes areas of open water such as lakes or major river systems. Eagles generally utilize live trees and snags near open bodies of water as winter daytime roosting sites. Bald eagles require large open areas for foraging, such as lakes, rivers, shorelines, and gravel bars. Fish are the primary food source during the breeding season although they will also eat waterfowl, upland birds, small mammals, and carrion. Foraging areas are enhanced by the presence of nesting, perching, and roosting trees in the vicinity. Territory size and configuration are influenced by a variety of habitat characteristics, including availability and location of perch trees for foraging, quality of foraging habitat, and distance of nests from waters supporting adequate food supplies.

The Proposed Project Area lies within the Upper Salmon Subbasin and bald eagle recovery Zone 15. The first contemporary record of breeding bald eagles in the upper Salmon Subbasin was documented in 1990. Over the next 16 years, the breeding bald eagle population in the subbasin has steadily increased in abundance and expanded in distribution to a current record high of 13 nesting territories documented in 2006 (Waterbury 2006b). This number reflects the increasing statewide trend for Idaho's breeding bald eagle population which reached a historic high in 2005.

No bald eagle nests occur in the immediate vicinity of the Proposed Project Area. The closest nest is approximately 5 miles downstream of the East Fork Salmon/Salmon River confluence. This nest was reported in 2004, and in March 2005, occupancy of an adult pair at this location was confirmed. No eggs were laid in 2005 and this nest was unoccupied in 2006 (Waterbury 2005 and 2006b). A historic nesting territory occurred near Lyon Creek, approximately 4 miles from the East Fork Salmon River confluence, but is no longer occupied or monitored (Waterbury 2005).

Wintering bald eagles are regularly observed in the riparian habitats (black cottonwoods) near the confluence of the East Fork Salmon and Salmon rivers in the vicinity of the quarry site from November through March, likely due to the presence of open water and prey availability. The number of eagles present varies daily depending on river conditions and available food sources. The mid-winter bald eagle count conducted along the Salmon River between Sunbeam and Challis recorded 19 individuals in 2006 and 14 in 2005 (Lukens 2006; USGS 2005). Four regularly used foraging/roosting perches are along the Salmon and East Fork Salmon rivers, from 0.4 mile to 1.7 miles from the Proposed Project Area, of which all but the furthest upriver perch are within line-of-sight of the quarry. Three to five eagles make regular use of this area during icy conditions and eight to ten eagles during periods of open water (Waterbury 2006a). Bald eagles do not readily depend on upland habitats in the Proposed Project Area or its vicinity, but could forage on winter- or road-killed big game.

Gray Wolf

The Northern Rocky Mountain wolf (*Canis lupus irremotus*), as a subspecies, was listed as endangered in 1973 (38 FR 14678). However, based on the probability of enforcement problems and because the trend among taxonomists was to recognize fewer subspecies of wolves, the entire species was listed as endangered throughout the lower 48 States, with the exception of Minnesota, where they were listed in 1978 (43 FR 9612) as a threatened species. In 1994, final rules in the Federal Register made a distinction between Idaho wolves that occur north of Interstate 90 (I-90) and wolves that occur south of I-90. Gray wolves occurring north of I-90 are listed as an endangered species and receive full protection in accordance with provisions of the ESA. Gray wolves occurring south of I-90 are listed as part of a nonessential, experimental population, with special regulations defining their protection and management.

In 1995 and 1996, 35 wolves from southwestern Canada were reintroduced to the Central Idaho Recovery Area, which includes the southern portion of the State of Montana, south of I-90 and Central Idaho. An additional 31 wolves were reintroduced to Yellowstone National Park during this period. Since reintroduction wolf population recovery goals for the three northern Rocky Mountain recovery areas, including Central Idaho, as defined in the 1987 Northern Rocky Mountain Wolf Recovery Plan (USDI-FWS 1987), have been met (Nadeau and Mack 2006).

Gray wolves use habitats with varied topography, substrate, and vegetation. Forests, open meadows, rocky ridges, and lakes and rivers may all comprise portions of a pack's territory. Wolves prey mainly on ungulates year-round (Mech 1970) and packs generally require large home ranges. The actual size of a pack's home range depends mainly on pack size, weather, and prey abundance and distribution and can range from 50 square miles to more than 1,000 square miles.

The Proposed Project Area is located within the immediate vicinity of the Buffalo Ridge and Castle Peak wolf pack territories. The 2006 annual progress report confirmed six wolves in the Buffalo Ridge pack, of which five were pups; the Castle Peak pack did not qualify as a breeding pair for 2006, and the status of this pack is not known. The Buffalo Ridge territory includes the main Salmon River near (within approximately 2 miles) the confluence with the East Fork Salmon River and extends north to the Yankee Fork. The Castle Peak wolf pack territory overlaps the southern edge of the Buffalo Ridge territory and the East Fork Salmon River just south (about 2 miles) of the confluence with the Salmon River. Additional packs, the Yankee Fork and Pass Creek Packs, are in the greater vicinity, with the former overlapping the western portion of the Buffalo Ridge territory and the latter occurring within the southern part of the Castle Peak territory. The wolves in the Pass Creek pack were qualified as a breeding pair in 2006 (Nadeau *et al.* 2007). Therefore, continuous wolf pack activity surrounds the Proposed Project Area. The proximity of the quarry site to the highway, elevated human activity, and presence and use of large machinery likely discourage gray wolves from utilizing the quarry as habitat. Healthy ungulate prey populations in the region support a stable and increasing gray wolf population.

Canada Lynx

Federal agencies that manage lands within Canada lynx habitat have begun to promote Canada lynx recovery actions in their land use plans. The U.S. Forest Service (USFS) and BLM signed 4-year Conservation Agreements with the USFWS in 2000. The USFS agreement has been revised and renewed (USDA-FS and USDI-FWS 2005). The BLM agreement has not been renewed although the agency continues to work within the agreement. Under the agreements, lynx habitat was mapped on all National Forest and BLM-administered lands across the contiguous United States, and ESA Section 7 Consultation occurs on these lands as appropriate. Determinations of project effects on lynx are based on the most current science, including the Lynx Conservation Assessment and Strategy (LCAS) (Ruediger *et al.* 2000). National Forest Land and Resource Plans and BLM Land Use Plans have been revised or amended, or are in the process of revision or amendment, to address lynx conservation needs (USDI-FWS 2005b).

Canada lynx inhabit mature spruce-fir forest (primary habitat) in the southern portion of their range. Lynx habitat is closely associated with the habitat requirements of the snowshoe hare (*Lepus americanus*), the primary prey species for lynx. Early successional stands with high densities of shrubs and seedlings provide optimal habitat for snowshoe hares, making them important foraging habitat for lynx. Mature forests with downed logs and windfall provide denning, security cover, and travel corridors for lynx. Conifer-aspen forests, particularly those with dense regeneration or an extensive shrub and woody debris understory component, and willow riparian areas may also be important for prey species, as they provide both forage and cover.

In accordance with the LCAS (Ruediger *et al*. 2000), Lynx Analysis Units (LAUs) were delineated across the Upper Columbia-Salmon Clearwater BLM Districts. A LAU is a project analysis unit upon which direct, indirect, and cumulative effects analyses can be performed. The size of a LAU approximates the area used by an individual lynx, about 65 to 129 square kilometers (25 to 50 square miles).

Canada lynx may occur in the region around the Proposed Project Area but their presence has not been verified. Primary lynx habitat and denning habitat is not present in the Proposed Project Area or its immediate vicinity. More suitable habitat is present in the forested regions to the northwest and south of the quarry. The Bayhorse-Kinnikick LAU is located approximately 4 miles to the northwest of the quarry and the Northfork LAU is located approximately 20 miles southeast of the quarry site. A lynx linkage area is present north of the Northfork LAU, approximately 10.5 miles south of the quarry, and the East Fork Salmon River runs through the western portion of this linkage. Therefore, although the Proposed Project Area and surrounding shrub-steppe habitat do not provide suitable cover habitat, there is the possibility that lynx could use this area on occasion, including the adjacent East Fork and Salmon rivers, as a potential travel corridor between the LAUs to the north, south, and west of the quarry.

Pygmy Rabbit

The pygmy rabbit is a sagebrush endemic occurring in patchy distributions across the Great Basin desert and adjoining intermountain regions. In Idaho, pygmy rabbits occur in patchy distributions of sagebrush-steppe habitat across southern Idaho, extending to the fault-block basins of east-central Idaho. These east-central basins, which appear to connect to populations in southwest Montana, comprise one of the largest, contiguous habitat strongholds for pygmy rabbits in Idaho (Rachlow and Svancara 2003).

Pygmy rabbits occupy sagebrush dominated landscapes supporting tall, dense stands of mature sagebrush and relatively deep, loamy, and/or sandy soils (Green and Flinders 1980, Dobler and Dixon 1990). These combined habitat features provide preferred forage for pygmy rabbits, protective cover from weather and predators, and soils that are suitable for digging burrows. Given the naturally fragmented nature of their habitat and limited dispersal capabilities on the landscape, pygmy rabbits are particularly vulnerable to loss, alteration, and fragmentation of sagebrush habitats.

In spring and early summer 2006, IDFG conducted a survey for pygmy rabbits on lands administered by the Challis Field Office. Priority survey locations were identified first at the coarse-scale level based on a combination of known localities, habitat model maps, and interviews with individuals with local knowledge and then further refined using orthophoto quadrangle, vegetation, and topographic GIS layers. Based on a conservative habitat model (using GAP analysis), the project quarry originally fell into the “predicted habitat” category. However, when further refined, the Three Rivers Stone Quarry and immediate vicinity did not rank out as a priority survey area because of the rocky, shallow soil type which makes it unsuitable for burrowing. Because of the shallow soil, and the lack of tall, dense sagebrush, the Proposed Project Area is not considered suitable for pygmy rabbits. Priority survey areas were identified in the Bradshaw Basin and Spar Canyon, and positive observations of pygmy rabbits were made about 5.5 miles east of the quarry (Waterbury 2006d and 2007).

Greater Sage-Grouse

The greater sage-grouse is an upland game bird that was once abundant throughout sagebrush habitats in the west. The success of the sage-grouse is directly dependent on, and correlates to, the health of the sagebrush shrub-steppe community. Its original range encompassed the western to northwestern U.S. and three provinces of southwestern Canada. Currently, the greater sage-grouse range has measurably decreased within eleven states and two Canadian provinces and they are no longer present in some western states. Since the 1950s, the greater sage-grouse population has declined by an estimated 45 to 80 percent (Braun 1998), with only about 150,000 to 200,000 breeding greater sage-grouse remaining throughout the range (Connelly and Braun 1997). Greater sage-grouse populations are continually declining throughout their range and individual populations have become increasingly separated (Knick *et al.* 2003). Core populations of greater sage-grouse have survived in several states, including Idaho, Montana, Wyoming, and Colorado, but even these populations, with the exception of Colorado, have significantly declined. The sage-grouse was recently petitioned for listing, but the USFWS determined that listing was not warranted (USDI-FWS 2005a).

The greater sage-grouse is entirely dependent upon sagebrush communities for all stages of its life cycle, with extensive areas of this habitat type required year-round. Sage-grouse have a high fidelity to their seasonal habitats (breeding, late brood-rearing, and wintering habitats), and females commonly return to the same areas to nest each year. Most sage-grouse nests are located under sagebrush plants that provide overhead cover, with 15 to 30 percent canopy cover preferred. Late brood-rearing habitats, used from summer into fall, usually have less dense sagebrush canopy than nesting habitats and generally have a higher proportion of grasses and forbs in the understory. Riparian meadows, springs, and streams are also used during this time, especially in dry years, as these areas produce the forbs and insects necessary for juvenile birds. Because the diet of chicks consists of forbs and insects, diverse plant communities with abundant insect populations are especially important. During winter, sage-grouse feed almost exclusively on sagebrush leaves and buds, so exposure above the snow, rather than canopy cover, is critical (USDI-BLM 2003d).

There are no active or historic sage-grouse leks (traditional sites where males and females congregate for courtship) within the Proposed Project Area. The closest active leks occur approximately 5 to 6 miles southeast of the quarry. Sage-grouse sign (scat) has been observed in the near vicinity of the quarry, suggesting that grouse have or do travel though the area. Potentially suitable nesting and wintering habitat is present in portions of the project site, such as in the southern portion near the ACEC/RNA. However, due to the proximity of the quarry to the highway and the level of human activity (mining) currently taking place, the likelihood of sage-grouse using habitat in the quarry for nesting or wintering is low. Potential habitat for brood-rearing could occur adjacent to the project site in the riparian areas associated with the East Fork Salmon River and main Salmon River. However, use of these areas by sage-grouse has not been documented.

Peregrine Falcon

The peregrine falcon was removed from the endangered species list by the USFWS, and is no longer on the updated list of endangered, threatened, proposed, and candidate species list for the BLM Challis Field Office (USDI-FWS 2007b). The peregrine falcon is listed by the BLM as an Idaho Sensitive Species – Type 3: Regional/State Imperiled (USDI-BLM 2006). Peregrine falcons, as well as all migratory birds, are protected under the Migratory Bird Treaty Act.

Peregrine falcons are found in a wide variety of habitats and are often associated with open water, wetlands, and riparian habitat. They are neotropical migrants that most commonly nest on large cliffs (greater than 200 feet high) under 9,500 feet in elevation. However, they also may nest on man-made structures such as high-rise buildings. They forage in a variety of open habitats and prey almost exclusively on other birds, which they capture in the air. They may forage up to 18 miles away from their eyries (nest sites), although most hunting occurs within a 10-mile radius of the nest, and often over 80 percent of the foraging occurs within 1 mile. Human activity, especially above the nest area, can cause the abandonment of nests and reproductive failure.

A peregrine falcon nesting territory is present approximately 2 miles from the quarry. Two nests are known to occur in this territory, one that was used in 2003 and another that is considered a “probable” eyrie. The territory was discovered in 2002 but did not produce any young. In 2003, two young were fledged from the confirmed eyrie and in 2004, a nesting attempt in the other eyrie failed. The nest territory was unoccupied in 2005 and 2006 (Waterbury 2006c and Lukens 2006). The BLM and IDFG monitor peregrine falcon activities in the Challis Field Office area.

Snake River Sockeye Salmon

Sockeye salmon were listed as threatened under the ESA in the mid-1980s. Sockeye salmon exhibit some of the more complex life history patterns among Pacific salmon in that they rely on both stream and lake environments for early rearing (Burgner 1991, Irving and Bjornn 1984). Sockeye salmon in the Columbia River Basin are typically late summer/fall spawners. Juveniles emerge from the gravel the following spring and move into the lake for 1 to 2 years where they feed on zooplankton before migration. Sockeye salmon are present in the Salmon River.

Snake River Spring/Summer Chinook Salmon

Chinook salmon were listed as threatened under the ESA in the mid-1980s. Spring/summer Chinook salmon arrive in Idaho waters in the spring and summer to spawn in the Clearwater, Salmon and Snake Rivers. Salmon smolts migrate to the ocean after 6 months to 1 year. Spring Chinook return to the Upper Salmon River in the Sawtooth Mountains and the Middle Fork, East Fork and Yankee Fork of the Salmon River. Summer Chinook return to the South Fork of the Salmon River and the Salmon River. Chinook salmon are present in the East Fork Salmon River and the Salmon River and these rivers are designated critical habitat for Snake River spring/summer Chinook salmon.

Snake River Basin Steelhead

Steelhead, the anadromous form of rainbow trout, were listed as threatened under the ESA in the mid-1980s. They arrive in Idaho in August and September and spend the winter in Idaho streams before spawning the following spring. Steelhead are common in the Snake, Salmon, and Clearwater Rivers below the Hells Canyon and Dworshak dams. Steelhead are present in the East Fork Salmon River and the Salmon River and these rivers are designated critical habitat for steelhead.

Columbia River Basin Bull Trout

Bull trout were listed as threatened under the ESA in 1998. Bull trout are widespread throughout tributaries of the Columbia River basin. This species exhibits fluvial (i.e. fish migrate as adults from larger streams or rivers to smaller streams to reproduce) and adfluvial (i.e. fish migrate larger distances as mature adults from lakes to inlet or outlet streams to spawn) life-history strategies through much of its current range. The Salmon River Watershed provides suitable habitat for bull trout. Electrofishing surveys conducted by the IDFG in 2001 found a total of 659 bull trout within the Salmon Region, including one within Squaw Creek and two within Herd Creek (IDFG 2002). Herd Creek is a tributary to the East Fork Salmon River located upstream from the quarry.

Westslope Cutthroat Trout

Westslope Cutthroat trout are a BLM Type 2 sensitive species, and use the Salmon River, East Fork Salmon River, and virtually all of its suitable tributaries for spawning and rearing. Westslope cutthroat trout are present in these systems in various life stages year-round. They spawn in the smaller tributary streams from May through mid-July, when water temperatures reach about 50 degrees Fahrenheit.

3.2.5 Wild Horses and Burros

The Proposed Project Area is in the Challis Herd Management Area (HMA), which has an appropriate management level of 185 horses. The herd has varied from 185 to 253 horses between gathering events. The Challis HMA covers 167,840 acres bounded by Highway 75 on the north, East Fork Road on the west, the Willow Creek divide on the south, and U.S. Highway 93 on the east. There are no burros in the Challis HMA.

Wild horses have been observed within approximately 2 miles of the Proposed Project Area during census flights. Evidence of horse use was noted in the summer of 2002 on the power-line access road approximately 2,000 feet southeast of Pit 2. A group of four to six wild horses has been noted on the northeast side of the East Fork Salmon River, approximately 1.5 mile southeast of the quarry during the winters of 2001 and 2002. The Three Rivers Stone Quarry receives very little use by wild horses and does not contain any areas identified as crucial habitat (USDI-BLM 1999).

3.3 OTHER RESOURCES

3.3.1 Cultural Resources

Background

Cultural resources are sites, buildings, districts, structures, and objects that contain evidence of past human activities. The National Historic Preservation Act (NHPA) of 1966 established the Federal government's policy and programs on historic preservation, including the establishment of the National Register of Historic Places (National Register). Cultural resources that are listed or eligible for listing on the National Register are called historic properties. Historic properties can reflect many kinds of significance, including architecture, history, archaeology, engineering and culture.

Archaeological survey of the proposed area of potential effect (APE) is required to assist in implementing Section 106 of the NHPA, procedures of the Advisory Council on Historic Preservation (36 CFR 800), and BLM policy requiring inventory and evaluation for cultural resources within potential impact areas. Section 106 of the NHPA requires that prior to any action, Federal agencies make a reasonable and good faith effort to identify cultural resources that might be affected by the action, to identify those resources which may qualify as eligible to the National Register, and that Federal agencies take into account the effects of their undertakings on all historic properties. The Idaho State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation (ACHP) are the state and Federal agencies responsible for overseeing the management and preservation of heritage resources in compliance with the NHPA.

Existing Cultural Resources

The Salmon River Corridor is rich with prehistoric and historic culture. Native Americans have used the Salmon River corridor and the confluence area of the East Fork and Main Stem Salmon rivers extensively for thousands of years, and prehistoric sites have been located along the rivers and in their vicinity. The historic town site of Crystal is also located at the confluence of the East Fork and Main Stem Salmon rivers and historic building remnants have been recorded in this area.

The archaeological and historic inventory record was examined to determine the presence of cultural resources in the existing Three Rivers Stone Quarry and the area proposed for expansion. Records included reports and summaries of field surveys conducted by the BLM, Idaho State University Museum, Shapiro and Associates, and the Idaho Transportation Department between 1975 and 2004. Most surveys completed between 1996 and 2004 were directly tied to mining operations by L&W Stone and covered the majority of the area proposed for mining expansion and exploration. These previous inventories identified a total of five cultural resources in or adjacent to the proposed APE. Of these, one was eligible for inclusion in the National Register under Criterion D. Table 3.3-1 summarizes these cultural resources. Maps of these sites are not included in this document in order to protect the historic resources, as authorized by Section 304 of the NHPA.

Table 3.3-1. Cultural Resources Previously Recorded in the Project Area Vicinity.

Site Number	Site Type	Year Recorded	National Register Eligibility
10CR508	Rock Overhang/Shelter	1975	Not Eligible
10CR984	Lithic Scatter	1991	Not Eligible[1]
10CR-1861	2 Talus Pits[2]	2004	Criterion D
10CR-492	Lithic Scatter[2]	1975	Yes
10CR-493	Five Talus Pits/ Hunting Blinds[2]	1975	Yes

[1] This site was heavily disturbed in the winter of 1999-2000. A large component of the site was removed and some artifacts were displaced, thus the site no longer retains the integrity that might render it eligible for the National Register.

[2] Adjacent to but outside of the Proposed Project Area.

In addition to the five previously recorded sites above, four flakes of locally available volcanic tuffs were noted within the Proposed Project APE in 2004 but not formally recorded. These flakes were not associated with any other cultural materials are not eligible for listing on the National Register.

To date, surveys of the Three Rivers Stone Quarry in the area proposed for expansion have not resulted in the record of any cultural resources eligible for listing on the National Register. A small portion of the area proposed for expansion between Pit 1 and Fuel Storage Area #2 and the Pit 1 waste rock area have not been surveyed for cultural resources. The potential that cultural deposits remain in this area is low due to the steep topography and disturbed nature of the majority of the area. However, the potential still exists for the presence of cultural resources in localized portions of this area; therefore, an intensive survey of this area will be conducted between the draft and final version of this EIS, and the findings of the survey will be reported in the Final EIS.

3.3.2 Tribal Treaty Reserved Rights and Interests

The Challis Field Office area is entirely comprised of lands (aboriginal, traditional, or unoccupied) on which the Shoshone-Bannock Tribes reserved the right to hunt, fish and gather natural resources in the Fort Bridger Treaty of 1868. As a land and resource manager, the BLM has a Federal trust responsibility to honor treaty rights, and to make land management decisions and take actions that do not harm treaty rights, treaty resources, and other tribal interests. The BLM is required to do this while still meeting its land and resource management responsibilities to all of the nation's people.

Historically, the East Fork Salmon River has been an important fishery resource for the Tribes. In the past, the Tribes have expressed concern about actions within the watershed that have the potential to impact the spawning and rearing systems of spring/summer Chinook salmon and summer steelhead. Steelhead and salmon fishing in the East Fork continues to be an important cultural activity for Shoshone-Bannock tribal members today. Some tribal members continue to use traditional methods to catch fish, such as spearing, which requires clear water and good visibility. Any potential impacts to water clarity or turbidity are of special concern to the Tribes.

Government-to-government consultation with the Shoshone-Bannock Tribes is ongoing regarding the amended plan of operations and proposed quarry expansion (see Section 5.1.1). As of August 30, 2005, the Tribes have divulged no specific concerns about properties potentially eligible for the National Register, or properties related to tribal treaty rights or Native American religious concerns within the L&W Stone proposed APE.

3.3.3 Social and Economic Conditions

The Proposed Project Area is within Custer County, near the incorporated communities of Challis and Clayton. Custer County is 4,925 square miles in size, was sparsely populated with 0.9 persons per square mile in 2000 (U.S. Census Bureau 2006b), has no metropolitan areas, and is distant from urban areas (USDI-BLM 1998). Approximately 23 residential properties have views of some portions of the proposed operations. Since the majority of people employed at the Three Rivers Stone Quarry live in the Challis area (Challis and Clayton), the following discussion is limited to these communities and does not include the communities of Stanley and Mackay.

Population

The population of Challis in 2000 was 909, a decline of about 15 percent from 1990 (US Census Bureau 2006a). This decline in population was due primarily to the closure of the Hecla Mine. More recently, and since the 2000 Census was completed, the Thompson Creek Mine has increased employment which has positively affected the population of Challis. The number of retirees buying homes in the Challis area has also increased the population of the area. The population of the greater Challis area (ZIP Code Area 83226) is 2,288, indicating that the majority of the residents live in a rural/unincorporated setting. Unlike Challis, the population in the greater Challis area has been stable during the period between the two most recent population censuses.

Employment

The service sector is the largest component of employment in the Challis area, employing about 345 people and consisting of a variety of services for residents and accommodations and food services for tourists (Table 3.3-2). Challis was a historical trading center for miners, and mining is still the primary way of life for many community members. Today about 281 people work in the mining industry which makes up the second largest component of employment in the Challis area (Table 3.3-2). Other areas of significant employment include retail trade, government, and agriculture (Table 3.3-2). Minor areas of employment (less than 10 %) include construction, transportation, communication, and utilities (TCU), financial services (FIRE), and manufacturing (Table 3.3-2).

Table 3.3-2. Challis Area Employment.

Employment Type	Number Employed in Challis Area
Services	345 (23%)
Mining	281 (19%)
Government	248 (17%)
Agriculture	197 (13%)
Local Trade	178 (12%)
Construction	129 (9%)
TCU	58 (4%)
FIRE	36 (2%)
Manufacturing	19 (1%)
Total	**1,491 (100%)**

Challis has a variety of public services including an airport that provides charter access to the Idaho backcountry, Custer County Offices, a medical clinic, USFS and BLM offices, and the Challis School District. The community's largest employer is the Thompson Creek Mining Company. The second largest employer is the Federal government (USFS, BLM, and the U.S. Postal Service). Other major employers include L&W Stone, two utility companies, two grocery stores, three restaurants, two service stations, and the local bowling alley.

The L&W Stone Corporation currently employs about 75 workers at the Three Rivers Stone Quarry. Approximately 36 of these employees work seasonally, generally April through December of each year. Wages at L&W Stone are among the highest of all employers in the Challis area and Custer County. The majority of seasonal employees are paid by the weight and quality of flagstone produced daily, with wages paid dependent on experience and job description (Table 3.3-3). The quarry provides a variety of jobs including laborers, trucking, equipment operators, management, and rock splitters and handlers. Much of the work requires hard physical labor, and even with the high wage scale, the quarry has been unable to meet all of its labor needs with local workers. Consequently, the majority of the rock splitters and handlers at the quarry are seasonal workers with work visas (H2B visas) or resident cards who reside part of the year in Mexico. The Three Rivers Stone Quarry employs approximately 14 year-round rock splitters that also hold work visas or resident cards. They are able to work at the quarry throughout the winter due to the installation of heated tents in 2006. It is likely that employees holding work visas or resident cards send a portion of their income to Mexico.

Table 3.3-3. Wage Rates at the Three Rivers Stone Quarry.

Job Type	Wage
Entry level general laborers	\$7.00 – \$9.00/hr
Truck drivers, loader operator, bulldozer operator, driller/blaster, maintenance	\$10.00 – 25.00/hr with benefits plus overtime (\$20,800 – \$52,000 annually)
Rock splitters and handlers	Paid weekly based on the weight and quality of flagstone produced, \$500 – \$1,500 per week (\$18,000 – \$65,000 annually), plus housing benefits. Resident aliens offered medical insurance.

Employment in metal mines in the Challis area has exhibited a boom and bust character due to the volatile nature of the metal markets. In contrast, L&W Stone operations are linked to construction demand for dimension stone which has been steady in the west due to its value in residential and commercial construction. Stone from the Three Rivers Quarry is being sold on the west coast of the United States and in the Far East (Japan). Consequently, employment at the quarry is more stable than the other mining employment in the area. When examined from the perspective of total industry output (industry sales), mining makes an even larger contribution to the local economy, making up about 26 percent of all economic activity in the Challis area. This is explained by the relatively high wage scales and sales per worker of mining operations a compared to retail trade or service businesses.

Challis Area Economy

The Challis area economy is based on a combination of mining, agriculture, tourism, government services, and land development (Table 3.3-4). The Thompson Creek Mining Company (molybdenum) and L&W Stone are the two principal mining companies.

Agriculture in Custer County is primarily cattle ranching and associated hay and pasture operations. Land used for ranching is experiencing considerable pressure for land subdivision and development as retirees and “quality-of-life migrants” are moving into the upper Salmon River valley and purchasing retirement and recreation homes. Tourism is seasonal with a relatively short summer season followed by a fall season focused on big game hunting. There are also spring steelhead fishing seasons and winter sports. Motel and restaurant employment is greatest during the tourist season. Land development and other natural resources are also important components of the economic base. Other natural resource activities include logging and hunting and associated guides and outfitter operations.

Table 3.3-4. Challis Area Economy and Economic Base.

Contribution Type	Economic Base (%)
Mining	46
Agriculture	25
Tourism	13
Government	10
Land Development	6

Source: Bureau of Economic Analysis 2007.

Income

Challis residents derive a large share (60%) of their income from wage and salary employment. Farm and business profits also make a significant contribution (11%) to the local economy, and spending by owners of seasonal homes is becoming more important to the areas’ economy. Retirees in Challis rely more on social security income as opposed to investment income as in neighboring communities.

Per capita income in Challis in 1999 was $15,803, which was slightly lower than surrounding communities. However, median family income was slightly higher, at $39,444. Twelve percent of the population had individual income below the poverty level, which was comparable to surrounding communities (US Census Bureau 2006a).

Housing

Housing in the Challis area, which comprises the Challis, Patterson and Clayton ZIP code areas (83226, 83253, and 83227), consists of owner and rental housing units. In Challis, older homes typically sell for $75,000 to $125,000 and newer homes for $125,000 to $175,000. Rental units rent for $300 to $500 per month, with a median rent of about $450. In 2000, there were 1,856 housing units in the greater Challis area (U.S. Census Bureau, 2006a) and currently, very few are vacant. Rental demand has gone up with the expansion of the workforce at the Three Rivers Stone Quarry and Thompson Creek Mine, and the demand currently exceeds the supply. A small portion of the houses are inhabited by second-home owners, with the numbers recently increasing in the Challis area.

Community Services

Community services in the Challis area are shown in Table 3.3.5. In addition to law enforcement and protection from the Challis police department, Challis receives services from the Custer County Sheriff. Given the small size of Challis, only one small healthcare facility is present. Dental, vision, and chiropractic services are also present. The closest hospital is in Salmon, Idaho, about 60 miles from Challis. Two additional hospitals are present in the region, one in Hailey (113 miles away) and another in Idaho Falls (150 miles away). Ambulances are provided by the 24-hour Challis Volunteer Ambulance Service. Fire protection is provided by paid and volunteer county firemen.

Table 3.3-5. Community Services in the Challis Area.

Location	Police Departments (number)	Medical Facilities (number and type)	Schools (grade and number of students)
Challis	1	4 (1 healthcare, 1 dental, 1 vision, and 1 chiropractic clinic)	PK – 6 (176) 7 – 12 (235)
Clayton	--	--	KG-4 (6)

Source: Challis Chamber of Commerce and Institute of Educational Sciences National Center for Educational Statistics.

Challis is within the Challis Joint School District 181. In addition to the schools listed in Table 3.3-5, an elementary school in Patterson, Idaho and an elementary-junior high school in Stanley, Idaho are also part of this District, with an additional 42 students. Many of these students attend the high school in Challis. However, given the distance from the quarry, it is unlikely that children of quarry employees attend these schools. Demography of the students enrolled in the schools in Challis and Clayton is primarily Caucasian, with 6 percent Hispanic, and 1 percent Asian. Demography of the students enrolled in the school in Stanley is all Caucasian, and demography of the students enrolled in the school in Patterson is 79 percent Caucasian and 21 percent Hispanic. An English proficiency program is offered in the school District.

Public Land Ownership

In Custer County, Federal land ownership accounts for over 90 percent (94.3%) of all land. Less than 2 percent is owned by the state. The county has a high proportion of land in Federal ownership compared with surrounding counties. Consequently, local officials report that the county's economic well-being is very dependent upon public land management decisions (USDA-FS 2003). The principal components of the Challis area economic base are all dependent to a large degree on Federal land management.

3.3.4 Visual Resources

VRM System

In order for the BLM to meet its responsibility to maintain the scenic values of the public lands, they use a Visual Resource Management (VRM) system. This system defines various scenic values, and provides a way to describe and evaluate landscape appearance (USDI-BLM 1986a; USDI-BLM 1986b). The VRM system is a classification of many landscape characteristics that helps guide land management activities and project implementation. The system is intended to identify scenic values, sensitive areas, and potential mitigation strategies, not as a basis for approving or denying land use activities. The VRM system allows land management decisions to be considered within the context of visual resources so activities can be implemented to maintain or enhance the particular scenic values of an area.

Assessing scenic values and determining visual impacts can be a subjective process. To increase objectivity and consistency, the VRM system describes and evaluates landscapes by using the basic design elements of form, line, color, and texture. This same system can also be used to describe proposed actions and analyze potential visual impacts of these actions. Projects that repeat these design elements are usually in harmony with their surroundings, whereas those that do not, create contrast. By adjusting project designs so that the basic design elements are repeated, visual impacts can be minimized. In general, the VRM system consists of two stages: inventory classification and management classification (USDI-BLM 1986b). These classifications are summarized below in the context of the Proposed Project Area.

Visual Resource Inventory

The VRM Inventory is a process that BLM uses to guide the management of visual resources (USDI-BLM 1986a). The process rates the visual appeal of a tract of land, accounts for public concern for scenic quality, and determines whether the tract of land is visible from travel routes or observation points. The inventory utilizes a classification matrix to rank landscape characteristics such as scenic quality, visual sensitivity, and distance zones. Inventory classes provide a basis for considering visual values during the RMP process. They do not establish management direction and should not be used as a basis for constraining surface disturbing activities. The visual resource inventory process utilizes the following landscape characteristics:

Scenic Quality: This characteristic is a measure of the visual appeal of a tract of land within the planning area. The planning area is sub-divided into Scenic Quality Rating Units (SQRU) of similar visual character on a basis of: like physiographic characteristics, similar visual patterns, texture, color, variety, etcetera, and areas which have similar impacts from man-made modifications. The size of the SQRU may vary from several thousand acres to 100 or less acres, depending on the homogeneity of the landscape features, and the detail desired in the inventory. Normally, more detailed attention would be given to highly scenic areas or areas of known high sensitivity. Seven key factors determine the scenic quality of a unit: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. Resource specialists consider these factors when ranking units for scenic quality (A = high, B = medium, C = low). Ratings consider key factors on a relative basis, taking into account similar features within the area. Prominent high cliffs for example, may receive a higher quality rating than flat valley bottoms. At the time of preparation of this document the SQRU established by the BLM for the proposed project area were not available.

Visual Sensitivity: This characteristic is a measure of public concern for scenic quality. Public lands are assigned high, medium, or low sensitivity levels for each by analyzing various indicators of public concern, such as: type of user, amount of use, public interest, adjacent land uses, and special areas such as wilderness. At the time of preparation of this document the sensitivity level rankings for the proposed project area were not available. However, the State of Idaho has designated SH-75 between Stanley and Salmon as the Salmon River Scenic Byway Corridor. The Idaho Department of Transportation has begun a planning effort to complete a Salmon River Scenic Byway Corridor Management Plan, which is currently under preparation. It is locally driven, and considers values that local citizens wish to preserve, conserve, or otherwise enhance. The Proposed Project Area is visible from specific sections of SH-75, and visibility depends on travel direction.

Distance Zone: Landscapes are subdivided into three distance zones based on relative visibility from travel routes or observation points. The three zones are: foreground-middleground, background, and seldom seen. The foreground-middleground zone includes areas seen from highways, rivers, or other viewing locations that are less than 3 to 5 miles away. The background zone is beyond the foreground-middleground zone, but usually less than 15 miles away. The seldom-seen zone includes areas not seen as foreground-middleground or background (i.e., hidden from view). Known key observation points along SH-75, East Fork Salmon River Road, and the Salmon River would place the project in the foreground-middleground zone.

Visual Resource Management Classification

The RMP process utilizes information from the visual resource inventory process to classify the planning area into one of four VRM Classes. The objective of each class is listed below. Existing mining operations and the proposed expansion area are located in a VRM Class II area.

VRM Class I Objective: To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.

VRM Class II Objective: To retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

VRM Class III Objective: To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.

VRM Class IV Objective: To provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.

Baseline Visual Conditions Verses Existing Visual Conditions

Environmental baseline conditions for visual resources at the Three Rivers Stone Quarry are those that existed in 1992 because those conditions represent the most recent level of disturbance approved by the BLM. Changes that have occurred at the quarry site since then have never been formally analyzed for visual impacts. The photographs below depict the Proposed Project Area from approximately the same vantage point over a period of time from 1992 to 2005 (see Figures 3.3-1 through 3.3-5). The figures are displayed here in an attempt to give the reader an idea of how the area has changed since 1992. Following the photographs is a description of visual resource conditions that existed at the site in 1992.

Obvious changes in the scope of operations since 1992 have resulted in visual contrasts. Being temporally removed from the visual baseline conditions presents a unique challenge in describing the affected environment. However, the greatest attempts have been made to reconstruct the visual baseline conditions using historic photographs, stereoscopic aerial photographs, historic plans of operation, field notes, personal communications, and other general information from the administrative record. The following description of visual baseline conditions strives to reconstruct the appearance of the landscape in 1992.

Figure 3.3-1. The Proposed Project Area (1992).

Figure 3.3-2. The Proposed Project Area (2003).

Figure 3.3-3. The Proposed Project Area (2005).

Figure 3.3-4. Overlook of Pit 1 (1992).

Figure 3.3-5. Overlook of Pit 1 (2005).

Project Area Visibility

The Proposed Project Area is in the Northern Rocky Mountains physiographic province at the confluence of the Salmon and East Fork Salmon rivers. The region consists of high mountain ranges with deeply dissected, steep-sided valleys. These narrow valleys are comprised of irrigated fields flanked by rugged foothills and cliff features. Vegetation in the foothills creates a very irregular pattern caused by patches of grasses, low lying sagebrush, or dark stands of conifers. This is a very arid appearing environment with colors mostly in the spectrum of muted greens, browns, and yellows. Houses and structures associated with small-scale farmlands in the river bottoms sparsely populate the landscape. A two-lane highway parallels the length of the Salmon River adjacent to the quarry and an unpainted paved county road parallels the East Fork Salmon River.

A Key Observation Point (KOP) is one or a series of points on a travel route, use area, or a potential use area where the view of a management activity would be most revealing. KOPs are chosen based on existing land use, frequency of visibility, duration of visibility, and anticipated activities of the observer. Six KOPs were established that provide a view of the Proposed Project Area from diverse locations in an effort to communicate landscape appearance experienced by the public from various perspectives (Figure 3.3-6).

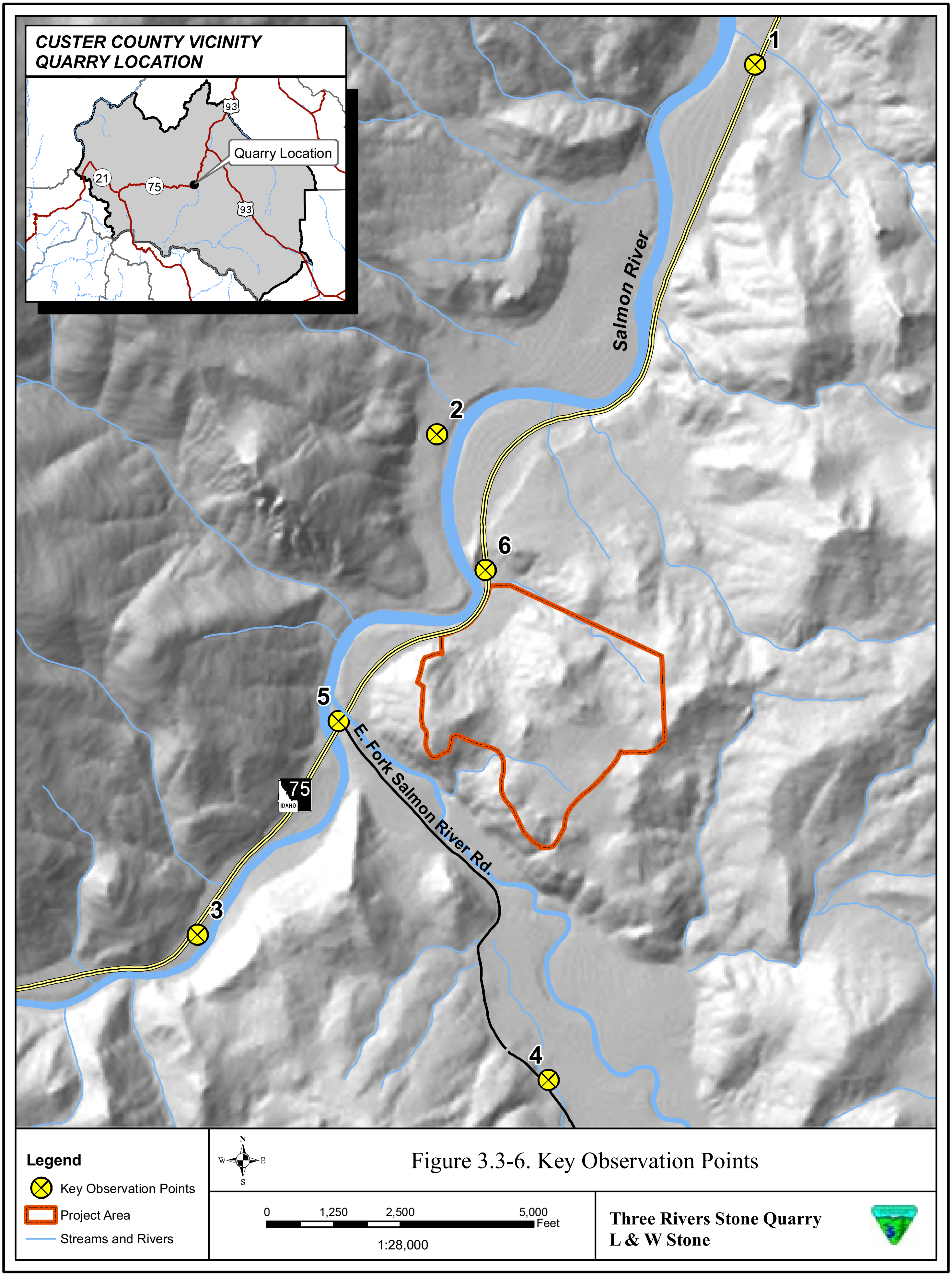


Figure 3.3-6. Key Observation Points

Three Rivers Stone Quarry
L & W Stone

KOP 1

This observation point is approximately 2.5 miles northeast of the Proposed Project Area and is positioned to characterize the landscape conditions that motorists experience when traveling southwest on SH-75. From this point the quarry is visible in the middleground zone of the landscape (Figure 3.3-7).

Figure 3.3-7. KOP 1 – View Looking Southwest (2006).

From this perspective the landscape can be classified according to two major features – the Salmon River floodplain and the surrounding uplands. Natural contrasts between the floodplain and the adjacent uplands present different patterns of landscape form and complexity. The floodplain is relatively simple with gentle horizontal slopes and lines. The uplands appear more complex, with irregular slopes more vertical than horizontal, prominent rock outcrops, and talus toe slopes. The floodplain displays a greater concentration of cultural modifications (e.g. roads, fences, houses) than the surrounding uplands. The colors tend to be less muted in the floodplain than the surrounding uplands during the growing season due to irrigated vegetation and cottonwood trees. This color distinction between floodplain and the surrounding uplands is seasonal, with less contrast in the winter.

Mining activity at the Proposed Project Area would have been less visible from this KOP in 1992. No historic photographs of the quarry site are available from this perspective.

However, photographs of the Proposed Project Area taken in 1992 from other perspectives (Figure 3.3-1) show less surface disturbance at the quarry site than what is presented in Figure 3.3-7. For example, the Pit 1 waste rock storage pile did not exist in 1992. Also, what is now referred to as the Pit 1 footwall was not relatively apparent in 1992. Some surface disturbance was present at what is now Pit 1; however that disturbance was not likely to be noticed by the casual observer from this KOP. The feature of the quarry that may have been visible in 1992 would have been the mining road. The mining road at that time had several switchbacks and allowed vehicles to ascend the steep slope visible from this perspective at the quarry. This road cut may have been visible at this distance but would have presented a minor visual contrast in a localized area. The duration of observation from this perspective is approximately 2 minutes if traveling by automobile along SH-75. Farmers who work the fields adjacent to this KOP may experience this view for several hours.

<u>KOP 2</u>

This observation point is located approximately 0.5 mile north of the Proposed Project Area and is positioned in an attempt to characterize the landscape relative to the Salmon River (Figure 3.3-8).

The duration of observation from this perspective depends on the type of recreational activity. Recreational activities at this location result in view durations from several minutes to several hours depending on activity type. The Salmon River represents a destination point for many recreational activities such as boaters or fishermen. Boaters traveling down the Salmon River would experience view durations of several minutes, while fishermen could experience view duration of several hours, depending on length of stay.

From this perspective (Figure 3.3-8) the Salmon River is the dominant feature of the landscape partially due to its presence in the foreground. Cultural modifications associated with the floodplain (e.g. highway, transmission lines, etc.) are not visible here due to the line of sight obstruction. Therefore, the naturalness of the landscape is greater at this perspective than from other KOPs along the highway. Cultural modification of the landscape is visible from this KOP in the middleground distance zone at the Proposed Project Area where rock piles form evenly spaced talus slopes instead of the irregularly spaced talus slopes found in the surrounding landscape. Mining roads appear to form contrasts in line as they trend horizontally in the middleground zone where vertical lines are most common. The reflectivity of the Pit 1 footwall presents some isolated contrast in brightness from this perspective, though not to the extent of KOP 1 or KOP 6.

Figure 3.3-8. KOP 2 – View Looking South (2006).

Surface disturbance and landscape alteration would have been less visible from this perspective in 1992. There are no historic photographs of the Proposed Project Area from this perspective available. However, photographs of the Proposed Project Area taken in 1992 from other perspectives (Figure 3.3-1 and Figure 3.3-4) show much less surface disturbance at the quarry site than what is presented in Figure 3.3-8. The quarry would have appeared more natural than it does now and visual contrasts would have been relatively low from this perspective in 1992. The mining road would have presented some contrast in a localized area of this view as it traversed the slope to what is now called Pit 1. Vehicles may have been present along this road infrequently. Color and texture contrasts would have been relatively low vegetation which occupied much of the site where waste rock piles exist today. Lines would have trended more vertically than horizontally in the Proposed Project Area due to the natural landscape form and absence of terraces. The slot cut visible on the right-hand side of Figure 3.3-8 would appear as a concave depression of undeveloped rangeland vegetation and rock outcrops, and would have obscured more of the background view which is now visible.

<u>KOP 3</u>

This observation point is approximately 1 mile southwest of the Proposed Project Area and is positioned to characterize the landscape conditions that motorists experience when traveling northeast along the SH-75 corridor (Figure 3.3-9). The quarry is just visible in the middleground zone from this perspective.

Figure 3.3-9. KOP 3 – View Looking Northeast (2006).

The Salmon River Valley is narrow from this perspective and complex topography in the surrounding uplands dominates the view. The colors in the uplands are more muted than that of the Salmon River Valley but complex geologic formations and rock outcrops draw the attention of the casual observer to the uplands. Only a very small portion of the Proposed Project Area is visible from this perspective. The top of the Pit 1 highwall is visible from this perspective as a thin light brown strip in the middleground distance zone. This surface disturbance may not be noticeable to a passerby who is not aware of current operations at the quarry. The majority of people who see the Proposed Project Area from this perspective are traveling by motorized vehicle on SH-75. The rate of travel along this corridor results in short duration views of approximately 30 seconds by most observers.

Visual baseline conditions would have been similar to those depicted in Figure 3.3-9 with one distinction. The top of the Pit 1 highwall would have been more visible from this perspective, because it was taller in 1992. The visual effect would have been minor but did result in a slightly more complex view than that presented in Figure 3.3-9 because of the additional feature in the middleground distance zone. There are no historic photographs available from this perspective. It is likely that the portion of the highwall visible from this perspective in 1992 was also darker than it appears in Figure 3.3-9 due to exposed rock outcrops and sparse vegetation. The Salmon River itself was also a sub-dominant feature of the landscape relative to the surrounding uplands due to the effects of scale and perspective. Viewing angles were concentrated along SH-75 (floodplain). Cultural modifications such as roads, structures, and residences were concentrated along the floodplain and sparse in the uplands.

KOP 4

This observation point is approximately 1 mile south of the Proposed Project Area and is positioned to characterize the landscape conditions that motorists experience when traveling northwest on East Fork Salmon River Road (Figure 3.3-10). The quarry site would appear in the middle ground zone when viewed from this point.

Figure 3.3-10. KOP 4 – View Looking North (2006).

The landscape can be described according to differences in the floodplain verses the surrounding uplands. Cultural modifications are common in the valley bottom which is wide and flat from this perspective. The landscape of the uplands displays greater complexity than that of the floodplain due to topography, vegetation types, and colors. Colors in the uplands are generally more muted browns and greens where bright greens dominate the floodplain during the growing season. Color contrasts between the floodplain and the uplands may be less apparent in the winter although more snow would accumulate in the floodplain. Most activity associated with current mining operations is not directly visible from this perspective due to obstructions in the line of site. There is a localized area of surface disturbance visible in the middleground distance zone where an old mining road was reclaimed. Vegetation has not yet become fully established along this localized area and appears as a localized contrast in line and color. View duration at this location is varied based on the presence of the East Fork Salmon River Road and residences along the East Fork Salmon River. Motorists traveling along SH-93 experience view durations of approximately 1 to 2 minutes. The residences scattered along the East Fork Salmon River valley experience prolonged view durations from this perspective. This KOP attempts to characterize the Proposed Project Area for those residences.

Visual baseline conditions would have been similar to those depicted in Figure 3.3-10. A localized area of the middleground distance zone would have appeared more massive because it has been laid back and reduced in height since 1992. Under visual baseline conditions the backside of the Pit 1 highwall would have obscured slightly more of the background distance zone. Also, the reclaimed mining road would not have been visible in 1992.

KOP 5

This observation point is approximately 1,500 feet west of the Proposed Project Area and is positioned to characterize the landscape conditions that recreational visitors experience when camping at the East Fork Campground (Figure 3.3-11).

Recreational activities at the campground result in prolonged view durations for the majority of observers of approximately 1 to 2 days based on a typical weekend camping trip. Current operations at the quarry site are not visible from the East Fork Campground located at the confluence of the East Fork Salmon and Salmon Rivers due to the landform and perspective. From this perspective riparian vegetation associated with the East Fork Salmon River appears in the foreground with cultural modifications associated with the campground and road. The upland geology and vegetation dominate the middleground zone. Cultural modifications are generally absent in the middle ground zone, colors are more muted, and textures are finer than the foreground. Vegetation associated with the foreground is coarse with brighter hues than the middleground. Visual baseline conditions would have been the same as those presented in Figure 3.3-11 with the exception of some picnic tables and other structures in the foreground at the campground.

Figure 3.3-11. KOP 5 – View from the East Fork Campground, Looking Southeast (2006).

KOP 6

This observation point is less than 500 feet from the northern boundary of the Proposed Project Area and is positioned to characterize the landscape conditions that motorists experience when passing the quarry on SH-75 (Figure 3.3-12). The quarry appears in the foreground from this point. From this perspective the scale of current operations dominates the field of view. Surface disturbance and alteration of rock outcroppings appear lighter in color relative to the surrounding landscape. Motorists passing the administration area would observe surface disturbance, equipment, and structures that give the area an industrial appearance.

The Proposed Project Area displays disturbed and undisturbed areas. Disturbed areas include bare ground, altered rock outcrop patterns, areas of waste rock and fill material, and unpaved roads. Structures and equipment are visible at dispersed locations throughout the quarry site. An important consideration from this KOP is view duration, which is relatively short. Motorists would experience this view for approximately 30 seconds based on the general rates and direction of travel along the highway at this location. Visual contrasts at the quarry site are relatively high due to the appearance of surface disturbance and modifications to landscape form in the foreground.

Figure 3.3-12. KOP 6 – View Looking Southeast (2006).

Visual contrasts in 1992 would have been lower than those depicted in Figure 3.3-12, though not altogether absent. Although no photograph from this perspective is available from 1992, Figure 3.3-1 gives the reader some idea of the landscape at that time. The most obvious difference between visual baseline conditions and current conditions is the amount of waste rock visible. Very little waste rock would have been visible in 1992. In its place, would have been natural vegetation more continuous at the toe slope than near the ridge. The landform would have appeared as a concave slope increasing in pitch toward the top where rock outcrops mingled with sparse vegetation. Surface disturbance at the administration area was visible in the foreground in 1992 and would have appeared lighter in color relative to the surrounding landscape. Also, there would have been fewer vehicles and structures visible at the administration area relative to current conditions. Contrasts in line would have been visible at the administrative area where roads existed. The Spar Canyon Powerline Road, visible in Figure 3.3-12 in the middleground distance zone just above the administration area, was present in 1992 and presented the same visual contrasts as it does now.

3.3.5 Transportation, Access and Public Safety

Several roads (gravel and dirt) currently exist within the Proposed Project Area and were created to facilitate operations at the quarry (Figure 3.3-13). The mine area road system is dynamic with old roads reclaimed and new roads constructed as needed.

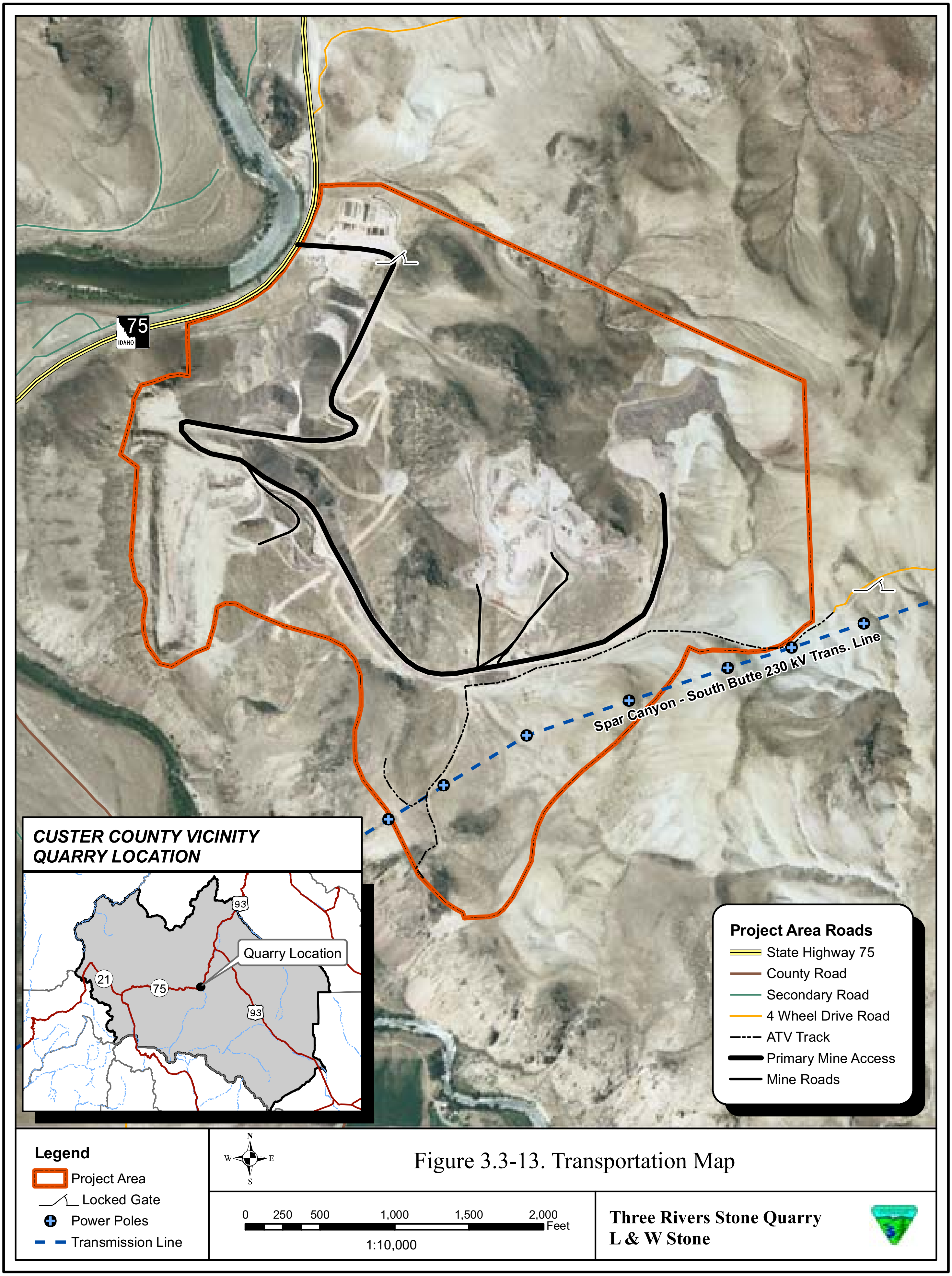


Figure 3.3-13. Transportation Map

Three Rivers Stone Quarry
L & W Stone

The 230 kV "Spar Canyon-South Butte" section of electric transmission line (Figure 3.3-13) was constructed during 1981 to 1982 in a 100-foot wide right-of-way near the Proposed Project Area by the Salmon River Electric Cooperative, Inc (BLM serial number IDI-15966). The right-of-way agreement specifies that all activities directly or indirectly associated with the construction and maintenance of the power line must be conducted within the limits of the right-of-way. However, the right-of-way agreement also specifies that existing roads be used wherever possible. Consequently, only 3.5 miles of new roads were constructed for the entire right-of-way (Moore to Squaw Creek and Challis, approximately 80 miles). A natural-surface road generally parallels the right-of-way, but in many places is outside the right-of-way. It is inferred that nearly all of the power-line access road existed prior to the power line construction. The portions of such road outside the right-of-way are not recorded with the BLM, but are generally considered to be public roads.

A section of the power-line access road extends from Highway 75 through the project site (Figure 3.3-13), and ultimately connects with the Spar Canyon area. The approximately first 0.25 mile of the power-line access road from Highway 75 utilizes an existing road (built prior to 1981 for access to the Pit 1 area). The road surface is compacted soil, but the road has been enlarged and covered by crushed rock where it is used for mine operations.

The region between the project site and the Spar Canyon area is remote and rarely used by the public. For example, the power-line access road typically is used 5 to 10 times each year by the public, primarily by hunters who access the road from Highway 75, or less commonly may access the road from the Spar Canyon area and exit onto Highway 75. The road also is used by a mining claimant, other than L&W Stone, to access mining claims.

Gates restricting public access through the quarry have been authorized and installed to ensure safety to both the public and quarry employees. L&W Stone initiated a policy in July 2003 that all visitors must: 1) check in with L&W Stone personnel at the administration area upon arrival to the site, 2) indicate the purpose of the visit and area of the quarry that will be visited, and 3) be accompanied by a quarry employee at all times while at the quarry site. L&W Stone employees generally are not present from 6:00 pm to 7:00 am, and the gate at the entrance to the project site is locked in the absence of quarry personnel. However, reasonable accommodation to the quarry site by the public is made by the quarry employees.

Idaho Transportation Department (ITD) maintains an Automatic Traffic Recorder on SH-75 located just north of the bridge over the East Fork Salmon River at Milepost 227. This traffic recorder (#82) counts all vehicles passing it on a daily bases. Information from this traffic recorder is summarized and made available in a variety of formats by ITD. Traffic on SH-75 varies seasonally, with peak use occurring during the summer. Average daily traffic for 2006 passing Automatic Traffic Recorder 82, summarized by month, ranged from a low of 369 vehicles per day in January to a high of 1,254 per day in July. The 2006 annual average for this traffic recorder was 718 vehicles per day (ITD 2007).

The majority of vehicles leaving the quarry (trucks and personal vehicles) travel north on SH-75 and therefore are not counted by Automatic Traffic Recorder 82. Most of the employees of the quarry commute on SH-75 at an approximate rate of two passengers per vehicle. Existing quarry-generated traffic traveling north on SH-75 is estimated at approximately 37 personal vehicles (75 round trip) per day and two to three trucks (four to six round trip). Adding these numbers to the ITD 2006 annual daily average for Automatic Traffic Counter 82 increases the estimated annual daily average vehicle use on SH-75, between the bridge over the East Fork Salmon River and US-93, to approximately 799 vehicles or an 11 percent increase.

3.3.6 Land Uses and Private Property

Both the surface and mineral estates of the Proposed Project Area are owned by the Federal government and administered by the BLM. A number of active mining claims (including mill site claims) are located on and in the vicinity of the Proposed Project Area.

The BLM has issued one right-of-way to Salmon River Electric Cooperative, Inc. for construction and maintenance of a 230 kV suspended power line in the Proposed Project Area. The current Challis Land Use Plan does not identify the Proposed Project Area as one for disposal or exchange. There are no land exchanges currently proposed by BLM for the quarry site. The Three Rivers Stone Quarry is located in the Split Hoof Grazing Allotment. A grazing permit has been issued for this allotment, although livestock generally do not utilize forage within the quarry boundaries.

Existing and potential land uses within and proximal to the Three Rivers Stone Quarry include mineral exploration and development, electric power-line rights-of-way, State Highway rights-of-way, cattle grazing, recreation, and residential living. Based on the site topography and remoteness, it is not anticipated that the site would ever be developed for anything other than mining, grazing, and easements for roads and public utilities.

Private lands are found 1 mile to the south of the Proposed Project Area along the East Fork Salmon River as well as 1.5 miles to the north along the Salmon River. These lands are being used for livestock grazing and home sites as well as under agricultural production.

3.3.7 Recreation

The area in and immediately surrounding the quarry site provides minimal recreation opportunities on public land. Public access to the site is limited by locked gates and topography (i.e. the cliffs to the south), and activities on-site are managed consistent with Mine Safety and Health Administration (MSHA) safety requirements, which provides the public very limited access or freedom of activity. Public lands beyond the immediate vicinity of the quarry to the east and south, provide somewhat primitive (with the exception of the intensively managed East Fork Campground) recreation opportunities, with minimal evidence of management intervention. Visitors to the public lands can reasonably expect to recreate without encountering large numbers of other people.

While recreational use of the Proposed Project Area itself is not possible due to the current mining activities, there are a variety of uses that occur in the vicinity of the Proposed Project Area. The major recreation uses of the public lands in the vicinity of the quarry include floating (e.g., inner tubing, kayaking, rafting, canoeing), boating, fishing, hunting, camping, hiking, nature study, photography, picnicking, wildlife viewing, backpacking, rockhounding, mountain biking, cross country skiing, and off highway vehicle use. The most frequent of these uses are camping at the BLM East Fork Campground, wildlife viewing along East Fork road, and floating the Salmon River. The East Fork campground is at the confluence of Highway 75, the East Fork Salmon River, and the Salmon River, approximately 0.30 mile west of the western boundary of the quarry. The campground has 14 campsites and potable water but provides no boat access to the rivers. The Three Rivers Stone Quarry is not visible from the campground. Under certain atmospheric conditions, mining activities from the quarry are audible at the campground. Noises sometimes heard include those from heavy equipment use (diesel engines and back-up alarms), the scraping of metal on rocks, trucks entering and leaving the site, and "thumps" during blasting. However, some of the noise from the mining activities is masked by the sound of the East Fork Salmon River, the noise of vehicles on the highway, and the prevailing winds in the area.

The Proposed Project Area is located within the Upper Salmon River Special Recreation Management Area (SRMA) (Figure 3.3-14). This SRMA contains 108,279 acres and was created to protect its unique recreation values, including the outstanding opportunities for river recreation, ease of access, international name recognition, and proximity of the area to other prominent recreation centers. The Upper Salmon River SRMA includes the entire reach of both the East Fork Salmon River and the Salmon River that are managed by the Challis Field Office. The Challis RMP enlarged the SRMA from a corridor 0.25 mile wide on each side of the Salmon River (USDI-BLM 1998, Map 3-2) to its present configuration (USDI-

BLM 1999, Map 40). The Challis RMP states that saleable mineral activity will be considered within the SRMA if impacts to other resource values are minimized.

Recreational use of the project site is minimal with the exception of rockhounding, hunting, and OHV use. The site remains somewhat important visually to the recreational experience of people using the Salmon River. There have been some past modifications to the visual quality of some recreational experiences in site-specific areas due to the mining activities that have occurred at the site (see Section 3.3.4, Visual Resources).

Mining claims have been located at the Proposed Project Area since at least the 1960s. Due to the increased mining activity in this area since then, the road density has also increased. SH-75 was constructed in the 1950s and runs adjacent to the quarry site. Access to the quarry site has diminished despite the increased road density due to the increased restrictions to visitor activities. The remoteness of the site has decreased since the 1960s with the increase in mining activity, and the naturalness of the site has decreased with the increase in modifications to the landscape from mining activities and the associated increase in visibility of human activity.

The Upper Salmon was an extremely popular salmon sport fishing stream in the 1950s and 1960s. Recreation use (fishing) was incredibly high but there were no facilities available to accommodate the fishermen. After several severe threats to human health (because of the lack of sanitation), the first recreation developments were put in along the river, with the BLM, State of Idaho, and county governments all cooperating. Unfortunately, the salmon fishery faltered in the late 1960's and by 1978 the IDFG ended all salmon sport fishing on the Salmon River.

The return of the steelhead runs in the 1980s brought the Salmon River back into the limelight, where it gained in visibility and reputation. People again saw the Salmon River as a quality anadromous fishery. The construction of two salmon hatcheries in the Salmon River drainage could also mean the eventual return of a salmon sport fishery. Add this to a good-to-excellent trout fishery and the result is an important recreation resource. Recreation use on the Salmon River has grown at a rate much faster than "normal" recreation trends. Based on the attraction of the Salmon River corridor to recreationists, recreation along the river corridor is expected to increase.

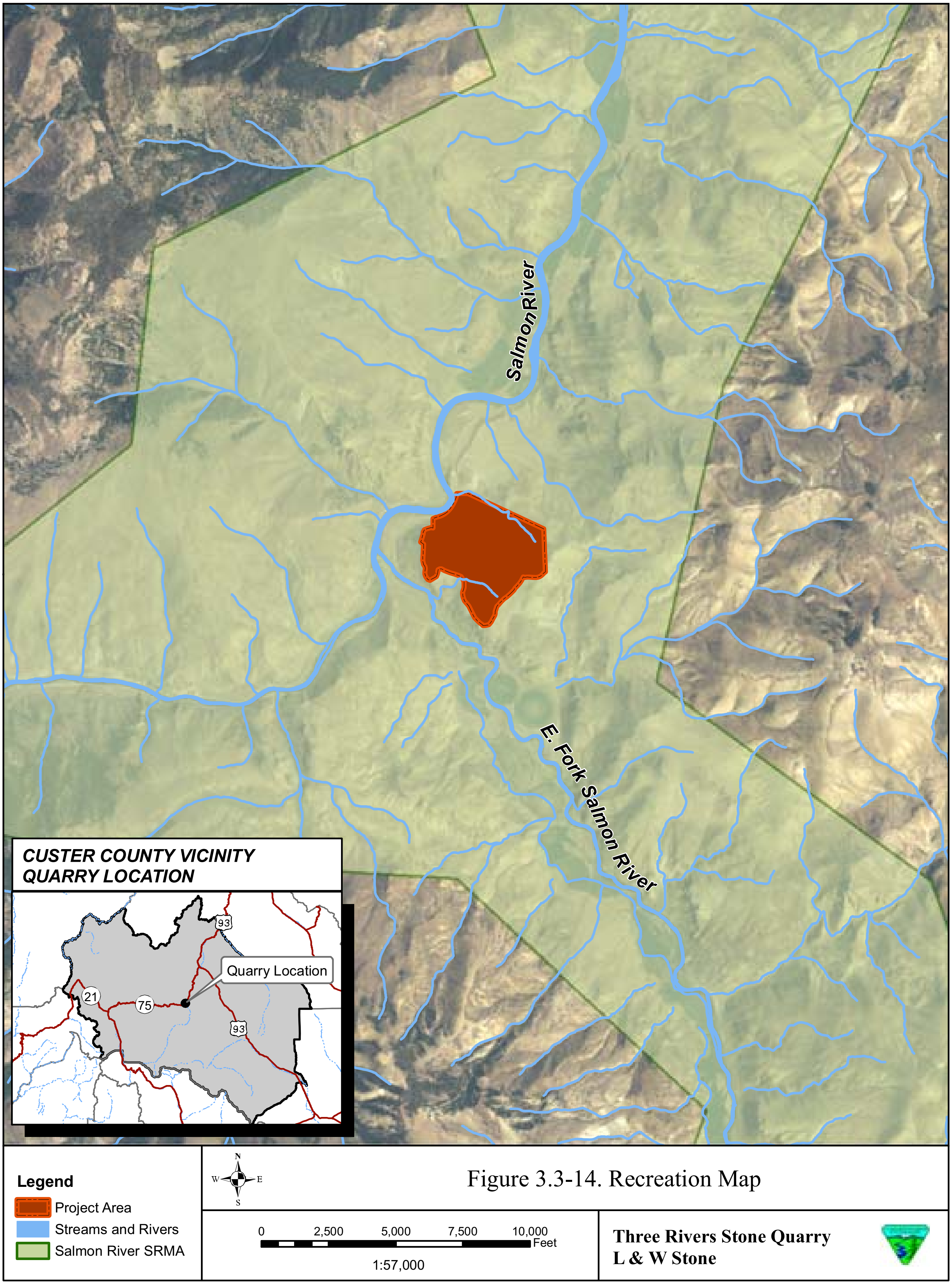


Figure 3.3-14. Recreation Map

Three Rivers Stone Quarry
L & W Stone

3.3.8 Livestock Grazing

The proposed operations are in the Split Hoof Allotment, which is permitted for grazing by cattle (Figure 3.3-15). The allotment contains 9,263 acres, of which 8,415 acres are on public lands and 848 acres on State lands, and provides a total of 187 Animal Unit Months (AUMs). One AUM is the amount of forage necessary to sustain 1 cow-calf unit for 1 month, which is approximately 800 pounds of forage. Grazing of cattle on the allotment is allowed from May 16 to June 15 each year. Currently, 183 cattle are allowed to graze during that period. The grazing permit for the Split Hoof Allotment was renewed for a 10-year term from March 1, 2002 through February 28, 2012. However, no grazing has occurred in the allotment since it was transferred to Bald Mountain Cattle in 2000. The East Fork Salmon River Bench area associated with the quarry site does not lend itself to being grazed by cattle due to its small size, lack of adjacent livestock watering areas, steep slope, and lack of access (USDI-BLM 1987). The East Fork Salmon River Bench ACEC/RNA is closed to livestock grazing.

The range condition in the Split Hoof Allotment was evaluated as part of the Challis Proposed RMP and Final EIS (USDI-BLM 1998, p. 647), and was described as having 2,759 acres in poor condition, 5,153 in fair condition, and 503 acres as unclassified. The condition of the quarry site is not classified, but forage production in this area is considered low. Based on recent field visits, it is estimated that it takes 12 to 15 acres of land for 1 AUM in this allotment (Morgan 2006).

3.3.9 Special Designations

Wild and Scenic Rivers

Wild and Scenic River designations are made under the Wild and Scenic Rivers Act (Public Law 90-542, as amended) to preserve the character of rivers possessing outstandingly, remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. The East Fork Salmon River and Salmon River were both found eligible for further study for possible inclusion in the National Wild and Scenic River System during the 1993 Wild and Scenic River studies (see Section 1.8). The mining operation existed at the time of these studies, and most of the proposed operations are visible from the Salmon River corridor. Very little of the operations are visible from the East Fork Salmon River corridor.

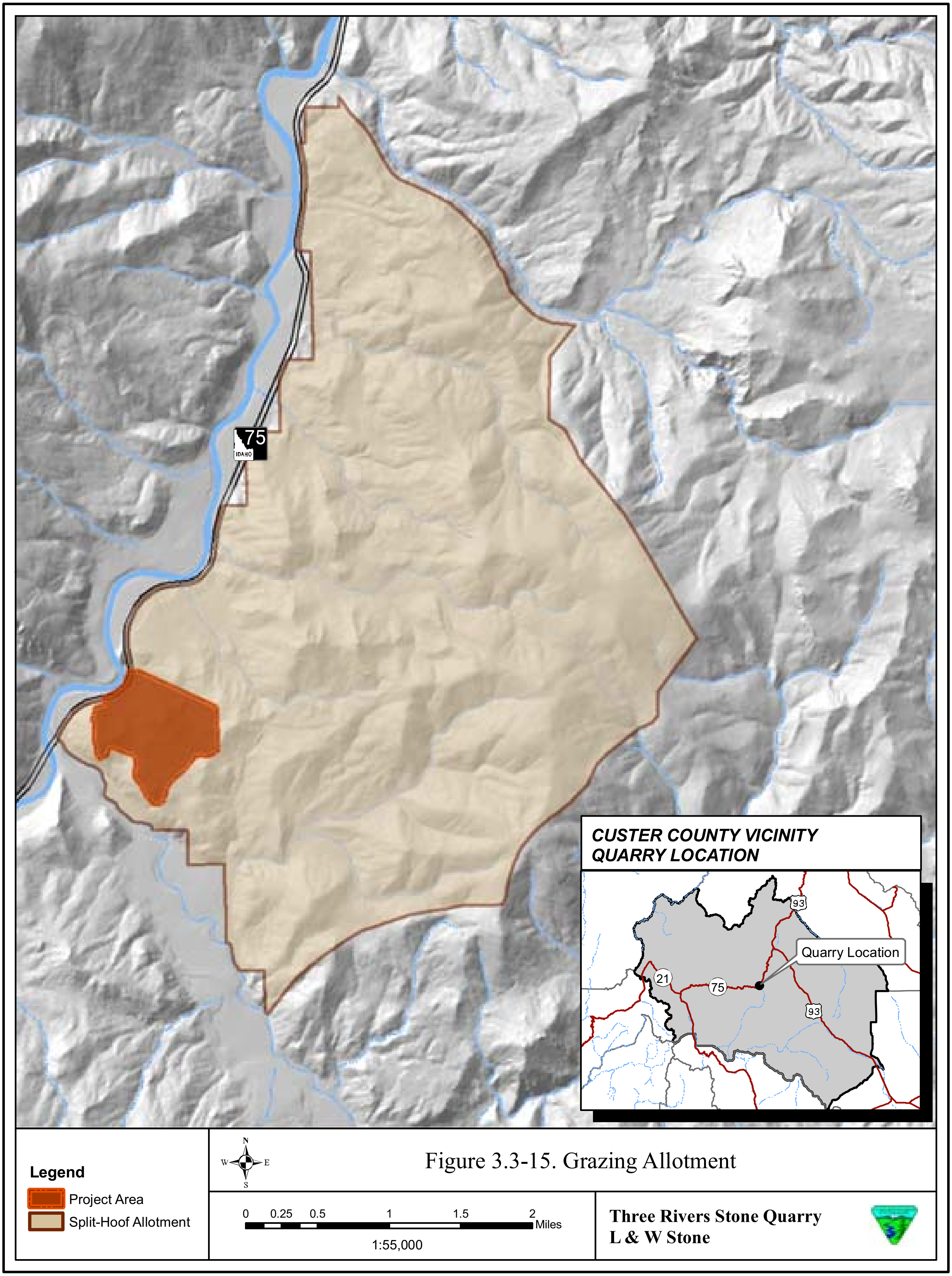


Figure 3.3-15. Grazing Allotment

Three Rivers Stone Quarry
L & W Stone

The Challis RMP requires that public land uses within such corridors will be managed to (1) maintain the level of development that resulted in the river segment's tentative classifications, (2) ensure non-degradation of outstandingly remarkable values, and (3) maintain free-flowing characteristics. The tentative classification for the East Fork Salmon River (segment EF-01a) is recreational, and the outstandingly remarkable values are scenic, recreational and fisheries. The tentative classification for the Salmon River (segment MS-01) is recreational, and the outstandingly remarkable values are recreational, fisheries and geological. A recreational classification identifies those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past (Section 2(b), Public Law 90-542). The RMP specifies that a plan of operations will be required for any mineral activity exceeding casual use in areas designated for potential addition to the Wild and Scenic River System (USDI-BLM 1999, p.88).

It is assumed that the values associated with both the Main and East Fork Salmon river corridors will be protected until a coordinated river study with the State of Idaho and with the U.S. Forest Service is completed. Until the suitability study is completed, both river segments will remain classified under the recreational classification as suitable for further study for possible inclusion in the National Wild and Scenic Rivers System.

Areas of Critical Environmental Concern/Research Natural Areas

The Areas of Critical Environmental Concern (ACEC) designation was made to protect natural systems at the site under the authority of the Federal Land Policy and Management Act (43 USC 1701 *et seq.*), which defines ACECs as areas within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources or other natural systems or processes; or to protect life and safety from natural hazards. Federal regulations require a Plan of Operations for all activities authorized under the General Mining Laws of the United States (43 CFR 3809.11).

Research Natural Areas (RNAs) are established and maintained for the primary purpose of research and education because the land has one or more of the following characteristics: a typical representation of a common plant or animal association; a threatened or endangered plant or animal species; a typical representation of common geologic, soil, or water features; or outstanding or unusual geologic, soil, or water features. Federal regulations state that the use of RNAs shall be nondestructive and consistent with the purposes for which RNAs were established (43 CFR 8223).

Located immediately south of the Proposed Project Area is the East Fork Salmon River Bench ACEC/RNA (Figure 3.3-16). The East Fork Salmon River Bench RNA designation was made to protect remnant vegetation associated with the bench in a relatively pristine condition. The ACEC designation is based on the historic absence of livestock grazing in the area, which has resulted in a plant community in near reference conditions. Approximately 4 acres of Pit 1 extends into the ACEC/RNA as a result of past mining activities.

The East Fork Salmon River Bench ACEC/RNA supports a sagebrush/steppe vegetation type, which is classified as Wyoming big sagebrush/bluebunch wheatgrass. The community occurs on the upper, middle, and toe slopes of quartzite talus slopes and cliffs. The portion of the ACEC/RNA in the Proposed Project Area and immediate vicinity supports sagebrush on river terraces and basins bordering the East Fork Salmon River. This plant community is topographically isolated from routine domestic ungulate grazing by cliff bands and by the East Fork Salmon River. Thus, the area serves as a relatively “pre-grazed condition” reference area against which to make comparisons with similar, but grazed plant communities. The ACEC/RNA designations were made to protect these vegetation values (USDI-BLM 1999, p. 34). The site was originally designated as an ACEC in the Salmon District Final Plan Amendment and Environmental Assessment for RNA/ACEC, September 1987 and most recently recorded as an ACEC/RNA in the Challis Resource Area RMP (USDI-BLM 1999, p. 34). The RMP identifies four management items regarding the ACEC/RNA:

1. Retain designation of 78 acres as an ACEC/RNA,
2. Continue to close the area to livestock grazing,
3. Monitor plant communities, and
4. Close the ACEC/RNA to motorized vehicle use.

As discussed in Section 1.7.1, mining occurred in Pit 1 on approximately 4 acres of the East Fork Salmon River Bench ACEC/RNA in the past and a road was built and subsequently reclaimed (reseeded and treated for weeds). However, these actions did not degrade the integrity of the vegetation associated with the bench. Some rockfall into the ACEC/RNA from past mining still exists, but current operations maintain a buffer to prevent further rockfall into this area. The ACEC/RNA continues to be closed to livestock grazing and motorized vehicle use and plant communities are monitored intermittently.

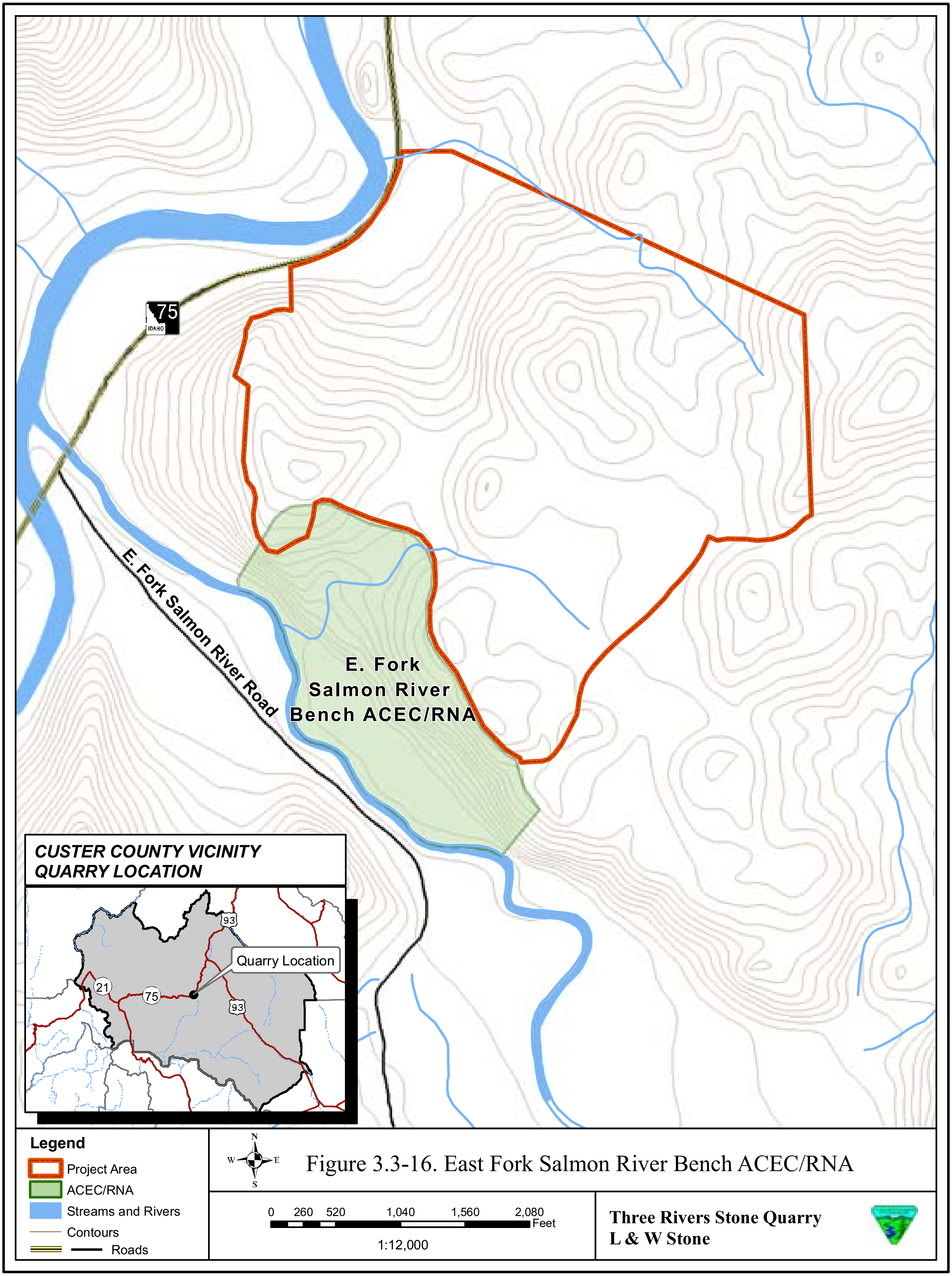


Figure 3.3-16. East Fork Salmon River Bench ACEC/RNA

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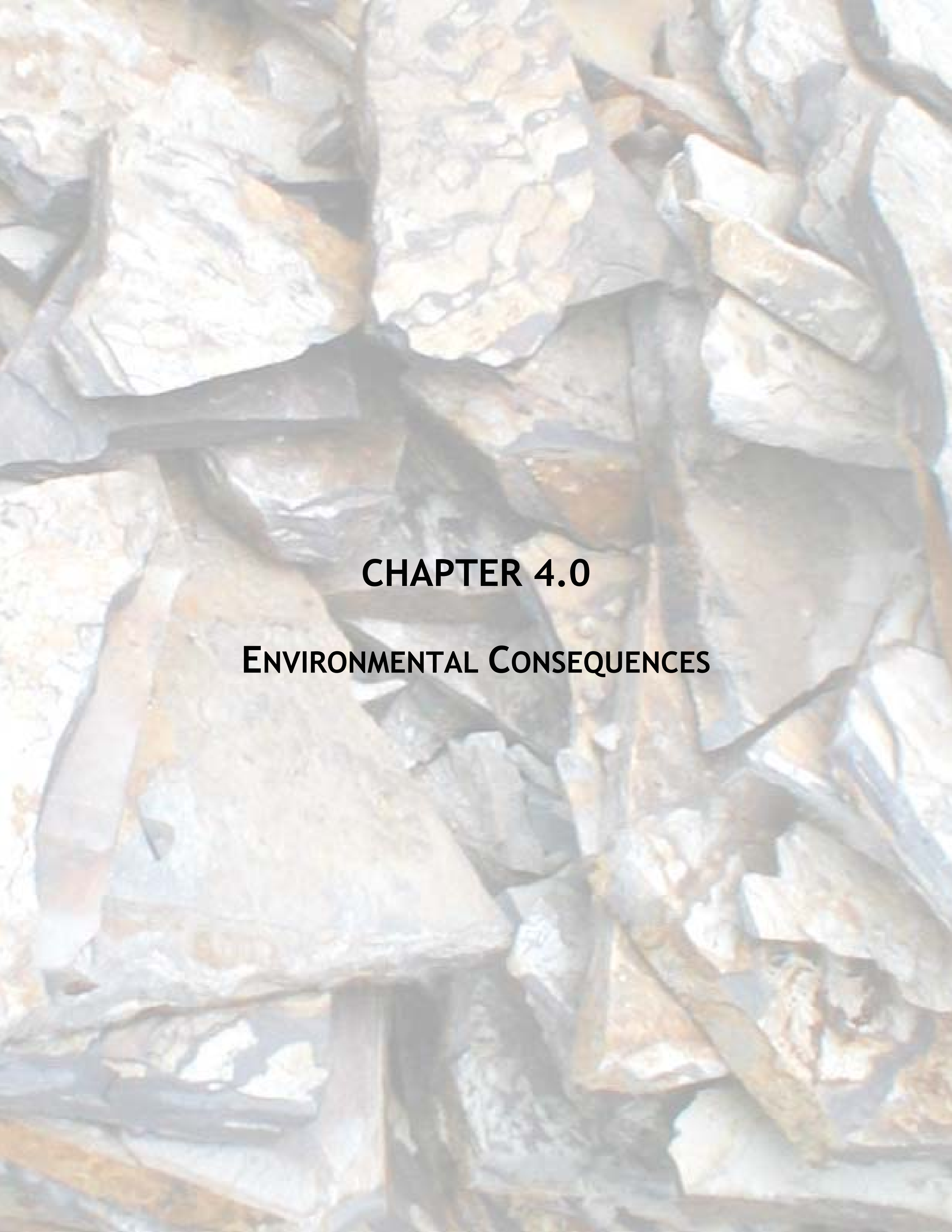


CHAPTER 4.0

ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental consequences, of the proposed actions on the physical, biological, cultural, and human environment at the Three Rivers Stone Quarry (Proposed Project) from implementation of the alternatives considered in this Draft Environmental Impact Statement (DEIS). The topics discussed are by resource, in the same order as those described in Chapter 3, Affected Environment.

For each topic, the impact analysis follows the same general approach. Criteria for determining impacts are developed for individual resources. Potential impacts are then identified and assessed for each resource by alternative based on available data, quantitative models, where applicable, relevant scientific literature, previously prepared environmental documents, and the best professional judgment of the Interdisciplinary Team (IDT) resource specialists. Impacts are assessed quantitatively and qualitatively, depending on available data, and impact duration definitions (short-term, long-term) and impact type (direct, indirect) are assessed where applicable.

Much of the information on the affected environment and potential environmental consequences is derived from detailed technical reports prepared by Bureau of Land Management (BLM) specialists, the URS Corporation, Inc., the prime consultant, and its subcontractors. These reports are available for review as part of the Analysis File maintained for the Amended Plan of Operations at the Three Rivers Stone Quarry at the Challis Field Office.

Knowledge is, and always will be, incomplete regarding many aspects of the terrestrial species, vegetative communities, the economy, and communities and their interrelationships. The ecology, inventory, and management of ecosystems are a complex and evolving discipline. However, basic ecological relationships are well established, and a substantial amount of credible information about ecosystems in the Proposed Project Area is known. The alternatives were evaluated using the best available information about these ecosystems. While additional information may add precision to estimates or better specify relationships, new information would be unlikely to appreciably change the understanding of the relationships that form the basis for the evaluation of effects.

The numbers generated and used for comparison of impacts are for analysis purposes only. The exact location and size of the Proposed Project features would be determined in the Plan of Operations. Therefore, the exact areas of impact to specific resources are estimates based on the best available information.

4.1 DIRECT AND INDIRECT EFFECTS

Effects are described in general terms and are qualified as short-term and long-term, as appropriate. Effects may also be described as direct or indirect. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by an action and occur later in time or farther removed from the area, but are reasonably foreseeable.

4.2 CUMULATIVE IMPACTS

The Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) requires assessment of cumulative effects in the decision-making process for Federal projects. Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 Code of Federal Regulations (CFR) 1508.7). Cumulative effects are considered for each resource and are analyzed in Section 4.8 of this document.

Cumulative effects were determined by combining the effects of the alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other past, ongoing, or reasonably foreseeable future actions in this area and in the surrounding landscape. All resource impacts would be added to these actions to present the cumulative picture or incremental contribution this Proposed Project would have on the resources.

4.3 PAST/PRESENT ACTIONS

Past use of the Proposed Project Area has included the flagstone quarry operations. This use continues through the present and is anticipated to continue into the reasonably near future. Other past and present actions in the Proposed Project Area and vicinity include rural residential living, ranching and agriculture, grazing, power line and road right-of-ways, off-highway vehicle use, and general recreation along the Salmon River and East Fork Salmon River.

4.4 FUTURE FORESEEABLE ACTIONS

At the Three Rivers Stone Quarry, future foreseeable actions would be limited to the expansion of the Proposed Project, reclamation following completion of mining activities, and removal of waste rock as salable mineral from a community pit.

4.5 PHYSICAL RESOURCES

4.5.1 Air Quality

Alternative A (No Action Alternative)

Under Alternative A, mining activities would cease and the site would be reclaimed. The cessation of mining activities would eliminate mining-related air pollution caused by vehicle emissions, blasting, excavation, and road travel. Wind-generated dust would continue to generate above natural levels from surface-disturbed portions of the site until reclamation activities are completed and vegetation has been reestablished. Reclamation activities would create low-level, short-term impacts to air quality in the form of emissions from vehicle exhaust and fugitive dust, but would reduce long-term, wind-generated fugitive dust over the project site. Dust suppression techniques, such as application of water to roads, would be used during reclamation and would reduce the levels of particulate matter in the air. Once successful vegetation reclamation has occurred, the generation of coarse particulate matter from the site would be similar to that generated prior to mining operations.

Alternative B

Existing mining operations would continue under Alternative B for 3 to 5 years, with a total of 100,000 tons of material (flagstone and waste rock) removed per year from two pits with an increase in surface disturbance of approximately 8 acres. The sources (vehicle emissions, blasting, excavation, and road travel) and levels of air pollution created from these operations would not be notably different than current conditions. Emissions would continue to be released by the regular use of heavy mine equipment, daily commute to the quarry by approximately 37 employee vehicles (based on 2 commuters per vehicle), and by the annual transport of materials from the quarry by 800 to 1,200 trucks. Emissions are not expected to materially degrade air quality because of the low level of vehicular traffic and equipment use. Carbon monoxide, nitrogen oxide, sulfur dioxide, and course particulate matter (dust) would continue to be released by the detonation of ammonium nitrate fuel oil (ANFO) during the 16 blasts per month proposed to remove overburden and expose flagstone; however, the emissions would be quick, temporary, and would have negligible impact on air quality.

Dust would continue to be generated from blasting, excavation, and vehicle travel on unpaved roads and could produce dust clouds up to several hundred feet in diameter. These pollutants would temporarily degrade air quality in the Proposed Project Area and immediate vicinity and would then dissipate. Dust suppression techniques, such as application of water to roads and other disturbed sites, would be used that would reduce the levels of particulate matter in the air (see Appendix B). The impact to air quality of dust emissions from vehicle travel is expected to be minor because of the relatively few vehicles and small size of the

Proposed Project Area as compared to the number of vehicles and size of areas producing dust throughout Custer County. Fugitive dust from wind erosion of the existing gravel roads and disturbed areas in the quarry would continue to be generated, but would be reduced or eliminated in areas that are reseeded as part of reclamation.

Federal and state air quality regulations (40 CFR; IDAPA 58:01.01.000 *et seq.*) would be complied with during mining operations. Despite these temporary impacts, it is anticipated that the air shed in the vicinity of the quarry site would continue to be classified as an attainment area with respect to Idaho Department of Environmental Quality (IDEQ) and U.S. Environmental Protection Agency (EPA) air quality regulations.

Alternative C

The sources (vehicle emissions, blasting, excavation, surface stripping, and road travel) of air pollution created from mining operations would be similar to Alternative B. However, the levels would be greater due to the increase in material (flagstone and waste rock) removed (240,000 tons per year compared to 100,000 tons per year) and area disturbed. These activities would occur over a 30-year time period. Vehicle emissions would be released at an increased rate by the regular and increased use of heavy mine equipment for material removal, the daily commute to the quarry by approximately 50 employee vehicles (as compared to 37), and the annual transport of materials from the quarry by 1,200 to 1,500 trucks (as compared to 800 to 1,200 under current operations). However, emissions are not expected to materially degrade air quality given the overall low level of use of vehicles and equipment in the quarry and its vicinity. Carbon monoxide, nitrogen oxide, sulfur dioxide, and course particulate matter would be temporarily released at the same level as under Alternative B. Dust would continue to be generated from blasting, excavation, surface stripping, and vehicle travel on unpaved roads. However, daily and annual amounts of dust would increase due to the increase in use of heavy equipment, amounts of material (flagstone and waste rock) removed, and acres of surface disturbed. Additional dust would be generated from exploration activities (construction of roads, drill pads/drill holes, trenches, test pits, and/or general surface stripping) over 31 additional acres. Reclamation activities would create low-level, short-term impacts to air quality in the form of emissions from vehicle exhaust and fugitive dust, but would reduce long-term, wind-generated fugitive dust in reseeded areas over the project site.

These sources of pollutants would temporarily impact air quality in the Proposed Project Area and immediate vicinity and would then dissipate. Implementation of dust suppression techniques, primarily water application, on mining roads, pits and other areas of surface disturbance would reduce the levels of particulate matter released in the air (Appendix B).

Dust suppression efforts would be more efficient than under Alternative B through the use of the proposed well at the administrative area. As under Alternative B, it is anticipated that the air shed in the vicinity of the quarry site would continue to be classified as an attainment area with respect to IDEQ and EPA air quality regulations.

Alternative D

The sources of air pollution created from mining operations under Alternative D would be the same as under Alternative C, but the levels would be elevated. Traffic to and from the quarry would increase under Alternative D, primarily due to the transport and delivery of quarried flagstone (1,500 to 2,000 truck trips leaving the quarry annually versus 1,200 to 1,500), and to a minor extent from the increase in workforce. This would result in an increase in emissions of vehicle exhaust at and in the vicinity of the quarry. The increase in emissions from the additional 12 employees would likely be negligible given the low number and many workers would carpool to the site (approximately 2 people per vehicle). Years of anticipated operation (40 years verses 30 years), acres of new surface disturbance (73 acres verses 49 acres), number of pits (three verses two), and amount of material (flagstone and waste rock) removed (300,000 tons verses 240,000 tons) would be greater under Alternative D than under Alternative C. This would result in increased use of heavy machinery and associated emission of exhaust and generation of dust. The number of monthly blasts would be greater under Alternative D than under Alternative C (22 verses 16). However, the associated increase in dust and emissions of carbon monoxide, nitrogen oxide, and sulfur dioxide is expected to be negligible.

Reclamation of disturbed areas would occur, reducing long-term, wind-generated fugitive dust in reseeded areas over the project site. Although the acres of disturbance are greater under Alternative D, the impacts to air quality in the Proposed Project Area and immediate vicinity from resulting pollutants would be temporary and would dissipate. Implementation of increased dust suppression techniques, primarily water application, on mining roads, pits and other areas of surface disturbance would reduce the levels of particulate matter released in the air (Appendix B). As under Alternative C, dust suppression efforts would be more efficient than under Alternative B due to the proposed on-site water source (well). It is anticipated that the air shed in the vicinity of the quarry site would continue to be classified as an attainment area with respect to IDEQ and EPA air quality regulations.

4.5.2 Geology and Minerals (Leaseable, Locatable, Saleable)

The Proposed Project would have direct impacts on geologic and mineral resources. Impacts would be limited to excavating and transporting flagstone off-site, along with excavating and relocating waste rock on-site. In addition, waste rock would be transferred off-site from the community pit. For all of the action alternatives, waste rock would be excavated to expose flagstone. This waste rock would be transported and placed in the Pit 2 rock storage area. This would bury, but not eliminate, future access to geologic and mineral resources beneath the Pit 2 waste rock storage area.

Alternative A (No Action Alternative)

Mining activities would cease under Alternative A and no additional rock would be disturbed at the site. Locatable and saleable minerals would no longer be mined, exploration for locatable minerals would not occur, and demand for Three Rivers Flagstone would not be met. No additional waste rock would be added to the Pit 2 waste rock storage area. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.

About 32 acres of geologic and mineral resources would be buried beneath the existing Pit 1 and Pit 2 waste rock storage areas. This would eliminate recovery of 500,000 to 12 million tons of flagstone and waste rock from the geologic resource at the quarry site.

Alternative B

Under Alternative B, mining would occur on about 44 acres (37 existing and 7 proposed new acres in Pit 1 and Pit 2) for a period of 5 years. About 100,000 tons of flagstone and waste rock would be removed annually from the quarry, for a total of 500,000 tons. About 33 acres of geologic and mineral resources would be buried beneath waste rock removed from Pit 1 and Pit 2. This would limit, but not eliminate, future access to geologic and mineral resources beneath the Pit 1 and Pit 2 rock storage areas. This would be about a 1-acre increase of geologic and mineral resources over the No Action Alternative. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.

Alternative C

Under Alternative C, mining would occur on 56 acres (37 existing and 19 proposed new acres in Pit 1 and Pit 2) for a period of 30 years. About 240,000 tons of flagstone and waste rock would be removed annually from the quarry, for a total of 9.6 million tons of flagstone. This would be an increase of 140,000 tons of flagstone annually and 9.1 million total tons removed over Alternative B. About 62 acres of geologic and mineral resources would be buried beneath waste rock removed from Pit 1 and Pit 2. This would limit, but not eliminate, future access to geologic and mineral resources beneath the Pit 2 rock storage area. This would be an increase of about 30 acres of geologic and mineral resources over the No Action

Alternative and an increase of about 29 acres over Alternative B. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.

Alternative D

Under Alternative D, mining would occur on 75 acres (37 existing and 38 proposed new acres in Pits 1, 2, 2-E and 3) for a period of 40 years. About 300,000 tons of flagstone and waste rock would be removed annually from the quarry, for a total of 12 million tons. This would be an increase of 200,000 tons of flagstone annually and 2.4 million total tons over Alternative B. About 67 acres of geologic and mineral resources would be buried beneath waste rock from Pit 1 and Pit 2. This would limit, but not eliminate, future access to geologic and mineral resources beneath the Pit 2 rock storage area. This would be an increase of about 35 acres of geologic and mineral resources over the No Action Alternative, an increase of about 34 acres over Alternative B, and an increase of about 5 acres over Alternative C. Up to 20,000 cubic yards of waste rock per year would become available to the public in the form of a community pit.

4.5.3 Soils

The quarry expansion would result in an increase of between 8 and 73 acres of surface disturbance (Table 4.5-1) over the existing 92 acres of disturbance. This area of surface disturbance includes the quarry pit areas, haul roads, flagstone storage areas, waste rock disposal area, soil stockpile area, and access roads.

Table 4.5-1. Surface Disturbance in the Project Area by Action Alternative.

Disturbance Area	Acres Disturbed		
	Alternative B	**Alternative C**	**Alternative D**
Not previously disturbed (vegetated and rock outcrops)	4	37	59
Previously Disturbed (predominantly unvegetated)	4	12	14
Total	**8**	**49**	**73**

Potential impacts to soil resources would occur during soil salvage operations and soil redistribution activities. Impacts to soil during salvage and stockpiling operations include physical loss of soil from excavating and handling the soil, along with interrupting soil biological, physical, and chemical activity as a result of placing soil in the stockpile. Additional soil loss would occur during reclamation when soil is re-handled from the stockpile and distributed on disturbed areas.

Soil would remain in the stockpile over the duration of mining activity. Stockpiling of soil destroys soil aggregates, buries biological soil crusts, and removes vegetative cover and litter. Stockpiled soil would be subject to wind and water erosion resulting in some loss of soil over the life of the quarry operations. Stockpiled soil would also exhibit decreased biological activity, along with altered physical and chemical characteristics. The primary mechanism for direct soil loss is wind erosion. Wind erosion typically increases when soil is stockpiled, because the surface soil that contains more organic matter (and thereby reduces wind erosion susceptibility) is mixed with subsoil and substratum that contain less organic matter.

Chemical changes would result from mixing surface soil horizons with subsoil during salvage and stockpiling of soil from Pit 2 and the Pit 2 rock storage area. Mixing soil horizons during salvage and stockpiling would reduce the amount of organic matter contained in the surface horizon by diluting the surface horizon with subsoil. Redistributed soil would have lower organic matter content as a result of salvage and stockpiling. Soil biological activity would be reduced or eliminated during stockpiling as a result of anaerobic conditions created in deeper portions of stockpiles. After soil redistribution, biological activity would increase and eventually reach pre-salvage levels. Impacts to physical characteristics of soil include mixing of horizons (loss of soil structure), along with compacting and pulverizing soil as a result of equipment handling and traffic. Compacting and pulverizing soil would result in decreased permeability, water-holding capacity, and loss of soil structure.

On disturbed areas, water erosion of soil could occur during periods of heavy precipitation. This would occur primarily on unpaved road surfaces where the compacted soil helps to create sheet flow of water during heavy precipitation events. These “hardpack” roads may increase rates of soil erosion, and also change drainage patterns. The end result would be a potential increase in soil transported into ephemeral drainages and eventually into the Salmon River or East Fork Salmon River. Under the Proposed Project, Best Management Practices (BMPs) would be continued in order to control soil loss by inhibiting the effects of sheet flow on hardpack roads (see Appendix B).

The BLM determined that the waste rock contains no visible sulfide minerals, and only trace amounts of oxidized iron minerals, and that there is no visible evidence of acidic drainage from the waste rock, such as dead vegetation, color stains, or sulfurous odors (Gardner 2006). Results of trace element testing of rock and soil (Chapter 3, Section 3.1.2) show that soil derived from mining activities would not generate trace elements in soil above levels that already exist in undisturbed native soil.

Alternative A (No Action Alternative)

Implementation of the No Action Alternative would limit the disturbed area to the 92 previously disturbed acres. Minor amounts of soil loss could occur during reclamation activities. Once vegetation becomes successfully established in reclaimed areas, the amount of soil loss from disturbed areas would decrease.

Alternative B

Alternative B would result in approximately 8 acres of new surface disturbance over existing conditions, for an approximate total of 100 acres of surface disturbance. This disturbance and stockpiling of topsoil could lead to a loss of soil and reduced biological activity structure of soil, as described above. This could lead to reduced or slowed establishment of vegetation on reclaimed areas resulting in a prolonged period of potential erosion and a delay in the reestablishment of wildlife habitat.

Alternative C

Alternative C would result in approximately 49 acres of new surface disturbance over existing conditions, for an approximate total of 141 acres of surface disturbance, and an increase in the amount of topsoil disturbed and stockpiled. This would result in an increase in the potential for soil loss from the topsoil stockpile and from disturbed areas due to wind and water erosion over Alternative B. The potential impacts to biological activity and soil structure would be similar to those described under Alternative B but would be of greater magnitude due to the increased acres of surface disturbance.

Alternative D

Alternative D would result in approximately 73 acres of new surface disturbance over existing conditions, for an approximate total of 165 acres of surface disturbance, and an increase in the amount of topsoil disturbed and stockpiled. Potential impacts to topsoil from wind and water, reduced biological activity, and changes in soil structure would be similar to Alternative C but would be of greater magnitude due to the increased acres of surface disturbance.

4.5.4 Hazardous Substances and Petroleum Products

No acutely hazardous materials/waste or "listed wastes" as defined by the EPA are used or stored at the project site. This section addresses the potential for impacts of the Proposed Project related to chemicals and petroleum products, as described in Section 3.1.5, Chapter 3.

Alternative A (No Action Alternative)

Under Alternative A, mining operations would cease and the site would be reclaimed. During cleanup and reclamation activities, there is the potential for chemicals and petroleum products stored on site, as described in Section 3.1.5, Chapter 3, to leak or spill on site or off site during removal and transport of removed materials. This risk would be reduced through the implementation of the current Chemical Spill Prevention, Control, and Countermeasures Plan. Once reclamation activities are completed, there would be no risks of spills or leaks of chemicals and petroleum products on public lands.

Alternative B

Under Alternative B, there would be the potential for fuel and lubricant leaks and spills to occur during storage and transport of materials and maintenance and operation of vehicles and heavy equipment. There would also be the potential for leaks and spills during the storage, transport, and mixing of ammonium nitrate and fuel oil. Leaks and spills could range from small, such as those potentially occurring during equipment malfunctions to large, such as from the potential, but unlikely, rupture of a storage tank. Storage and delivery of these materials is described in Chapter 2, Section 2.4.3. A Chemical Spill Prevention, Control, and Countermeasures Plan would be prepared and followed for the life of the quarry which would ensure proper storage of fuels, lubricants, and chemicals, and reduce the risk of leaks or spills of chemicals and petroleum products on public lands.

The areas most vulnerable to impact from a leak or spill of chemicals and petroleum products would be the East Fork Salmon River Bench Area of Critical Environmental Concern/Research Natural Area (ACEC/RNA), the East Fork Salmon River, and the Salmon River. The greatest risk of a leak or spill reaching one of these sites would be during transport of fuel and chemicals on State Highway 75 (SH-75). It is improbable that a leak or spill from mining operations would ever reach these areas due to the use of containment areas for fuel and chemical storage and use, topography of the quarry site, the ephemeral nature of the two drainages in the project site, and the adherence to the Chemical Spill Prevention, Control, and Countermeasures Plan. Fuel storage Area #1 would be located on the east side of the administration area. Due to the grade of this area, leaks or spills from this site would not reach the ephemeral stream to the north that eventually drains into the Salmon River. Containment of this storage site by earthen berms would preclude fuel leaks or spills from entering surface runoff during rainfall events. Fuel Storage Area #2 would be located on a saddle between the Salmon River and the East Fork Salmon River. It is separated from the ACEC/RNA to the south by the backside of Pit 1. The containment area and road pullout in which it resides is graded so that runoff flows in the opposite direction of the ACEC/RNA and East Fork Salmon River. Fuel Storage Area #3 would be located in the Pit 2 rock storage area near the end of the main mining road. The topography and grade in which this area is located would preclude fuel leaks or spills from entering surface runoff during rainfall events.

Alternative C

The potential impacts of Alternative C would be the same as under Alternative B. However, the risk of leaks or spills of chemicals and petroleum products would exist over a longer time period due to the extended life of mining operations (up to 30 years). Even though the storage quantities would be the same, the amount of fuel and lubricants used for operations would be greater than under Alternative B. There would also be the potential for increased delivery and use of ammonium nitrate if blasting is to be used during mineral exploration. However, the maximum quantity of pre-mixed ANFO that would be stored at the quarry at one time would not change. There would be an increased risk of fuel spills during truck transport of materials (flagstone, fuel, and other supplies) due to the increased number of trucks leaving the quarry. However, as under Alternative B, it is improbable that a leak or spill from mining operations would reach the ACEC/RNA due to the use of containment areas for fuel and chemical storage and use, topography of the quarry site, the ephemeral nature of the drainage in the ACEC/RNA, and the adherence to the Chemical Spill Prevention, Control, and Countermeasures Plan.

Alternative D

The potential impacts of Alternative D would be similar to Alternative C with the following exceptions. The use of explosives would be slightly greater, thus the amount of ANFO used and number of deliveries of ammonium nitrate to the site could be greater. There would be an increased risk of fuel spills during truck transport of materials (flagstone, fuel, and other supplies) due to the increased number of trucks leaving the quarry. The area where potential small-scale incidents could occur (such as fuel leaks from machinery or vehicle fuel tanks) would be increased to include the Pit 2 expansion area and Pit 3. However, due to containment and use of buffers and additional measures proposed to direct runoff and prevent it from reaching the ACEC (i.e. a new stormwater detention basin and BMPs), the likelihood that materials would reach the adjacent ACEC/RNA is extremely small.

4.5.5 Water Quality

Impacts to water quality are assessed by qualitatively or quantitatively determining if the Proposed Project would cause sediment delivery to the East Fork Salmon and mainstem Salmon Rivers, increase the risk of a fuel or chemical spill into these river systems, and result in the interception of ground water. Ground water levels are not currently available for the Proposed Project Area. Therefore, the surface water levels of the Salmon River and East Fork Salmon River are used with the assumption that ground water levels are at or below these levels. The term "chemicals" refers to small quantities of chemicals used on site, as described in Section 3.1.5, Chapter 3.

Alternative A (No Action Alternative)

Under Alternative A, mining activities would cease and the site would be reclaimed and potential impacts to water quality associated with mining operations under the action alternatives would not occur. There would be potential for some erosion to occur during reclamation activities which could result in sediment delivery to the Salmon and East Fork Salmon rivers. However, erosion control measures to reduce the potential for sediment delivery to these water bodies would be implemented during reclamation, as described in Appendix B. The goal of these measures would be to eliminate sediment delivery above natural levels. Success of these measures would be contingent on effectiveness, maintenance, and monitoring of erosion control features. Once reclamation is complete and vegetation reestablished, the potential for erosion and sediment delivery to the rivers would be greatly reduced and would be similar to pre-mine conditions. There would also be the potential for fuel spills during the removal and transport of storage tanks and operation of equipment used during reclamation. However, these risks would be short-term, lasting only the duration of reclamation, and the risk would be reduced by implementing BMPs (Appendix B) and the current Chemical Spill Prevention, Control, and Countermeasures Plan.

Alternative B

The projected elevations of the final pit floors in the Three Rivers Stone Quarry under Alternative B (5,425 and 5,900 feet for Pit 1 and Pit 2, respectively) would be a minimum of 65 feet above surface water levels of the Salmon and East Fork Salmon rivers. Currently the water table in the vicinity of the quarry site intersects the ground surface in the valley floors at the Salmon and East Fork Salmon rivers at approximately 5,360 feet above mean sea level. Existing mining operations have not intercepted ground water to date and future operations would not be anticipated to. If ground water were intercepted in one of the pits, all mining operations in the pit would be stopped. No dewatering of the pit would occur and no impacts to levels of ground or surface water levels would result.

As discussed in Section 3.1.2, results of the rock geochemical analyses showed that there is no leaching of chemicals from the rock at the quarry. Therefore, no impacts to the quality of ground or surface water from chemicals in the rock would result if ground water were intercepted.

Indirect impacts to the surface water and to the stream substrate could occur through the delivery of fine sediment from the quarry site. As discussed in Chapter 3, Section 3.1.6, sediment currently enters the Salmon and East Fork Salmon rivers through surface runoff during large rainfall events. Despite this delivery of sediment, the Salmon River has been found to be in full support of aquatic life beneficial uses and the stretch of this river below the quarry site has not been recently listed as impaired by pollutants (IDEQ 2002). It is anticipated that current levels of sediment delivery would continue under Alternative B, occurring primarily during infrequent large rainfall or rain-on-snow events, but would not notably increase due to the minor increase in surface disturbance proposed. BMPs for erosion control would be implemented.

Indirect impacts to surface water of the Salmon and East Fork Salmon rivers could also occur through the delivery of fuel, lubricants, nitrate, or pre-mixed ANFO. It is unknown what level, if any, of fuels and chemicals from the quarry site enter the rivers. It is likely that trace amounts of residual fuel and oil might be present in the administrative area, on the mining roads, or on SH-75 and could enter the rivers via runoff during large rain events. However, a notable increase in the amount of fuel, lubricants, or chemicals delivered to the rivers over that which may be presently occurring from existing operations is not anticipated to occur. A Chemical Spill Prevention, Control, and Countermeasures Plan would be prepared and followed for the life of the quarry which would reduce the risk of fuel, oil, and chemicals used in mining operations from entering the rivers. There is the potential, however, that the existing detention ditch could be breached during an extreme precipitation and runoff event. If this were to occur, trace amounts of residual fuel and chemicals potentially transported from the administrative area and mining roads to the detention ditch, could be delivered in a highly diluted form to the Salmon River. See Section 4.6.4, under Salmon, Steelhead, and Trout, for further discussion about the potential for contaminants to reach the Salmon and East Fork Salmon rivers.

Water for dust abatement purposes would continue to be obtained from the Salmon River north of the Proposed Project Area. The amount of water required under Alternative B is not anticipated to change notably from current operations and would fall within that allowed under L&W Stone's IDWR water use permit. Reductions in flow of the river, if any from water withdrawal, would have negligible effects on water quality.

Alternative C

Potential impacts to ground water quality would be the same as those described under Alternative B. Indirect impacts to the surface water and to the stream substrate could occur through the delivery of fine sediment and residual fuels or chemicals from the quarry site as under Alternative B. However, due to the increase in surface disturbance, hardened surfaces, and quantity of fuel and lubricant use proposed under Alternative C, the risk and the levels of fine sediment and fuels or chemicals potentially reaching the Salmon River and East Fork Salmon River would be increased.

Under Alternative C, the existing, improperly-functioning stormwater detention ditch would be improved, the grade of the administration area would be modified, a new stormwater detention pond located north of the administration area would be constructed, and BMPs for erosion control (Appendix B) would be implemented. These project features would reduce the potential for sediment-laden water crossing SH-75 or entering the culverts under SH-75 and reaching the Salmon River. The new stormwater detention pond would provide an area to hold water and settle suspended sediment. The improvements to the existing detention ditch and the new detention pond would be monitored to ensure that they are functioning properly. There is the potential, however, that the detention ponds could be breached during an extreme precipitation and runoff event. If this were to occur, a surge of sediment-laden water could be delivered into the Salmon River. A small amount of chemicals and petroleum products, as described in Section 3.1.5, Chapter 3, could potentially be transported from the mining roads, pit floors, and administrative area to the stormwater detention ponds in the event of a leak or spill. If the detention ponds were breached, water containing a small, diluted amount of chemicals and petroleum products could potentially be delivered into the Salmon River. The potential for sediment to reach the East Fork Salmon River via the ACEC/RNA during heavy rain events would still exist and could occur at an elevated level compared to Alternative B due to the expanded operations proposed under Alternative C.

Water for dust suppression would be obtained by a proposed well under Alternative C. It is estimated that maximum daily use of water would approximate 87,000 gallons, as opposed to the 55,000 gallons under Alternative B. Water would be withdrawn under an approved water right for a maximum volume of 340 acre-feet per year. No impacts to water flow in the Salmon and East Fork Salmon rivers would result.

Alternative D

The projected elevations of the final pit floors of Pit 1 and Pit 2 under Alternative D would be the same as under Alternatives B and C. The elevation of the final pit floors of Pit 2-E and

Pit 3 would be 5,760 feet. All final pit floor elevations would be a minimum of 65 feet above surface water levels of the Salmon and East Fork Salmon rivers. Therefore, there would be no impacts to ground water from the proposed quarry pit expansions. As under Alternatives B and C, if ground water were intercepted in one of the pits, all mining operations in the pit would be stopped.

Indirect impacts to the surface water and to the stream substrate could occur through the delivery of fine sediment and fuels or chemicals from the quarry site as under Alternative B and C. Due to the increase in surface disturbance, hardened surfaces, and quantity of fuel, lubricants, and pre-mixed ANFO proposed for use under Alternative D, the risk and the levels of fine sediment and fuels or chemicals potentially reaching the Salmon River and East Fork Salmon River would be increased. Additional project features are proposed under Alternative D to reduce the potential for quarry-generated runoff, which could include sediment and fuels and other contaminants, from reaching the rivers. As under Alternative C, the administration area would be regraded, the existing, improperly-functioning stormwater detention ditch would be improved, and a new stormwater detention pond located north of the administration area would be constructed to capture runoff and reduce the potential for sediment delivery to the Salmon River. In addition, another stormwater detention pond would be constructed between Pit 2-E and Pit 3 and additional drainage ditches would be constructed to deliver surface runoff to this new detention pond. These additional features would direct and capture surface runoff from the main mine access road in the vicinity of Pit 2-E and Pit 3, preventing runoff from flowing into the ACEC/RNA and subsequently into the East Fork Salmon River. The improvements to the existing detention ditch and the new detention ponds would be monitored to ensure that they are functioning properly. There is the potential, however, that the detention ponds could be breached during an extreme precipitation and runoff event. If this were to occur, a surge of sediment-laden water, and water containing small, dilute quantities of chemicals and petroleum products could be delivered into the Salmon and East Fork Salmon rivers.

Under Alternative D, water for dust suppression would be obtained by a proposed well, as described under Alternative C. It is estimated that maximum daily use of water would approximate 95,000 gallons. Water withdrawal levels would still fall within the allowable volume under the approved water right.

4.5.6 Noise

This section describes the predicted noise impact in the vicinity of the Three Rivers Quarry from various sound sources associated with the Proposed Project.

Background

For explanations of acoustical descriptors and terms to be used in this section, refer to the background discussion in Section 3.1.7, Noise, in Chapter 3.

Applicable Noise Abatement and Control Criteria

Human Receptors

Thresholds used to evaluate potential noise and/or vibration impacts on people are based on applicable criteria. In the absence of Federal, state, county or local ordinances, the EPA document "Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety," USEPA Report Number 550/9-74-04, is a guideline for determining acceptable sound levels for residential land use. The recommended level at residential receivers is 55 A-weighted sound level (dBA) day-night average noise level (L_{dn}). This level is used for this analysis.

Wildlife Receptors

Guidelines for determining acceptable sound levels for wildlife have not been recommended by the EPA. Thresholds for noise impacts on wildlife vary based on the species and their sensitivity to this type of disturbance. Guidelines for acceptable sound levels for the Least Bell's vireo and other songbirds have been developed (Mock and Tavares 1997). These have been modified slightly for this analysis, as described below, and used as a baseline for evaluating potential impact to raptors and other wildlife. A general discussion of the effect of noise on wildlife follows.

Effects of Noise on Wildlife Background

Noise is an unwanted sound that usually is caused by human actions and interferes with normal activities or otherwise diminishes the quality of the environment. Noise can be either stationary or transient. Stationary sources generally are related to land developments such as housing tracts and industrial plants. Transient sources move through the environment either along established paths such as railroads and highways, or randomly through the environment, such as low-altitude military training aircraft. The total acoustical environment at a site is the blend of the background or natural acoustics with man-made noise.

Human-generated noise is known to affect animals in a range of ways, from annoyance, to chronic stress, to hearing loss. Noise may directly affect reproductive physiology or energetic consumption as individuals incur energetic costs or lose mating or foraging opportunities by repeatedly reacting to or avoiding noise. Animals may also be forced to retreat from favorable habitat in order to avoid aversive anthropogenic noise levels. Though the direct effects of noise on wildlife may be the most obvious, noise may also have indirect effects on population dynamics through changes in habitat use, foraging, predator avoidance, courtship and mating, reproduction and parental care, and possibly local patterns of wildlife movement. Excessive or persistent noise may also affect mortality rates of adults by causing hearing loss, a serious hazard in predator-prey interactions. Other effects of noise on wildlife are likely to be subtler, such as those affecting intra-specific and inter-specific communication. In species that rely on acoustic communication, anthropogenic noise may adversely affect individual behavior by making signal detection difficult and thus altering the dynamic interaction between the producers and perceivers of communicative signals (Larkin 1997).

However, it cannot always be assumed that human-generated noise will necessarily have a negative effect. One reason is that, although natural environments can be quiet (i.e. low 20's dBA in desert, Brattstrom and Bondello 1983), natural noise is part of the natural world (Ryan and Brenowitz 1985) and adaptations to a noisy environment predate modern day noises generated by humans. For instance, certain species of frogs avoid vocalizing during loud calling by cicadas (Páez *et al.* 1993). Similar avoidance of acoustic interference is found in songbirds (Popp 1989).

In addition, habituation of animals to their environment also is a significant factor in assessing impacts of noise. The definition of habituation is "the elimination of the organism's response to often recurring, biologically irrelevant stimuli without impairment of its reaction to others". Habituation is ubiquitous in the animal kingdom (Peeke and Petrinovich 1984). No study takes place without subjects habituating to their natural or experimental environments to some degree. More predictable sources of disturbance can lead to greater apparent habituation in field situations than less predictable ones. Situations in which similar noise-producing activities occur in the same habitat at frequent intervals may affect locally-breeding wildlife less than less-frequent or less-predictable activities.

One might therefore classify two types of effects as follows:

- Acute – otherwise known as a "startle" response to infrequent and/or unfamiliar noise; and,
- Chronic – response to frequently occurring noise that may interfere with daily behaviors or activities.

Some literature exist that reports qualitative and quantitative knowledge of these effects for the peregrine falcon, bald eagle and golden eagle (collectively, "raptors"). This information, coupled with a threshold level for assessing chronic effects, are used as the basis for the assessment of potential noise impact of mining operations on raptors known to inhabit the vicinity of the Proposed Project Area.

A commonly-observed threshold for assessing chronic effects ranges from 60-65 dBA hourly Equivalent sound level (L_{eq}), with the higher end suitable for habituated species. This range is reasonably consistent with conditions that can be found in human-populated environments and supported by Larkin (1997), who writes that the peregrine falcon “has been reintroduced into many urban locations, indicating it is not often sensitive to noise.”

As for acute effects, should one assume blasting events are comparable to nearby jet aircraft passes and sonic booms, Ellis *et al*. (1991) reports that the latter caused peregrine falcons to fly away from their nests but not abandon them or negatively impact reproduction. However, it should be noted that if these events were visible by nesting peregrines, such as could be the case for the human presence indirectly associated with blasting activities, the falcons could be further disturbed, especially if there was a visible component above the nest.

Similarly for bald eagles, Fleischner and Weisberg (1986) have shown that bald eagles do startle, but that proximity to a visibly perceived threat tends to have greater influence on behavior than noise level (Ellis *et al.* 1991). “As with many other types of disturbance, the intensity of response by raptors to noise depends largely on the familiarity of the noise. For example, White and Thurow (1985) reported that ferruginous hawks and other similar species will tolerate considerable noise (about 80 decibels (dB)) close to their nests if they are familiar with it, especially if humans are not visible or otherwise obviously associated with the noise” (AMEC Americas Ltd. 2005).

The same reference containing the above observation suggests, for raptors in general, a buffer distance of 500 meters (0.31 miles) between the nest and the noise source, which typically is great enough to obscure the visibility of the noise source. Hence, in the absence of additional research to the contrary, and since the presence of raptors in the Proposed Project Area vicinity suggest they are accustomed to blasting and similar acute noise effects, this buffer distance and the aforementioned 65 dBA hourly L_{eq} guideline could define a threshold above which impact is likely.

Mining Operation Noise Effects

The existing noise environment, based on long term sound level measurements conducted at the closest residences to the quarry, is detailed in Section 3.1.7, Noise, in Chapter 3. To summarize:

Monitoring Location 1 (ML1) – L_{eq} ranged from 37.4 dBA to 44.4 dBA during the monitoring period, with short duration levels reaching nearly 45 dBA between 5PM and 6PM and 9AM and 10AM the following morning. The latter of these peaks is coincident with a test blast at the quarry.

Monitoring Location 1 (ML2) – For the duration of the monitoring period, 10-minute average L_{eq} never exceeded 38.9 dBA.

Activities at the Three Rivers Stone Quarry that were audible at the residences included noise from the diesel engines and back-up alarms on the heavy equipment, particularly when the equipment was operating near the top of the pits. Other activities that were audible on occasion included the metal scraping of the loader bucket on the rocks, trucks entering/leaving the site, and "thumps" during blasting.

<u>Noise Prediction Model</u>

The noise impacts associated with the Proposed Project were assessed with a Microsoft Excel-based noise prediction model. User inputs include (1) distances between the modeled acoustic "centers" and the receptors, (2) quantities of equipment or events over a specific time period (i.e. blasts per month) and hours of daytime (up to 12 hours) and (3) the combination of evening and nighttime operation (again, up to 12 hours for this combined "shift"). The sound sources and noise-sensitive receptors used in the model are described in the following subsections. Parameters specific to mining activities at the quarry for each project alternative were input in the model to predict individual sound level contributions with the following equation:

$$L_{eq} = Source\ SPL + 10 * \log10\ (Duty\ Cycle) + 10 * \log10\ (Quantity) + 10 * \log10\ (Hours/12) - 20 * \log10\ (Distance\ from\ Source\ /\ Reference\ Distance)$$

Where SPL = Sound Pressure Level

The model then logarithmically sums these individual sound levels (equipment-related sources, as defined below) to arrive at "aggregate" L_{eq} values for a mining activity category with respect to a specific reception point. These aggregate values were averaged across activity category for this analysis (see Tables 4.5-2 and 4.5-3). Values for individual mining activity category are displayed in the Noise Analysis Report filed in the Administrative Record.

For product shipments, the Quantity factor for the above equation was modified by a percentage based on the direction of shipment: 88 percent for shipments headed north on SH-75, and 12 percent for remaining shipments headed west.

Source Depiction

Mining activities associated with the Proposed Project could contribute temporary noise effects in and around the Proposed Project Area over a time period as specified by the proposed alternatives under consideration. However, unlike facility processes that involve specified equipment at known (and usually static) locations with scheduled hours of operation, mining activities comprise a host of different mobile sound sources with unique characteristics such as duty cycles and varying locations.

The most prevalent of these multiple sound sources are engine-driven construction equipment. Examples of these are excavators, front-end loaders, bulldozers, graders, trucks and forklifts. The noise prediction model categorizes these equipment-related sources into eight types of activity for which defined sets of equipment apply:

- Rock handling
- Drilling
- Miscellaneous
- Pre-shipment product loading
- Blasting
- Worker commuting
- Site reclamation
- Product shipments

These categories and their respective equipment rosters are shown in the appendix of the Noise Analysis Report filed in the Administrative Record. Product shipments refer to the transportation of product along SH-75 past the noise-sensitive receptors.

Noise-Sensitive Receptors

The model includes the two known human residences near the project site as receptors, ML1 and ML2. Additional non-human receptor locations include the following:

- Two peregrine falcon eyries (PF1 and PF2)
- Four bald eagle winter foraging/roosting perch sites (BE1, 2, 3 and 4)
- One golden eagle nest (GE1)

These seven wildlife locations not only represent potential wildlife impacts to these species from noise, but could concurrently serve as noise impact evaluation points for mule deer and other species that may roam or temporarily reside in the vicinity. Note that the locations of bald eagle perch sites used in the model are approximation. Further information about these wildlife locations is described in Sections 3.2.3 and 3.2.4 in Chapter 3.

Table 4.5-2 depicts the distances between the quarry activity centers and the selected human receptor locations. Note that the distances of the quarry activity centers from the wildlife receptor locations are not disclosed due to the sensitivity of these data. All wildlife nest and perch sites used in this analysis are less than 15,000 feet from the quarry.

Table 4.5-2. Distances between Quarry Activity Centers (Sound Receiver Locations) and Selected Sound Receptors (feet).

	Sound Receiver Location (distance is from location centers)						
Sound Receptor	**Pit 1**	**Pit 2**	**Pit 2E**	**Pit 3**	**Admin. Area**	**Quarry**	**Perpendicular distance from SH-75**
ML1 - Residence #1	4,331	4,043	3,475	2,460	5,913	4,251	6,213
ML2 - Residence #2	5,600	5,975	6,230	7,335	3,847	5,758	3,100

<u>Noise Modeling Assumptions</u>

The Noise Analysis Report details the assumptions used in the noise prediction model. These assumptions are summarized below.

- Sound propagation – The model does not consider any terrain-based attenuation that might result from sound propagation over great distances due to the similarity of vegetation across the Proposed Project Area. Both attenuation and reverberation from ridgelines and rock faces are ignored in the model. The resulting unobstructed line-of-sight sound paths that define all source-to-receptor distances should impart some degree of conservatism in the model (i.e. the actual noise levels are likely to be much less than estimated). The neglect of atmospheric attenuation in the model also provides model conservatism.

- Reference sound pressure levels – Most equipment used in the mining operations have sound pressure level based on the engine horsepower (HP) per the following equation:

$$99 + 10 * \log10 (HP * 0.75) + 10 * \log10 (1) - 20 * \log10 (Reference\ Distance / 3.25) – 11dB$$

where the Reference Distance is usually 50 feet. A "noise abatement" factor of an additional -10dB is also applied, which presumes the equipment has some manufacturer-supplied sound attenuating treatment for primary noise emission paths such as air intake, combustion exhaust and engine casing radiation. This factor can be increased to reflect actual attenuation performance or the installation of upgrades as suggested by the manufacturer or required by the BLM as part of a sound mitigation program.

Exceptions to usage of the above equation and noise abatement factor in the base model are the drill rigs, blasting processes and highway vehicles used to transport workers and product. Methods for estimating these reference sound levels are as follows:

Drill rigs – based on test data from reasonably similar equipment. Noise abatement is possible, via engine sound treatment and/or temporary absorptive barriers fabricated and installed around the rig.

Pre-blast and blast – from 10-minute average L_{eq} sound measurements taken at ML1, calculated back to a reference distance of 50 feet and the corresponding sound pressure level.

- Equipment Duty Cycle – For each piece of equipment detailed in the model, duty cycle is derived by dividing current annual hours of operation by total annual hours (i.e., 8,760 total hours for a calendar year). Where applicable, equipment hours are split evenly between Pits where mining activity occurs.

- For blast and pre-blast activity, the duty cycle is the fraction of a daytime shift over which the 10-minute measurement and corresponding L_{eq} was recorded during the site survey. For trucks shipping product along SH-75, the duty cycle is a 2-minute duration pass-by at approximately 60 miles per hour.

- Noise Prediction Inputs – User inputs for Table 4.5-3 reflect considerations discussed in the previous subsection, information contained in Chapter 2 of this report, and client-supplied data available at the time of this analysis.

Prediction Results

Table 4.5-3 presents prediction results based on the model for each of the four project alternatives. Context of these results per alternative appears in the following paragraphs.

The value for "L_{eq} E+N" represents the prediction for both "evening" (i.e., commonly defined as 7PM to 10PM) and "nighttime" (10PM to 7AM) hours from 7PM to 7AM. Based on long-term sound monitoring results in the vicinity of the project, an average L_{eq} of 38 dBA was set for both evening and nighttime ambient sound level. Hence, for Alternatives A and B where there is no anticipated non-daytime activity expected for the quarry, average L_{eq} remains at this 38 dBA average level. For Alternatives C and D, expected evening and nighttime noise from mining activities would increase the average sound energy level and thereby push L_{eq} to 40 dBA and higher.

Table 4.5-3. Quarry Noise Impact Prediction (L_{eq} = equivalent sound level; L_{dn} = day-night average noise level).

	Predicted Sound Pressure Level (SPL), dBA														
	Alt A			Alt B			Alt C			Alt D (1) (Pit 1, 2, 3)			Alt D(2) (Pit 1, 2E, 3)		
Sound Receptors	**L_{eq} Day**	**L_{eq} E+N**	**L_{dn}**	**L_{eq} Day**	**L_{eq} E+N**	**L_{dn}**	**L_{eq} Day**	**L_{eq} E+N**	**L_{dn}**	**L_{eq} Day**	**L_{eq} E+N**	**L_{dn}**	**L_{eq} Day**	**L_{eq} E+N**	**L_{dn}**
ML1	46	38	47	48	38	48	48	47	54	52	50	57	53	50	57
ML2	43	38	46	45	38	47	45	45	51	47	45	52	47	45	52
PF1	38	38	45	41	38	45	41	42	48	43	43	49	43	43	49
PF2	39	38	45	41	38	45	41	42	48	44	43	50	44	43	50
BE1	43	38	46	45	38	47	45	45	51	47	45	52	47	45	52
BE2	38	38	44	41	38	45	41	42	48	43	43	49	43	43	49
BE3	48	38	48	50	38	49	50	49	55	51	49	56	52	49	56
BE4	47	38	47	49	38	49	48	48	54	53	51	58	43	51	58
GE1	38	38	44	38	38	44	38	40	46	40	41	47	40	41	47

Sound Receptors are defined under Noise-Sensitive Receptors subsection above.

Alternative A – (No Action Alternative)

Daytime average L_{eq} at the receptor locations reflects the planned reclamation activity at the project site over the span of only 1 year. After this period, daytime noise impact from the site should be insignificant.

Alternative B

Although reclamation activities are not considered in the modeling of noise impacts for this Alternative, results from Alternative A suggest that noise from such activities subsequent to the 5-year plan would not exceed current sound contribution from the project.

Alternative C

Although daytime average L_{eq} levels are functionally equivalent to those predicted for Alternative B, the extension of operating hours of the quarry into evening hours would result in evening and nighttime L_{eq} being nearly as high.

At ML1, L_{dn} approaches the 55 dBA threshold recommended by the EPA. The noise prediction model was based on 16 blasts per month under Alternative C. It did not account for potential blasting during exploration activities as this value is unknown. Any additional blasting over the modeled 16 per month could result in the L_{dn} exceeding the 55 dBA threshold.

Alternative D

Two sets of levels are presented in Table 4.5-3: Alternative D(1) considers the aggregate of mining activity at Pits 1, 2 and 3; and Alternative D(2) accounts for the transfer of activity at Pit 2 to Pit 2E and the resulting impact on noise. It appears there would be differences in daytime average L_{eq} between these cases for a few of the receptor locations, but they would be no greater than 1dB. In either case, the increased activity related to Pit 3, including additional blasting, would be partly responsible for pushing daytime and evening average L_{eq} above those predicted for Alternative C.

At ML1, L_{dn} exceeds the 55 dBA threshold recommended by the EPA.

<u>Wildlife Impacts</u>

Since the noise prediction model considers all four alternatives having daytime and non-daytime shift durations of twelve (12) hours each, the average L_{eq} prediction results presented in Table 4.5-3 could also reasonably reflect hourly L_{eq} for most mining and related activities that would tend towards the production of chronic noise effects. A pair of exceptions would be the pre-blast and blast events, which should likely produce the loudest hourly L_{eq}.

Table 4.5-4 exhibits the predicted hourly L_{eq} values that, in addition to reflecting usual mining activity during a daytime hour, include a single pre-blast and blasting event like the one measured during the site survey and detailed in Section 3.1.7, Chapter 3. Note that the values change due largely to the location of the blast for each studied alternative.

Table 4.5-4. Chronic Noise Impact Prediction on Wildlife.

	Loudest Hour L_{eq}, SPL (dBA), including pre-blast and blast					
	Alt. B or C (Pit 1)	Alt. B or C (Pit 2)	Alt. D (Pit 1)	Alt. D (Pit 2)	Alt. D (Pit 2E)	Alt. D (Pit 3)
PF1	50	51	50	51	51	52
PF2	51	51	51	51	52	53
BE1	55	55	55	55	55	53
BE2	51	49	51	50	50	50
BE3	62	58	62	58	58	57
BE4	60	58	60	59	60	63
GE1	47	48	48	48	48	47

Several locations exhibit levels in the 60-65 dBA range, but none attain the 65 dBA threshold for chronic effects.

A few of the bald eagle receptor locations (perch sites) and the golden eagle nest are less than 500 meters from SH-75 (the distance buffer recommended by some authors to mitigate noise impacts on raptors; AMEC Americas Ltd. 2005). The nearest noise source at these locations is daily traffic on this highway (passenger vehicles and trucks). It is likely that raptors have grown accustomed to the traffic at current levels (i.e., similar to Alternative B). Alternatives C and D would only increase the average magnitude (by increases in commuting and rock hauling traffic), but not above the 65 dBA hourly L_{eq} threshold.

Unless reclamation activities proposed for Alternative A would involve substantially different noise-producing equipment and processes than those currently in place at the quarry site, no new noise sources, and hence unfamiliarity that might create acute effects, would be expected to be introduced by the Project Alternatives under consideration. Potential impacts to noise sensitive wildlife (raptors) from mining operations could still occur, such as flushing or temporary avoidance, but would generally not be considered substantial due to the distance between the noise source and receptor locations (> 500 meters) and the possible habituation to existing activities occurring at the quarry. It could be possible that individual raptors may be more sensitive to the noise and human activity associated with mining operations than others, such as young of the year, and may not forage close to the quarry. However, displacement from the known nest and perch sites would not be expected due to the distance of these locations from the quarry (> 500 meters; i.e. the quarry activities would not be visible). The 65 dBA hourly L_{eq} would not be expected to be exceeded at the raptor nest and perch sites.

Acute effects of blasting would not be expected to be substantial due to the distance between sensitive raptor receptors and the location of blasting activity. Visual stimuli would likely not be associated with blasting, reducing the potential for disturbance to wildlife. There would be the potential that a raptor could associate human activity in one part of the quarry (such as the administrative area) with blasting heard in another part of the quarry (such as in Pit 2). However, the portions of the quarry where humans would be visible from the river (including from tree height along the river where raptors perch) would be limited.

Ground-Borne Vibration

Background

Vibration consists of waves transmitted through solid material (Beranek and Ver 1992). Unlike in air, there are several types of wave motion in solids including compressional, shear, torsional, and bending. The solid medium can be excited by forces, moments or pressure fields. This leads to the terminology "air-borne" (pressure fields) or "structureborne/groundborne" (forces and moments) vibration.

Ground-borne vibration propagates from the source through the ground by surface waves. Vibration may be comprised of a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is oscillating, measured in hertz (Hz). Most environmental vibrations consist of a composite, or "spectrum" of many frequencies, and are generally classified as broadband or random vibrations. The normal frequency range of most ground-borne vibration which can be felt generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz.

Vibration energy spreads out as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. High frequency vibrations reduce much more rapidly than low frequencies, so that in the far-field from a source the low frequencies tend to dominate. Soil properties also affect the propagation of vibration. When ground-borne vibration interacts with a building there is usually a ground-to-foundation coupling loss but the vibration can also be amplified by the structural resonances of the walls and floors. Vibration in buildings is typically perceived as rattling of windows or items on shelves or the motion of building surfaces. The vibration of building surfaces can also be radiated as sound and heard as a low-frequency rumbling noise, known as ground-borne noise.

Perceptible ground-borne vibration is generally limited to areas within a few hundred feet of railway systems, certain types of industrial operations, and construction activities, especially pile driving. Road vehicles rarely create enough ground-borne vibration to be perceptible to humans unless the road surface is poorly maintained and there are potholes or bumps. If traffic, typically heavy trucks, does induce perceptible vibration in buildings such as window rattling or shaking of small loose items, then it is most likely an effect of low-frequency air-borne noise or ground characteristics.

Building structural components can also be excited by high levels of low-frequency noise (typically less than 100 Hz). The many structural components of a building, excited by low-frequency noise, can be coupled together to create complex vibrating systems. The low frequency vibration of the structural components can cause smaller items such as ornaments, pictures, and shelves to rattle which can cause annoyance to building occupants. Human sensitivity to vibration varies by frequency and by person but generally people are more sensitive to low-frequency vibration. Human annoyance is also related to the number and duration of events. The more events or the greater the duration, the more annoying it will be to humans.

Construction activities can also produce varying degrees of ground vibration, depending on the equipment and methods employed. Ground vibrations from construction activities very rarely reach levels high enough to cause damage to structures, although special consideration must be made in cases where fragile historical buildings are near the construction site. The construction activities that typically generate the highest levels of vibration are blasting and impact pile driving.

Vibration from construction can be evaluated for potential impacts at sensitive receptors. Typical activities evaluated for potential building damage due to construction vibration include demolition, pile driving, and drilling or excavation in close proximity to structures. The ground-borne vibration can also be evaluated for perception to eliminate annoyance. Vibration from blasting propagates according to the following expression, based on point sources with normal propagation conditions:

$$PPV = K\left(\frac{R}{\sqrt{Q}}\right)^{-1.6}$$

Where:

PPV = the peak particle velocity in mm/sec;
K = site and rock factor constant;
R = distance of receptor from charge (i.e., the explosive) in meters; and
Q = maximum instantaneous charge per delay in kg.

The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration and is often used in monitoring of blasting vibration because it is related to the stresses experienced by structures. For blasting at this quarry, one might reasonably assume the following values:

K = 1140 (described as "normal confinement");
R = distance from receptor to Pit center; and,
Q = 12.27, or 27 pounds as described in Section 2.4.5, Chapter 2

Agencies such as the Federal Transit Administration (FTA) and the National Park Service (NPS) use PPV as a descriptor because it is related to the stresses experienced by buildings.

Applicable Vibration Criteria

Federal Transit Administration

The FTA has published guidelines for assessing the impacts of ground-borne vibration associated with construction of rail projects, which have been applied by other jurisdictions to other types of projects (FTA 1995). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 in/sec PPV. Although the FTA does not consider PPV suitable for evaluating human response, it indicates the human threshold of perception of vibration is 0.01 in/sec PPV.

National Park Service

The NPS has published guidelines for assessing the impacts of vibration on historic structures (Sedovic 1984). The following parameters are suggested for safe levels of vibration:

- 0.2 inches/second PPV for structures that exhibit significant levels of historic or architectural importance (typical of Category A and B structures in the NPS's List of Classified Structures), or that are in a poor or deteriorated state of maintenance.

- 0.5 inches/second PPV for all other historic sites.

Blasting Vibration Prediction

Vibration was not measured at the project site nor reported in the existing conditions survey. However, using the aforementioned equation for PPV, and if its factors are considered reasonably accurate, one might conclude that the greatest distance at which a "waste rock blast" could be humanly perceived is approximately 2,200 feet. With respect to this calculation, and since the shortest distance between a listed Pit center point and a noise-sensitive receptor appears to be 2,460 feet (i.e., between ML1 and the approximate geographic center of Pit 3), the blast vibrations—if properly designed and orchestrated—would be unlikely to be perceived by humans. However, should the actual origin position of a "waste rock blast" event be located closer to ML1 by at least 260 feet and yet remain within the understood boundaries of Pit 3, it would be possible that vibration could be perceived.

Even if human vibration perception occurs under the above scenario, PPV should still remain well below the NPS guidelines of 0.2 inches per second. No wildlife receptor sites are close enough to be of concern in regards to blasting-induced vibration.

4.6 BIOLOGICAL RESOURCES

4.6.1 Vegetation

Impacts to vegetation are assessed by determining the amount of vegetation removed and the potential for a plant community to be modified or converted to another type through the loss of productivity of the site or establishment of non-native weed species.

Vegetation community types that would be directly affected from mining activities include shrublands and grasslands (Table 4.6-1). Although not truly a vegetation community type, areas of rock outcrop that support small amounts of vegetation are included here. Likewise, previously disturbed areas that currently do not support vegetation are included. A weed management program would be implemented under all alternatives as part of the Plan of Operations and reclamation to control weeds before they have the opportunity to establish and spread (Appendix B). Weed treatments would be conducted consistent with the Challis BLM Field Office and the Custer County Noxious Weed Control Program.

Table 4.6-1. Ground Disturbance in the Project Area by Alternative.

Plant Community/Cover Type[1]	Acres Disturbed		
	Alternative B	Alternative C	Alternative D
Shrublands (sagebrush)	2	32	51
Grasslands	0	3	3
Rock Outcrop	2	2	5
Previously Disturbed (unvegetated)	4	12	14
Total	**8**	**49**	**73**

[1]As described in Chapter 3, Section 3.2.1.

Alternative A (No Action Alternative)

Under Alternative A, mining would cease, eliminating any further associated disturbance to the vegetation communities at the quarry. Reclamation activities would occur which would increase the number of vegetated acres within the Proposed Project Area. However, since there would be large piles of waste rock left on site that would not support vegetation, the total amount of vegetation at the quarry would be less than existed prior to the beginning of mining activities. The vegetation composition of the reclaimed acres could be somewhat different than pre-mining conditions due to the potential reduction in topsoil and site productivity, the availability of seed sources, the suitability of some species for planting, and the potential presence of noxious or invasive species.

Alternative B

Under Alternative B, approximately 2 acres of shrublands would be disturbed by mining activities (Table 4.6-1). This area and the majority of areas previously disturbed by mining would be reclaimed, where feasible, during or following completion of mining operations. However, there is the potential that noxious weeds and other invasive non-native species could become established prior to reclamation. The composition of the reclaimed vegetation community could be somewhat different than the currently existing community due to the potential presence of weeds, potential reduction in topsoil and site productivity, availability of seed sources, and the difficulty of regenerating some native species. It could take 20 to 40 years or more for reclaimed areas to return to their pre-disturbance community types, therefore, impacts to vegetation would be long-term in duration.

Mechanical effects to soil from mining activities, such as surface disturbance or soil compaction, would indirectly affect vegetation by impacting soil structure and function. Surface disturbances from excavation and blasting could lead to increased erosion potential and the loss of topsoil. The loss of this soil layer could result in: diminished structural support for, and exposure of, root systems; a reduction of available nutrients for established plants; and a diminished seed bank. Soil compaction on the other hand, could reduce water infiltration, restrict root depth, and limit seed germination. Individually, or a compilation of these two impacts, could indirectly lead to further reductions in native plant communities and the potential for reestablishment of vegetation.

Surface disturbances from construction activities could also indirectly impact vegetation by creating potential habitat for invasive species. The establishment and spread of these species would lead to increased direct competition for limited resources (nutrients, water, space, etc.) with native and desired plant species. Indirectly, invasive and noxious weed species could augment the amount and continuity of fuels, which could lead to decreased fire return intervals (Peters and Bunting 1994; Whisenant 1990). The compilation of decreased fire return intervals and competition for resources could alter community dynamics (fire frequency and severity, soil stability, nutrient cycling, etc.); therefore, surface disturbances would likely have short-term as well as potentially long-term impacts on vegetation.

Alternative C

The impacts of Alternative C on vegetation would be similar to those described for Alternative B, but at an increased level. Approximately 32 acres of shrublands, 3 acres of grassland, and 2 acres of rock outcrop would be disturbed by mining activities (Table 4.6-1). Additionally, disturbance would occur over a longer period of time (30 years) resulting in a greater chance of noxious weeds and other non-native plant species becoming established and spreading prior to reclamation activities, particularly alongside new mining roads.

Alternative D

The impacts of Alternative D on vegetation would be similar to those described for Alternative B and C, but at an increased level. Approximately 51 acres of shrublands, 3 acres of grassland, and 5 acres of rock outcrop would be disturbed by mining activities (Table 4.6-1). Disturbance would occur over a longer period of time than under Alternative C (40 years) resulting in a greater chance of noxious or invasive species establishment.

4.6.2 Special Status Plant Species

No Idaho BLM special status plant species are known to occur within the Proposed Project Area. However, the entire Proposed Project Area has not been surveyed for these species. The special status plant species that could potentially occur in the quarry site are Lemhi milkvetch, wavy-leaf thelypody, Challis crazyweed, Challis milkvetch, and white eatonella. Since the entire Proposed Project Area has not yet been surveyed for these species and suitable habitat occurs in portions of the quarry site, it is assumed for this analysis that these plants are present.

Alternative A (No Action Alternative)

There would be no impacts to special status plant species under Alternative A. Mining activities would cease and there would be no additional new surface disturbance in potentially suitable habitat for these species. It is unlikely that reclaimed areas would overlap suitable habitat for these plant species due to their disturbed nature.

Alternative B

Up to 4 acres of potentially suitable habitat for special status plant species would be disturbed under Alternative B. Use of heavy equipment for drilling, excavation, and surface stripping, etc. would have a high likelihood of destroying individuals or populations of plants, if present. Site-specific surveys would be conducted prior to any new ground-disturbing activities where surveys have not been previously completed to determine the presence of special status plant species. If special status plant species are found, the BLM would evaluate the site and determine the appropriate action to maintain viable populations of the observed species.

Alternative C

The potential impacts to special status plant species under Alternative C would be similar to Alternative B with the following exceptions. Under Alternative C, approximately 37 acres of potentially suitable habitat for special status plant species would be disturbed and up to 31 acres of potentially suitable habitat would be disturbed through exploration activities.

Alternative D

The potential impacts to special status plant species under Alternative D would be similar to Alternative C with the following exceptions. Under Alternative D, approximately 59 acres of potentially suitable habitat for special status plant species would be disturbed, as opposed to 37 acres under Alternative C. Exploration activities would be reduced from a 31-acre area under Alternative C to an 18-acre area under Alternative D.

4.6.3 Fish and Wildlife

Four types of potential impacts to terrestrial wildlife from the Proposed Project are considered in this analysis, where applicable. They are vegetation removal, noise from mining operations (explosives, heavy equipment operation, etc.), visual disturbance (of employees on foot and in vehicles and equipment), and human encounters. Many of these factors may be interdependent, depending on the location of the animal (i.e. an animal may see and hear mining activities concurrently). A comprehensive analysis of the impacts of noise on wildlife is addressed above, in Section 4.5.6 and only an abbreviated discussion of this impact is addressed in the following sections. Potential impacts to aquatic wildlife include impacts to water quality from sediment and petroleum products, and reductions in stream flow.

Big Game

Alternative A (No Action Alternative)

Under Alternative A, noise, visual disturbance, and human/wildlife encounters from mining operations would cease with the closure of the quarry. Forage and browse for big game would improve once forbs, grasses, and shrubs become established from reclamation activities. The potential for disturbance to wintering big game would occur during reclamation efforts if they occurred during the winter months, but this impact, if any, would be short-term and would cease upon completion of reclamation.

Alternative B

Under Alternative B, mining would continue at its current rate, as outlined in the Interim Mining Plan. Due to the infrequent use of the Proposed Project Area by pronghorn antelopes and elk, potential impacts to these species are anticipated to be negligible.

The existing quarry and areas proposed for new mining activities overlap mule deer crucial winter range, as described in Chapter 3, Section 3.2.3. Direct impacts to browse and forage for mule deer in the crucial winter range would occur from mining activities but would likely not be substantial since only minimal new surface disturbance would result (see Table 4.6-1). This surface disturbance would equate to a loss of less than 1 percent of the crucial winter range along the Salmon and East Fork Salmon rivers, as mapped in the RMP (USDI-BLM 1999, Map 32). Habitat would be maintained for big game consistent with IDFG management objectives. Indirect impacts to mule deer habitat could also result from the mining operations. Deer using the quarry site during mining operations could be temporarily displaced, especially new individuals in the herd or young of the year that are not accustomed to the existing level of disturbance.

Mining activities would create a potential visual disturbance and could increase the chance of human/big game encounters. Responses to such encounters could range from temporary startle and flight to short-term avoidance of the area. The response to a visual disturbance would depend on the distance between the animals and the visual stimuli (Freddy *et al*. 1986). Repeated disturbance and encounters could lead to increased metabolism and energy expenditure of the animals which could reduce their fat stores and lower their body weight, and could lead to long-term avoidance of the area (Geist 1971). Under severe winters, additional mule deer may be forced to use the Proposed Project Area and immediate vicinity. Increased stresses to these already stressed animals could occur as a result of quarry operations during severe winters, specifically in the latter months of winter, and could potentially lead to reduced reproduction or winter mortality (Thomas 1982 and Hobbs 1989). The existing use of SH-75 for hauling flagstone would continue at its current rate and could pose a risk of vehicle/big game collisions.

Noise from blasting could impact big game species wintering in the area, primarily deer. Blasting would occur up to 16 times per month, with no more than two blasts occurring on a given day. Responses of big game to blasting are poorly studied. However, literature does exist describing the impacts of aircraft noise and sonic booms on big game (Manci *et al.* 1988). Impacts vary depending on the species, group size, sex, season, previous exposure to noise source, and distance from the noise source. The distance from the noise source will influence both the noise intensity and whether the animal can locate the noise source. The literature indicates that the visibility of the noise source also influences the animal's reaction. For example, reindeer's response to sonic booms were moderate, irrespective of boom level, and included slight startle responses, raising of head, pricking the ears, and scenting the air. Panic reactions were not observed (Espmark 1972 *in* Manci *et al.* 1988). Conversely, responses of caribou to noise from low-altitude aircraft in remote areas resulted in running (escape), and panic responses, when aircraft (the visual stimuli) were within 200 feet (Klein 1973 *in* Manci *et al.* 1988).

Since occasional blasting is an existing condition that has occurred throughout the operation of the quarry, it is possible that many of the deer using the Proposed Project Area and immediate vicinity are habituated to some degree to this noise source. Although there is no direct visual stimuli associated with blasting, deer may associate other activities at the quarry outside of the blasting zone (e.g. at the administration area or in the waste rock storage areas) with the noise of blasting. Depending on the distance of the visual stimuli to the animal, this could lead to reactive conditioning where the blast and subsequent observation of humans induces an automatic negative response to every blast. Responses of big game to the blast could range from a short-term alertness, where the animals would stop what they were doing and look in the direction of the noise and human activity, to a flight response or long-term displacement. If flight responses repeatedly resulted, this would expend needed energy of big game in the winter. If long-term displacement were to occur, it could result in deer using less suitable areas or being more susceptible to predation.

Alternative C

The types of impacts to big game species under Alternative C would be similar to Alternative B but the magnitude of potential impacts would be greater. New surface disturbance would result in a reduction in forage and browse by approximately 35 acres. Exploration activities could further reduce forage and browse on up to 31 acres. This surface disturbance would equate to a loss of less than 1 percent of the crucial winter range along the Salmon and East Fork Salmon rivers, as mapped in the RMP (USDI-BLM 1999, Map 32). The number of employees working on site would increase by 33 percent, and areas where activities would occur (mining and mineral exploration) would expand, increasing the activities in winter range and the potential for a human/animal encounter. It is likely that mule deer in the Proposed Project Area are currently habituated to some degree to the presence of humans at the quarry site. However, the expansion of areas proposed under Alternative C where human would be present would result in human activities occurring in areas that the deer are not accustomed to. The increase in number of people on site and the decrease in vegetation would reduce the area of effective available habitat, which would result in additional stressors to deer, especially during severe winters. The amount of material removed and associated use of heavy equipment would increase, increasing the potential visual and noise disturbance. Increased potential for reaction to visual stimuli, noise, and human encounters and number of encounters could amplify the responses of mule deer to the disturbance. It could result in more frequent and longer distance flights and avoidance periods. This could lead to greater expenditures of energy which could lower body weight and affect reproduction, and could result in a greater likelihood of displacement than under Alternative B. Displacement would increase the stress to these animals and could render them more susceptible to wolf predation, if displaced to areas used by wolves. Use of SH-75 for hauling flagstone would increase over Alternative B and could pose an increased chance of vehicle/big game collisions.

Alternative D

The types of impacts to big game under Alternative D would be similar to Alternative B and C but the magnitude of potential impacts would be greater. New surface disturbance would result in a reduction in browse and forage by approximately 54 acres. Exploration activities could further reduce forage and browse on up to 18 acres. However, this surface disturbance would equate to a loss of less than 1 percent of the crucial winter range along the Salmon and East Fork Salmon rivers, as mapped in the RMP (USDI-BLM 1999, Map 32). The number of employees working on site would increase by 49 percent over Alternative B and 12 percent over Alternative C, and would increase the potential for a human/wildlife encounter. As discussed for Alternative C, the expansion of areas proposed under Alternative D where humans would be present would result in human activities occurring in areas that the deer are not accustomed to. The increase in number of people on site and the decrease in vegetation would reduce the area of effective available habitat, which could result in additional stressors to deer, especially during severe winters. The amount of material removed and associated use of heavy equipment would increase, increasing the potential for visual and noise disturbance. Increased potential for reaction to visual stimuli, noise, and human encounters and number of encounters could amplify the responses of mule deer to the disturbance, potentially resulting in more frequent and longer distance flights and avoidance periods. This could lead to greater expenditures of energy which could lower body weight and affect reproduction, and would have a greater likelihood of leading to displacement than under Alternatives B and C. Displacement would increase the stress to these animals and could render them more susceptible to wolf predation, if displaced to areas used by wolves. Use of SH-75 for hauling flagstone would increase over Alternatives B and C which could pose an increased chance of vehicle big game collisions. The number of blasts per month would increase over the other action alternatives, increasing the potential for resulting displacement and susceptibility to predation.

Upland Game Birds

Impacts to sage-grouse from mining are described in Section 4.6.4.

<u>Alternative A (No Action Alternative)</u>

Future habitat for upland game birds would improve under Alternative A once shrubs from reclamation activities become established and are large enough to provide cover. Forage availability would increase for upland game birds earlier than cover once grasses and forbs become established.

<u>Alternative B</u>

Up to 2 acres of potential habitat for upland gamebirds (sagebrush and grasslands) would be removed or damaged under Alternative B. Removal of shrubs would decrease available loafing and escape cover and nesting habitat for upland gamebirds and removal of grass would reduce their available food source. It is also possible that gamebirds would be disturbed and displaced by the noise and presence of people and heavy equipment used during mining activities. However, potential impacts to upland gamebird populations in the general vicinity of the quarry site are considered minor due to the availability of suitable habitat within portions of the Proposed Project Area that would not be affected and areas outside of the quarry boundary.

Alternative C

The types of impacts to upland game birds under Alternative C would be similar to those described for Alternative B except the amount of vegetation that would be removed or damaged would be greater. Up to 35 acres of potential habitat for upland gamebirds (sagebrush and grasslands) would be removed or damaged under Alternative C. Exploration activities could modify habitat for these species over the proposed 31-acre exploration area.

Alternative D

The types of impacts to upland game birds under Alternative D would be similar to Alternative C except that the amount of vegetation that would be removed would be greater. Up to 54 acres of potential habitat for upland gamebirds (sagebrush and grasslands) would be removed under Alternative D. Exploration activities could modify habitat for these species over the proposed 18-acre exploration area.

Furbearers

Alternative A (No Action Alternative)

Under Alternative A, current potential impacts to furbearers from mining activity would cease due to the proposed quarry closure. Habitat for small furbearers such as jackrabbits would increase slightly after the successful completion of reclamation activities.

Alternative B

Given the large territories of larger furbearers (such as bobcats and red fox) and the fact that they are not dependent on habitat within the Proposed Project Area, the removal of vegetation associated with mining activities, although it would be considered a negative impact, would not be considered adverse to these species. Due to the presence of people working on site, the potential of a human encounter with a furbearer exists. This type of disturbance would have a greater likelihood of negatively impacting furbearers, causing animals to startle or flee from the source of disturbance and potentially abandoning the area. These reactions would increase energy expenditure, and depending on the time of year of disturbance, could potentially decrease fitness. However, the Proposed Project Area is only a small portion of the home ranges of large furbearers, these potential impacts would occur only when furbearers were traveling through or foraging in the area.

The potential impact on furbearers from noise generated from the use of explosives is difficult to predict, as no studies examining this disturbance are known. Probable impacts of the noise from blasting could range from no response to a temporary startle response. Noise from use of heavy equipment and travel on mining roads would likely result in a similar response coupled by potential change in habitat use pattern (avoidance of the area) due to the associated visual disturbance.

The impacts of removing 2 acres of sagebrush would be considered negligible to smaller furbearers that rely on sagebrush shrubs for cover, such as jackrabbits. The chance of human encounters with small furbearers would be greater than for large mammals due to their smaller home ranges. Responses of these encounters could cause animals to startle or flee from the source of disturbance and potentially abandon the area. Impacts of noise and visual disturbances from mining activities on smaller furbearers would be similar to those of larger furbearers.

Alternative C

Impacts to large furbearers would be similar to Alternative B. However, due to the increased mining activities under Alternative C, the potential for a human/wildlife encounter and associated impacts would be greater.

Removal of approximately 32 acres of sagebrush under Alternative C could potentially impact smaller furbearers that rely on sagebrush shrubs for cover, such as jackrabbits. This would make them more vulnerable to predators and would reduce the thermal protection provided by the shrubs. The degree of impact would depend on the size of home range territories and availability and configuration of adjacent habitat. Concurrent reclamation activities would restore some of the sagebrush habitat once specific mining activities were completed. However, it could take at least 10 years before the planted sagebrush was large enough to provide cover for small furbearers. Impacts of the other types of disturbances would be similar to those of larger furbearers.

Alternative D

Impacts to furbearers under Alternative D would be similar to those described under Alternative C. Chances of human/wildlife encounters would be slightly greater since the number of workers would be greater, and the area where human/wildlife encounters could occur during mining operations would be expanded to the south due to the proposed mining in Pit 2-E and Pit 3. The amount of vegetation removed under Alternative D (54 acres) would be the greatest of all action alternatives, decreasing cover habitat for jackrabbits and other small furbearers.

Non-game Birds

The analysis of impacts of the Proposed Project on non-game birds is focused on Idaho high priority bird species defined by the Idaho Bird Conservation Plan (ID PIF 2000) that utilize sagebrush habitat. All alternatives would be in compliance with Executive Order 13186 for migratory birds. A detailed discussion of these species is contained in Section 3.2.3 of this document.

Alternative A (No Action Alternative)

Under Alternative A, habitat for Idaho high-priority bird species that use sagebrush vegetation communities would increase after successful reclamation of the quarry site.

Alternative B

Up to 2 acres of potential nesting or foraging habitat for Idaho high priority bird species would be removed under Alternative B. If birds were nesting in the areas proposed for ground surface-disturbing activities, nests could be abandoned, and/or nests and individual birds could potentially be destroyed. Areas proposed for further ground disturbance under this alternative are small and localized, and the likelihood of birds nesting in these areas which are in close proximity to Pit 1 and Pit 2 would be low. However, sagebrush obligate bird species have been documented avoiding areas around those that are directly disturbed (i.e. avoiding a buffer around roads and other edges; Ingelfinger and Anderson 2004), thus a larger area than that specifically disturbed by mining operations could be avoided or abandoned. Noise generated by equipment is not likely loud enough to interfere with vocal communication of bird species. Hearing damage to birds as a result of blasting would be unlikely to occur. Birds would be unlikely to use areas of the quarry where blasting would occur due to the disturbed nature of these areas and presence of quarry workers both before and after blast events. Birds could also be disturbed outside of the nesting period by noise from blasting and human presence, but impacts would be temporary and less severe such as temporary startle responses (flushing) and short avoidance flights.

The loss of habitat and potential impacts to individuals would not be anticipated to adversely affect populations of non-game birds due to the presence of undisturbed sagebrush habitat in the vicinity of the quarry, specifically in the East Fork Salmon River Bench ACEC/RNA. This undisturbed habitat would be available to other individuals in the populations, and possibly to displaced individuals, to use as nesting and foraging habitat. However, birds would be unlikely to re-nest in this habitat during the same season of potential displacement. Reclamation activities would restore some of the sagebrush habitat once mining activities are completed.

Alternative C

Ground surface-disturbing activities would be increased under this alternative relative to Alternative B. Up to 32 acres of potential nesting or foraging habitat for Idaho high priority bird species would be removed under Alternative C. This would reduce the availability of nesting and foraging habitat in these areas and fragment the habitat to some degree. Fragmentation of shrub steppe habitat has been documented as significantly influencing the presence of shrub-obligate bird species (Knick and Rotenberry 1995). The reduction in habitat could potentially displace individuals as well as deter sagebrush-obligate bird species from moving into the area. Birds could also be displaced from areas of suitable habitat that would be unaltered by quarry activities but would be rendered unusable due to their proximity to the activities. However, the presence of suitable sagebrush habitat in the vicinity of the quarry would still be available for other individuals of high-priority bird populations for foraging and nesting. Although impacts to individuals would likely result, impacts to populations would not be expected.

Alternative D

Up to 51 acres of potential nesting or foraging habitat for Idaho high priority bird species would be removed under Alternative D. This would further fragment the potential habitat, reduce the availability of nesting and foraging habitat, and likely result in displacement of sagebrush obligate species from the Proposed Project Area and potentially deter new individuals from moving into the quarry site. A greater area of habitat adjacent to the quarry activities would likely be rendered unusable to these bird species than under Alternative C. However, the presence of suitable sagebrush habitat in the vicinity of the quarry would be available for other individuals of high-priority bird populations for foraging and nesting. Although potential impacts to individuals would likely result, impacts to populations would not be expected.

Small Mammals

Alternative A

Under Alternative A, habitat for small mammal species that use sagebrush and grassland habitats would increase after successful reclamation of the quarry site.

Alternative B

Up to 2 acres of potential foraging habitat and thermal and hiding cover for small mammals (other than bats) would be removed under Alternative B. The loss of habitat and potential impacts to individuals would not be anticipated to adversely affect populations of small mammals. This is due to the small amount of habitat that would be removed, the presence of undisturbed sagebrush and grassland habitat within and in the vicinity of the quarry that would be available for use by other individuals in the populations, and the high reproductive rates of these animals. Reclamation activities would restore some of the sagebrush and grassland habitat once mining activities are completed.

Bats inhabiting the rock outcrops in and adjacent to the Proposed Project Area would not be expected to be impacted from noise associated with the use of explosives. This is because the sound frequency (pitch) of the blasting noise would be much lower than the levels used by bats for communicating and locating their prey (echolocation) and would not interfere with their behavior. Approximately 2 acres of potential rock outcrop habitat would be altered, which could result in impacts to roosting bats.

Alternative C

Impacts to small mammals under Alternative C would be similar to those described for Alternative B with the following exceptions. Up to 35 acres of potential small mammal habitat (other than bats) would be removed. Burrows and den sites could be destroyed if located in areas proposed for pit expansion and mineral exploration. The amount of area disturbed could encompass individual territories of some small mammal species and the disturbance could impact individuals and their reproductive potential for a given season. However, given the availability of suitable habitat in the vicinity of the quarry that would be available for use by other individuals of small mammal populations and the high reproductive rates of these animals, impacts to populations would not be expected.

Under Alternative C, impacts to bats would be the same as those discussed for Alternative B.

Alternative D

Impacts to small mammals under Alternative D would be similar to those described for Alternative B and Alternative C with the following exceptions. Up to 54 acres of potential small mammal habitat (other than bats) would be removed. Burrows and den sites could be destroyed if located in areas proposed for pit expansion and creation and mineral exploration. Although there could be impacts to small mammal individuals, impacts to populations are not expected.

Impacts to bats under Alternative D would be similar to those described under Alternative B, but would be greater in magnitude, because up to 5 acres of rock outcrop habitat would be altered.

Fish

Alternative A (No Action Alternative)

Under Alternative A, mining would cease and potential impacts to fish habitat associated with mining operations under the action alternatives would not occur. See Section 4.6.4 below for further discussion.

Alternatives B, C, and D

No direct effects to stream channel features or to individual fish populations are anticipated since there are no riparian areas within the Proposed Project Area. Potential indirect impacts to habitat quality for game- and non-game fish species could result from the potential delivery of sediment and chemicals and petroleum products from surface runoff to the East Fork Salmon and Salmon rivers (Section 3.1.5). The impacts by alternative would be the same as those described for special status fish species in Section 4.6.4, and are not further described here. Since no underwater noise would be produced in the rivers as a result of the mining operations, no noise impacts to fish would result (Section 4.6.4).

4.6.4 Special Status Fish and Wildlife Species

This section addresses the potential impacts of the Proposed Project on threatened, endangered, and sensitive wildlife and fish species. A Biological Assessment (BA) for aquatic species was prepared for the 2004 Three Rivers Stone Quarry Expansion Environmental Assessment (EA) (USDI-BLM 2003a) and was reviewed and concurred with by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). Since Alternative D involves actions not described in the BA upon which consultation was based in 2003, consultation would be undertaken with the USFWS and NMFS to update concurrence for threatened and endangered fish species. Since no impacts to Federally listed terrestrial species would result from implementation of the proposed alternatives, a BA for terrestrial species would not be submitted to the USFWS.

Special Status Wildlife

Four types of potential impacts to special status wildlife species from the Proposed Project are considered in this analysis, where applicable: vegetation removal, noise from explosives and heavy equipment operation, visual disturbance, and human encounters. Disturbance acres by vegetation community type are displayed in Table 4.6.1 above.

Bald Eagle

There are no bald eagle nest sites within the vicinity of the quarry site, so no impacts to nesting bald eagles would result from any of the alternatives.

Alternative A (No Action Alternative)

Mining activities and potential associated disturbance to wintering bald eagles along the Salmon and East Fork Salmon rivers would cease. The potential for disturbance would continue to occur during reclamation efforts if conducted during the winter months, but this impact, if any, would be minor and would cease upon completion of reclamation.

Alternative B

Mining activities and associated noise from equipment operation and blasting could disrupt behavior of bald eagles foraging and perching in the vicinity of the quarry during the winter. The magnitude of behavior modification would vary depending on the distance of the disturbance from the eagles and the intensity and duration of the disturbance. Responses could vary from temporary startle responses (flush) and short avoidance flights, causing them to avoid commonly used perch or forage sites, to longer-term avoidance of the area. Impacts would be greatest if the eagles were foraging in the immediate vicinity of the quarry where many of the quarrying activities would be above the eagles, potentially increasing the perceived threat to these birds. These actions could stress eagles, causing them to use more energy during a time when their energy levels are low. The consequences could be lower reproduction rates the following spring, increased susceptibility to disease, and predation. Wintering bald eagles have reportedly habituated to human activity (pedestrian and boating) along rivers with degree of habituation depending on the level and type of human activity and the sensitivity of individual eagles (Stalmaster and Newman 1978 and Knight and Knight 1984). Therefore, some habituation by eagles to activities, especially those occurring continuously or predictably, could occur.

Mining activities would not result in the removal of any habitat for bald eagles. Wintering bald eagles along the Salmon and East Fork Salmon rivers could potentially be disturbed by the continuation of mining activities (noise and visible human presence) under Alternative B. Blasting to remove overburden would represent the greatest potential noise impact and could flush perched or roosting eagles. These potential impacts would be short-lived and infrequent. In addition, the continued presence of eagles during the winter months in this area indicates some degree of tolerance or habituation to human activities in the Proposed Project Area. Noise of most mining activities would be muted and masked to some degree by the sound of the wind, rivers, and traffic on SH-75. The distance of eagle roosts from the quarry (0.4 to 1.7 miles) would reduce the potential visual disturbance and chance that the birds would flush or leave the area and would eliminate the potential for human encounters. Volume of noise reaching the roosting eagles would also be reduced from the original level produced at the blast site. Because of these factors, the noise level at the location of the bald eagle winter perch sites from the mining operations would not attain the threshold level for chronic effects (Section 4.5.6).

Alternative C

Impacts to wintering bald eagles under Alternative C would be similar to those for Alternative B except the number of year-round workers on site would increase by about 33 percent, potentially increasing visual disturbance to wintering eagles. The number of seasonal workers would also increase, but the period worked by the majority of the workers would only overlap the beginning of the eagle wintering period in the area. Noise levels would increase due to an increase in use of heavy equipment and traffic from commuters and shipping trucks, and from exploration activities (construction of roads, drill pads, drill holes, trenches, test pits, local surface stripping, and potential additional blasting). However, the noise level at the location of the bald eagle winter perch sites from the expanded mining operations would not attain the threshold level for chronic effects (Section 4.5.6). If additional blasting were used for exploration activities, the potential for adverse effects to eagles would increase. Potential impacts to wintering eagles would occur for up to 30 years and could lead to long-term avoidance of the immediate area. However, some habituation to activities, especially those occurring continuously or predictably, could occur, with some birds likely being more tolerant of mining activity than others. Conversely, it is possible that the eagles would become subject to a conditioned response to noise from blasting, if associated with the visual stimuli of other human activities in the Proposed Project Area. If this occurred, the eagles would potentially respond to each blast. The response (flushing, avoidance flights, and displacement etc.) would vary by individual and by the distance from the eagle to the visual stimuli.

Alternative D

The types of impacts to wintering bald eagles under Alternative D would be similar to Alternative C but the magnitude and duration of potential impacts would be greater due to the slight increase in number of seasonal employees, two-fold increase in the number of monthly blasts, and project duration of up to 40 years. Because of the increase in noise from blasting, this alternative would have the greatest potential to impact wintering eagles in the area.

Gray Wolf

Alternative A (No Action Alternative)

Mining activities would cease under Alternative A and disturbed areas would be reclaimed, increasing the potential forage and browse for key wolf prey species (elk and deer) in the future. Intensive human activity in the area would cease and use of the area by wolves and their prey could potentially increase.

Alternative B

Mining activities would likely continue to discourage use of the Proposed Project Area by gray wolves. Up to 2 acres of potential forage and browse for wild ungulates would be removed during mining operations. Although the amount of forage removed would not notably affect use of the area by big game, noise and presence of humans could increase the stress to mule deer and lead to temporary displacement, as described in Section 4.6.3. Given the presence of wolf packs in the vicinity of the quarry site, the mobility of wolves, and the size of their territories, displacement of mule deer outside of the quarry would increase predation opportunities for wolves in the region.

Alternative C

Under Alternative C there would be an increased amount of potential forage and browse for wolf prey (35 acres versus 2 acres under Alternative B) and an increase in noise and visual disturbance. This would increase the potential for deer displacement from the Proposed Project Area as described in Section 4.6.3. Therefore, prey availability for wolves would potentially increase with implementation of Alternative C if big game were redistributed as a result of quarry activities to areas used regularly by wolves.

Alternative D

Under Alternative D there would be an increased loss of potential forage and browse for wolf prey (54 acres versus 2 and 35 acres under Alternative B and C, respectively) and an increase in noise and visual disturbance. This would increase the potential for deer displacement from the Proposed Project Area over the other alternatives as described in Section 4.6.3. Therefore, prey availability for wolves would potentially increase with implementation of Alternative D if big game were redistributed as a result of quarry activities to areas used regularly by wolves.

Canada Lynx

Alternative A (No Action Alternative)

The Proposed Project Area does not contain suitable habitat for Canada lynx. Quarry closure and reclamation proposed under this alternative would not benefit, or adversely impact, Canada lynx.

Alternative B

The Proposed Project would not impact the Canada lynx, as this species has not been documented in the quarry site or its immediate vicinity, and primary habitat is lacking. Any use of the quarry site by lynx would be transitory, occurring between adjacent Lynx Analysis Units. Due to the crepuscular and nocturnal nature of lynx, there would be little overlap, if any, between traveling lynx and mining operations, reducing the potential for encounters with quarry employees.

Alternative C

The potential for impacts to Canada lynx would be similar to Alternative B, with one exception. Since mining activities could potentially occur 24 hours per day, as opposed to the 10 to 12 expected under Alternative B, the potential for encounters with quarry employees would be increased. However, this potential would still be small, since any use of the Proposed Project Area by lynx would be transitory.

Alternative D

The potential for impacts to Canada lynx would be the same as discussed for Alternative C.

Pygmy Rabbit

Alternative A (No Action Alternative)

The Proposed Project Area does not contain suitable habitat for the pygmy rabbit thus quarry closure and reclamation proposed under this alternative would not benefit, nor adversely impact, this species.

Alternative B, C, and D

The Proposed Project would not impact the pygmy rabbit, as this species has not been documented in the quarry site or immediate vicinity, and suitable habitat is lacking.

Greater Sage-Grouse

Alternative A (No Action Alternative)

Under Alternative A, mining would cease and disturbed areas at the quarry would be reclaimed. This would reduce the human disturbance in the area and improve potential nesting and/or wintering habitat for sage-grouse. Potential brood-rearing habitat in the riparian areas adjacent to the Proposed Project Area would not be altered by reclamation activities.

Alternative B

If sage-grouse were present within the Proposed Project Area, they could potentially could displaced by the proposed mining activities. Up to 2 acres of potential sage-grouse nesting or wintering habitat would be removed under Alternative B. Concurrent reclamation activities would restore some of the sagebrush habitat once specific mining activities were completed, but it could take at least 10 years before the sagebrush was large enough to provide cover for sage-grouse. Potential brood-rearing habitat in the riparian areas adjacent to the Proposed Project Area would not be directly impacted. However, if activities associated with the mining operation disturbed and altered the movements of sage-grouse, the suitability of this habitat could be reduced.

Alternative C

The potential for impacts to sage-grouse would be similar to those discussed under Alternative B. Mining would increase in the Proposed Project Area, further increasing the noise and activity in the area, which could potentially displace sage-grouse, if present, over a larger area than under Alternative B. Up to 32 acres of potential sage-grouse nesting or wintering habitat would be removed under Alternative C; an increase of 30 acres over Alternative B. This would fragment sagebrush in the area, and when combined with human disturbance, would reduce the suitability of the Proposed Project Area as potential habitat for sage-grouse. As under Alternative B, concurrent reclamation activities would restore some of the sagebrush habitat once specific mining activities were completed, but it could take at least 10 years before the sagebrush was large enough to provide cover for sage-grouse. Potential impacts to brood-rearing habitat in the riparian areas adjacent to the Proposed Project Area would be the same as those discussed under Alternative B.

Alternative D

Human disturbance associated with mining would increase in the Proposed Project Area slightly more than Alternative C, increasing the noise and activity in the area. If sage-grouse were present, they could potentially be displaced by the mining activities over a larger area than under Alternatives B and C. The potential for displacement would be greatest under this alternative due to the increase in activity and human presence proposed. Up to 51 acres of potential sage-grouse nesting or wintering habitat would be removed or disturbed under Alternative D, resulting in the greatest potential fragmentation of sagebrush habitat in the area of all action alternatives. This fragmentation, when combined with the increase in human disturbance, would reduce the suitability of the area as potential habitat for sage-grouse. As under Alternatives B and C, concurrent reclamation activities would restore some of the sagebrush habitat once specific mining activities were completed, but it could take at least 10 years before the sagebrush was large enough to provide cover for sage-grouse. Potential impacts to brood-rearing habitat in the riparian areas adjacent to the Proposed Project Area would be the same as those discussed under Alternative B.

Peregrine Falcon

Alternative A (No Action Alternative)

Under Alternative A, mining and associated noise disturbance from explosive use would cease, eliminating potential disturbance to the peregrine falcon territory to the southeast of the quarry. It is possible that in the absence of mining, peregrines could nest on the rock faces within Pit 1 that have been exposed from the mining operation.

Alternative B

Mining operations and potential disturbance to the peregrine falcon territory, if occupied, would continue. Falcons foraging along the Salmon and East Fork Salmon rivers could be disturbed by noise from blasting and general mining activity, potentially resulting in temporary startle responses (flush) or avoidance of this area. However, disturbance from blasting (the loudest mining activity) would be temporary and infrequent. The noise level at the location of the peregrine falcon territory would not attain the threshold level for chronic effects, as discussed in the wildlife subsection of Section 4.5.6. Peregrine falcons have been reported nesting and foraging in close proximity to mining and other human disturbances and often habituate to human environments (White *et al.* 1988), and may not respond to the noise from blasting. Due to the distance of the quarry from the falcon territory (approximately 2.0 miles) and the obstructed view of much of the mining activities from these locations, it is unlikely that mining activity would disturb falcon reproductive behavior or preclude them from nesting there in the future. If the eyrie sites continue to be unoccupied, mining would have no impact on the falcons. Once mining activities cease, it is possible that peregrines could nest on the rock faces within Pit 1 that have been exposed from the mining operation.

Alternative C

The impacts of Alternative C on the peregrine falcons in the vicinity of the quarry site would be similar to Alternative B. However, since mining activity would increase (increased area and increased number of workers) and exploration activities would occur (construction of roads, drill pads, drill holes, trenches, test pits, local surface stripping, and potential additional blasting), the potential for disturbance to foraging falcons would be greater. The nesting territory is not below the quarry, and the distance of the nesting territory from the proposed exploration area would be great enough that impacts to falcon nesting are not expected. The noise level at the location of the peregrine falcon territory would not attain the threshold level for chronic effects, as discussed in the wildlife subsection of Section 4.5.6.

Alternative D

The impacts of Alternative D on the peregrine falcons in the vicinity of the quarry site would be similar to Alternative B and Alternative C. However, since mining activity would increase and limited exploration activities would occur, the potential for disturbance to foraging falcons would be greater. The nesting territory is not below the quarry, and the distance of the nesting territory from the new pits and proposed exploration area would be great enough that impacts to falcon nesting are not expected. The noise level at the location of the peregrine falcon territory would not attain the threshold level for chronic effects, as discussed in the wildlife subsection of Section 4.5.6.

Special Status Fish

<u>Salmon, Steelhead, and Trout</u>

Potential project impacts to the Snake River sockeye salmon, Snake River spring and summer Chinook salmon, Snake River Basin steelhead, Columbia River Basin bull trout, and westslope cutthroat trout would be similar and are addressed together. No direct effects to stream channel features or to individual fish populations would be anticipated since there are no riparian areas within the Proposed Project Area. Potential indirect impacts to special status fisheries habitat could result from sedimentation from erosion and surface runoff, fuel or chemical spills, and water acquisition for dust suppression. These potential impacts would be directly associated with potential impacts to water quality (see Section 4.5.5). Of these potential impacts, sedimentation poses the greatest risk to salmonids. Increased sediment deposition can adversely affect salmonid spawning and rearing habitat. Excessive sediment interferes with water flowing through spawning gravel and reduces the transport of oxygen to incubating eggs, lowering egg and fry survival (Burton *et. al* 1990; Chapman 1988; Stowell *et al.* 1983). Fine sediments in cobble substrate fills interstitial space and pools, reducing the amount of summer and winter rearing habitat as well as the abundance and diversity of macroinvertebrates, which provide food for juvenile salmonids (Chapman and McCleod 1987).

Alternative A (No Action Alternative)

Under Alternative A, mining would cease and the potential impacts to aquatic biota, special status fish, and fisheries habitat associated with mining operations under the action alternatives would not occur. There would be potential for some erosion to occur during reclamation activities which could potentially result in sediment delivery to the Salmon and East Fork Salmon rivers. However erosion control measures to reduce the potential for fine sediment to enter fish bearing streams would be implemented during reclamation efforts. Once reclamation is complete and vegetation reestablished, the potential for erosion and sediment delivery to the rivers would be greatly reduced; it would be similar to pre-mine conditions, but somewhat greater due to the piles of waste rock that will no longer support a vegetation community.

Alternative B

Under Alternative B, mining operations and associated risks to aquatic biota, special status fish, and fisheries habitat would continue at a level slightly above the current rate. Sources of erosion from the existing roads and from the administrative area would occur at a slightly elevated level and pose an increased risk of fine sediment delivery to the Salmon and East Fork Salmon rivers. New surface disturbance would occur on approximately 2 acres of vegetated and 6 acres of previously disturbed land as a result of expanding Pit 1 and Pit 2 and would result in an additional, but short-term, risk of erosion. Since the removed topsoil would be stockpiled in a protected area, the risk of fine sediment entering the rivers from this disturbance would be reduced. BMPs would be in place to manage surface water and erosion potential as described in the Idaho Department of Environmental Quality's Catalog of Stormwater BMPs and the Idaho Department of Lands (1992) Manual of BMPs (see Appendix B). Proper implementation and adherence to these BMPs would greatly reduce the potential for sediment to leave the project site and reach the rivers. As portions of the quarry are reclaimed during operations, the potential for sediment reaching the rivers would lessen. It is expected that fine sediment could still reach the rivers over the life of the quarry, particularly during large storm events. In the unlikely event of failure of the stormwater detention trench by the administrative area, sediment, and potentially residual chemicals and petroleum products, as defined in Section 3.1.5, would be delivered to the Salmon River.

Potential sources of contaminants associated with the quarry include fuel, lubricants, degreasing solvents, vehicle maintenance fluids, fuel oil, ammonium nitrate, and pre-mixed

ANFO. As discussed in Section 4.5.5, there is the potential that these materials could spill during mining operations. Depending on the location and degree of spill, there is the potential that these contaminants could reach the East Fork Salmon River or Salmon River over the life of the project. However, the risk of this occurring would be low due to the adherence to a Spill Prevention, Control and Countermeasures Plan, proper storage and containment facilities, and the presence of spill clean-up kits near storage area. If contaminants were to reach one or both of the rivers, the contaminants would be diluted from their original concentration at the site of the spill, and would further dilute once they entered the water, reducing the degree of impact. The amount of time that the concentration of contaminants would be measurable in the water would be short and the associated impact to aquatic biota important to special status fish (i.e. macroinvertebrates and algal communities) would be short-term, and would not be expected to adversely impact fish populations.

Under Alternative B, water for dust suppression would be obtained from the existing screened diversion on the Salmon River. Approximately 10 acre-feet per year of water would be needed each year of operation, with maximum daily use estimated at 55,000 gallons, which would result in a minor reduction in flows in the river. Reductions in flow of the Salmon River would be accounted for by the existing IDWR water use permit. Since water would be pumped through a screen and the reduction in flow would be small, no impacts to fish or fish habitat are expected.

There is no known literature on the effect of noise and vibration from blasting on fish, but there have been some studies on the hearing of salmon and on the effects of sonic booms on fish. Sound measurements made in a study by Popper and Clarke (1976) led to the conclusion that salmon are unlikely to detect sounds originating in the air unless the source is nearly directly overhead, but that they are sensitive to substrate-borne sounds. They also stated that hearing of salmon is poor when compared with carp and cod and speculated that hearing is likely to be masked by ambient noise in a turbulent river. Research on the effects of sonic booms on fish behavior and egg development indicated that yearling trout elicited no or very slight reactions to this disturbance and that sonic boom exposure caused no increase in egg mortality (Rucker 1973). In light of this research, and since the noise and vibration from blasting at the quarry site would dissipate before nearing the Salmon and East Fork Salmon rivers, and since noise would be masked by ambient noise levels in the rivers and would not originate in the stream substrate, noise and vibration from blasting would not be expected to impact fish in these rivers.

Alternative C

Under Alternative C, potential impacts to aquatic biota, special status fish, and fisheries habitat would be similar to Alternative B. However, new surface disturbance would occur on approximately 49 acres of vegetated and previously disturbed land as a result of mining in Pit 1 and Pit 2. Also, new disturbance would occur on up to 31 acres from exploration activities such as road construction and surface stripping. The amount of erosion generated and potential for sediment reaching the Salmon and East Fork Salmon rivers would be greater under Alternative C due to the increase in the area of surface disturbance. The quantity of fuel and lubricants used on site would also be greater and could result in an increased risk of leaks or spills reaching the rivers. However, the existing stormwater detention trench along the northeastern edge of the administration area would be modified. New stormwater detention basin would be constructed adjacent to the existing stormwater trench, providing an expanded area for stormwater runoff to collect and sediment to settle before draining into the Salmon River, reducing the risk of sediment and contaminant delivery to this river. As under Alternative B, implementation of BMPs and adherence to a Spill Prevention, Control and Countermeasures Plan would reduce the chance and extent of impacts. However, the risk of sediment and residual chemicals and petroleum products entering the East Fork Salmon River would still exist. There would be no stormwater detention basin in this portion of the Proposed Project Area, specifically during extreme precipitation events. In the unlikely event of failure of the stormwater detention basin by the administrative area, sediment and residual chemicals and petroleum products (fuels and lubricants, etc.) could be delivered to the Salmon River.

Water for dust suppression would be obtained from a proposed well under Alternative C as opposed to directly from the Salmon River. It is estimated that a daily maximum of approximately 87,000 gallons of water would be needed from the well. Water would be withdrawn under an approved water right for a maximum volume of 340 acre-feet per year. Water withdrawal from the well would likely have no effect on flow in the Salmon River or on habitat for salmonids.

Alternative D

Under Alternative D, potential impacts to aquatic biota, special status fish, and fisheries habitat would be similar to Alternative C with the following exceptions. An additional 24 acres of new surface disturbance would occur over Alternative C on vegetated and previously disturbed land as a result of mining in Pit 2-E and Pit 3 for a total of 73 acres of new surface disturbance. Additional disturbance could be created by exploration activities in an 18-acre area. The amount of erosion generated and potential for sediment reaching the rivers would be the greatest under this alternative due to the increase in total new surface disturbance. However, a new stormwater detention pond would be constructed southeast of Pit 2-E. This new detention pond, coupled with the proposed expansion of the existing stormwater trench by the administrative area and the construction of a new stormwater detention basin adjacent to this stormwater trench would provide two areas for stormwater runoff to collect and sediment to settle before draining into the Salmon and East Fork Salmon rivers. This would reduce the risk of sediment delivery to these river systems. In the unlikely event of failure of the stormwater detention basins during large precipitation events, sediment and residual chemicals and petroleum products could be delivered to the Salmon and East Fork Salmon rivers.

Under Alternative D, water for dust suppression would be obtained from a proposed well under an approved water right for a maximum volume of 340 acre-feet per year. It is estimated that a daily maximum of approximately 95,000 gallons of water would be needed from the well. Water withdrawal from the well would likely have no effect on flow in the Salmon River or on habitat for salmonids.

4.6.5 Wild Horses and Burros

Alternative A (No Action Alternative)

Under Alternative A, mining activities would cease and the site would be reclaimed. The appropriate management level of 185 animals in the Challis Herd Management Area (HMA) would be retained. There would be the potential for increased use of the project site by wild horses in the Challis HMA once reclamation is completed due to the reduction in mining operations and associated noise and human presence. However, its use for forage would be limited due to the low cover of vegetation on the site. Because frequency of use of the site by horses did not decrease significantly with the commencement of mining, it is unlikely that a substantial increase in use would be realized once mining operations cease.

Alternative B

Under Alternative B, use of the quarry by wild horses is expected to continue at its current low level. The appropriate management level of wild horses in the Challis HMA would be retained. Once mining operations cease, an increase in use could occur (see Alternative A).

Alternative C

Under Alternative C, use of the quarry by wild horses during the period of operation could potentially decline over current conditions due to increased mining activity and the removal of up to 35 acres of potential forage. However, given the current low level of use by horses, and since the quarry site does not contain crucial habitat, no impacts to the viability of the wild horse population would result. It is anticipated that the appropriate management level of wild horses in the Challis HMA would still be retained.

Alternative D

Potential impacts under Alternative D are similar to those described under Alternative C. However, increases in mining activity under this alternative would be slightly greater, resulting in the removal of approximately 54 acres of potential forage.

4.7 OTHER RESOURCES

4.7.1 Cultural Resources

Alternative A (No Action Alternative)

Under Alternative A, mining activities would cease and the site would be reclaimed. Based on past surveys of the quarry site for archaeological and historic resources, no known cultural resources would be disturbed by reclamation activities.

Alternative B

Only two cultural resources were identified in the Proposed Project Area during past surveys of the quarry site for archaeological and historic resources. These sites are not eligible for the National Register and one of the sites (10CR984, lithic scatter) has been mostly obliterated. Mining activity would not be in proximity to the other site (10CR508), a rock overhang/shelter, and no impacts to cultural resources would result.

Alternative C

Proposed exploration activities under Alternative C would overlap the rock overhang/shelter documented in the Proposed Project Area and could potentially damage or destroy it. However, this resource is not eligible for the National Register because of lack of evidence of occupation or use, and the overhang is generally unsuitable for habitation because of steep rock floors. Otherwise, impacts to cultural resources would be the same as those described under Alternative B.

If additional cultural resources are documented in the Proposed Project Area during surveys of previously unsurveyed areas, as described in Section 3.3.1, Chapter 3, then potential impacts to these resources would be assessed in the Final EIS.

Alternative D

Impacts to cultural resources under Alternative D would be the same as those described under Alternative C.

4.7.2 Tribal Treaty Reserved Rights and Interests

The goal of the Challis Resource Area regarding Tribal treaty rights is to identify and consider Native American issues and concerns in order to accommodate treaty and other legal rights of appropriate Native American groups in the multiple-use management of public lands. Government-to-government consultation with the Shoshone-Bannock Tribes is ongoing regarding the Proposed Project, and is detailed in Section 5.1.1. Issues and concerns that the Tribes have for the natural environment, such as the affect of sedimentation on salmon spawning habitat, are addressed under specific resources in this chapter.

Alternative A (No Action Alternative)

Under Alternative A, mining activities would cease and the site would be reclaimed. There would be no negative impacts to Tribal rights and interests. However, the topography and visual quality of the site would be permanently modified (change in shape, height, and presence of peaks) from past alteration of the landscape from mining operations. The view and experience of future generations of Tribal members using land in the vicinity of the quarry would be different from the past view and experience of previous generations of Tribal members.

Alternative B

Gates would remain at the entrance to the quarry site from SH-75 and on the existing power-line road to the south of the Proposed Project Area and would be locked during hours when the quarry was not operating. Locked gates after hours and mining during operating hours would limit uninhibited access of the quarry site by Shoshone-Bannock Tribal members, impacting the opportunity for Tribal members to freely exercise treaty reserved rights within the active quarry area. The BLM would work with the Shoshone-Bannock Tribal members regarding access needs so that treaty rights are honored.

The topography and visual quality of the site would continue to be modified, and modifications would be permanent (see Section 4.7.4). The experience of Tribal members that used cultural and traditional use sites in the vicinity of the quarry prior to mining activities would be modified and the view and experience of future generations of Tribal members using land in the vicinity of the quarry would be different from the view and experience of previous generations.

Alternative C

Impacts to Tribal treaty rights and interests would be similar to those under Alternative B. The impacts to topography and visual quality would be greater due to the proposed expansion of Pit 1 and Pit 2.

Alternative D

Impacts to Tribal treaty rights and interests would be similar to those under Alternative B and C. The impacts to topography and visual quality would be greater under Alternative D due to the proposed expansion of Pit 1 and Pit 2 and the addition of Pit 2-E and Pit 3.

4.7.3 Social and Economic Conditions

The study area for the social and economic analysis includes the greater Challis area (Challis area), which comprises the Challis, Patterson and Clayton ZIP code areas (83226, 83253, and 83227). This area includes the Three Rivers Stone Quarry and the area where most of the quarry employees reside. Economic impacts resulting from mining operations also may be felt in other communities outside the Challis area. These effects, however, are believed to be minimal and are only evaluated qualitatively.

The following sections address the direct economic, total economic, and social impacts of the four proposed alternatives on the greater Challis area, the fiscal impact on the City of Challis and Custer County, and Environmental Justice in Custer County. The economic analysis is for all three action alternatives at their maximum capacity (maximum employment). Since the No Action Alternative would only employ workers for a short period (during reclamation), this alternative is analyzed at its final capacity, when workers are no longer employed.

Direct Economic Effects

Direct effects include the economics of jobs directly associated with the quarry, such as equipment operators and splitters. It does not include other jobs in the Challis area generated by the quarry, such as truckers who transport the rock from the quarry to distribution areas. The baseline used for this analysis are the number of jobs proposed by alternative (summarized in Chapter 2, Table 2.8.1) and the wage rates of quarry employees (summarized in Chapter 3, Table 3.3-3). The wage rates disclosed in Chapter 3 were averaged and adjusted for the economic model to include benefits. These data were used to compute industrial output for the Three Rivers Stone Quarry by alternative.

Table 4.7-1 depicts the direct impacts of the four alternatives on the economics of the Three Rivers Stone Quarry. Direct impacts are reported by alternative as a percent change in earnings and industrial output from baseline conditions. Dollar figures are not reported because of the confidential nature of these data. Changes in employee numbers are reported in both numbers and percentages.

Table 4.7-1. Direct Economic Effects of the Three Rivers Stone Quarry by Alternative.

	Alternative A	Alternative B	Alternative C	Alternative D
Number of Employees	Loss of 75 jobs (100% decrease)	75 (0 % change; baseline)	Gain of 25 jobs (33% increase)	Gain of 37 jobs (49% increase)
Earnings (Three Rivers payroll output)	-100%	0 % change	+ 32%	+ 48%
Industrial Output	-100%	0 % change	+ 33%	+ 50%

Alternative A (No Action Alternative)

Under Alternative A, there would be a loss of 75 jobs and a 100 percent decrease in earnings and industrial output associated directly with the quarry.

Alternative B

Under Alternative B, the quarry would continue to employ approximately 75 workers for the duration of the proposed operations (3 to 5 years) and the earnings and industrial output associated directly with the quarry are expected to stay the same as current conditions. At the end of the 3- to 5-year proposed operation period, the impacts to employment, earnings, and industrial output would be similar to those under Alternative A.

Alternative C

Under Alternative C, there would be a gain of 25 jobs and a 32 percent and 33 percent increase in earnings and industrial output associated directly with the quarry, respectively. These increases would be realized over the duration of the proposed operations (up to 30 years).

Alternative D

Under Alternative D, there would be a gain of 37 jobs and a 48 percent and 50 percent increase in earnings and industrial output associated directly with the quarry, respectively. These increases would be realized over the duration of the proposed operations (up to 40 years).

Total Economic Effects

This section addresses the economics of jobs that are both directly and indirectly associated with the quarry (community level economics). Jobs that are indirectly associated with mining operations fall into the following sectors: agriculture, mining, construction, manufacturing, TCU (transportation, communication, and utilities), trade, FIRE (finance, insurance, and real estate), services, and governments. The services sector includes social services, education outside of the school, child care, personal services, businesses such as phone and internet, motels, eating establishments, etc. The trade sector includes wholesale and retail such as grocery stores, sporting good stores, etc. The government sector includes taxes and public schools. The transportation sector includes trucking (for the shipping of rock), communication, and utilities, etc.

The direct economic impacts described above were entered into a community-level input-output model developed for the Challis area to determine the total economic effects to this area. The general assumptions used in the community economic model are described below and are followed by the results of this model, which are addressed by alternative in terms of employment and income impacts. Additional model detail is documented in the administrative record (Economic Model Development Process).

- Economic activity outside of the greater Challis area would not be significantly affected by change in the Three Rivers Stone Quarry operations.

- The future economic structure of the county in the study area, including the economic base, wage rates, productivity, commuting patterns, local consumption patterns, and labor markets, would be similar to the existing structure.

- Commuting patterns would be similar to current patterns.

- Future spending patterns would remain similar to current trade patterns throughout the life of the project.

- All employee earnings would stay within the Challis area (e.g., proportion of earnings sent out of the country were not incorporated in the model as accurate figures for these numbers are difficult to obtain).

Alternative A (No Action Alternative)

Under the No Action Alternative, the existing quarry would not be expanded and mining operations would cease. Some reclamation activity would continue for a few years but would not involve significant employment. Closure of the Three Rivers Stone Quarry would result in the loss of 75 jobs directly related to the quarry, and would eventually cause the loss of another 106 jobs indirectly related to the quarry, associated with the payroll and purchase of supplies for the quarry for a total of 181 jobs lost (Table 4.7-2). The majority of the jobs lost would be in mining, but the transportation sector would also show considerable impacts. Overall, the impact would be about a 12 percent change of total employment in the Challis area.

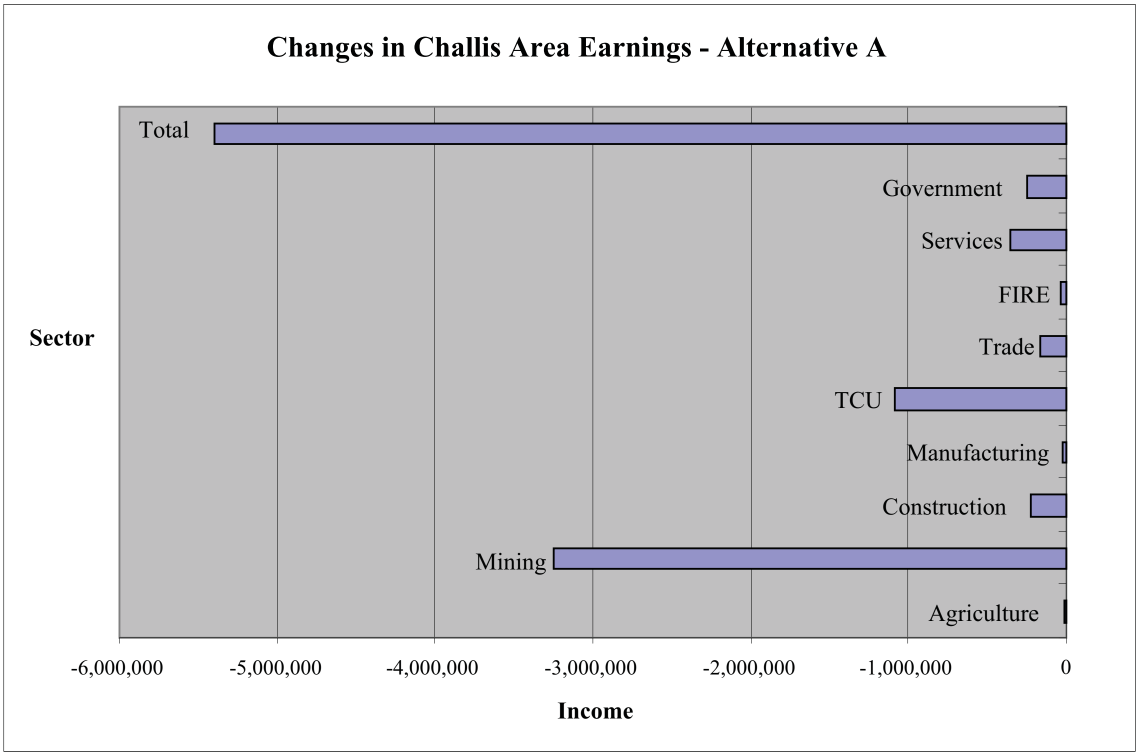
Table 4.7-2. Employment Impacts to the Challis Area Under Alternative A.

Employment Sector	Employment Impact (# Jobs Lost)	Percent Change to Challis Economy
Agriculture	1	0
Mining*	-87	-33
Construction	-7	-6
Manufacturing	-1	-11
TCU	-47	-82
Trade	-9	-5
FIRE	-2	-5
Services	-18	-3
Government	-9	-3
Total	**-181**	**-12**

*Includes 12 additional mining jobs indirectly related to the quarry, such as rock crushing; all other mining jobs are directly related to operations at the Three Rivers Stone Quarry.

Jobs at the Three-Rivers Stone Quarry are some of the highest paying jobs in the area, so the income loss would be considerable (see Figure 4.7-1). The Challis area would lose about $5.4 million in annual income if the quarry closed. The average wage rate of jobs lost would be about $30,000 per year.

Figure 4.7-1. Alternative A – Impact on Income (bars represent income loss).



Alternative B

Adoption of Alternative B would result in the continuation of current mining operations for 3 to 5 years with only limited expansion of activities. It is assumed for this analysis that the existing number of employees, earnings, and industrial output would stay the same and would not result in any changes to the Challis area economy (Table 4.7-3). The percent change in number of jobs in the Challis area related to the quarry and to the Challis economy would be zero.

Alternative B most accurately reflects current conditions at the quarry. This alternative was used as the baseline for comparing the other alternatives. Table 4.7-3 depicts the current and projected number of jobs directly and indirectly associated with the quarry, the current and projected earnings in the Challis area, and the percent change to the job numbers and economy projected under Alternative B.

Table 4.7-3. Employment and Economic Impacts to the Challis Area Under Alternative B.

Employment Sector	Current and Projected Employment (# Jobs)	Current and Projected Income in Challis Area (thousands)	Percent Change in Jobs and to the Challis Economy
Agriculture	1	$15	0
Mining*	87	$3,246	0
Construction	7	$230	0
Manufacturing	1	$27	0
TCU	47	$1,083	0
Trade	9	$162	0
FIRE	2	$36	0
Services	18	$351	0
Government	9	$243	0
Total	**181**	**$5,393**	**0**

*Includes 12 additional mining jobs indirectly related to the quarry, such as rock crushing; all other mining jobs are directly related to operations at the Three Rivers Stone Quarry.

Once the mining operations and reclamation proposed under Alternative B are completed (in 3 to 5 years), the impacts to the number of jobs and the changes to the Challis area economy would be similar to Alternative A.

Alternative C

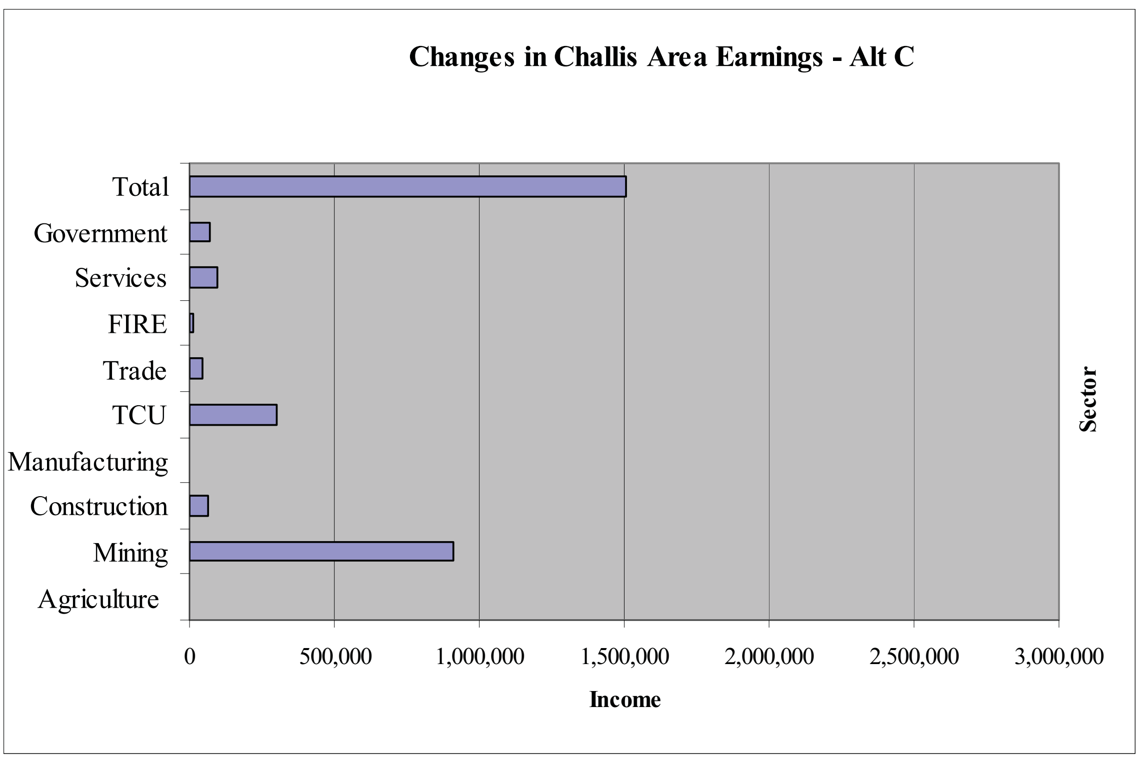
Alternative C would allow for an expansion of mining operations and would result in an increase in employment in the Challis area. Table 4.7-4 depicts the number of jobs that would be gained as a result of implementing Alternative C, total number of mining-related jobs (direct and indirect) projected for the Challis area, and the percent change to the economy in terms of all employment in the Challis area over current conditions. Expansion of the quarry would result in the gain of 25 jobs directly related to the quarry, and would eventually create an additional 26 jobs indirectly related to the quarry, for a total of 51 new jobs. This would equate to a total of 232 jobs when combined to the approximately 181 existing jobs). The impacts to the Challis area would be most evident in the mining, transportation, and service sectors, although the percent increase in new services jobs in the community would be relatively minor. Overall the project would result in about a 3 percent increase in total employment (mining- and non-mining-related) in the Challis area.

Table 4.7-4. Employment and Economic Impacts to the Challis Area Under Alternative C.

Employment Sector	Employment Impact (# Jobs Gained)	Total Jobs (Current + Projected New)	Percent Change to Challis Economy
Agriculture	0	1	0
Mining	25	112	9
Construction	2	9	2
Manufacturing	0	1	3
TCU	13	61	23
Trade	3	12	1
FIRE	0	2	1
Services	5	23	1
Government	2	11	1
Total	**51**	**232**	**3**

Most of the jobs created by the quarry expansion would be high paying jobs (mining and transportation) when compared to other jobs in the Challis area, with about half of the jobs paying $30,000 or more per year. The quarry expansion would generate about $1.5 million in new income annually to the area (Figure 4.7-2).

Figure 4.7-2. Alternative C – Impact on Income (bars represent income gain).



Alternative D

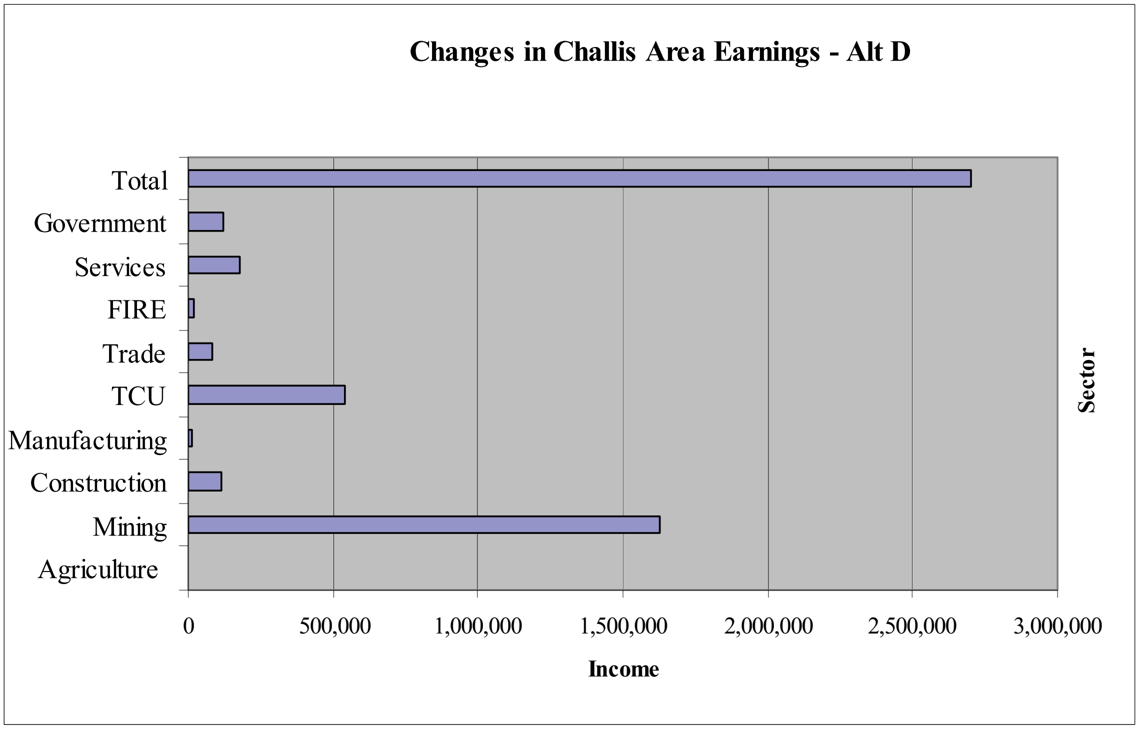
Alternative D would allow for long-term expansion of operations at the quarry. As new pits are developed, the quarry would gradually expand resulting in an increase in employment of about 49 percent over current operations. Table 4.7-5 depicts the number of jobs that would be gained as a result of implementing Alternative D, total number of mining-related jobs (direct and indirect) projected for the Challis area, and the percent change to the economy over current conditions in terms of all employment in the Challis area. Expansion of the quarry would result in the gain of 37 jobs directly related to the quarry, and would eventually create an additional 48 jobs indirectly related to the quarry, for a total of 85 new jobs. This would equate to an approximate total of 266 jobs when combined with the approximately 181 existing jobs). Most of the jobs created would be in mining, transportation and services, although the percent increase in new services jobs in the community would be relatively minor. There would also be some impacts on construction associated with building new housing for workers. The local government sector would also see some change due to the demands on schools and other community services. Overall the quarry expansion would result in about a 6 percent increase in total employment (mining- and non-mining-related) in the Challis area, as compared to the 3 percent increase estimated for Alternative C.

Table 4.7-5. Employment and Economic Impacts to the Challis Area Under Alternative D.

Employment Sector	Employment Impact (# Jobs Gained)	Total Jobs (Current + Projected New)	Percent Change to the Challis Economy
Agriculture	0	1	0
Mining	37	124	14
Construction	4	11	3
Manufacturing	1	2	6
TCU	24	71	41
Trade	5	14	3
FIRE	1	3	2
Services	9	27	2
Government	4	13	2
Total	**85**	**266**	**6**

The quarry expansion would generate about $2.7 million in new income to the area, as compared to $1.5 million under Alternative C (Figure 4.7-3). Like employment, impacts on income would also be realized primarily in the mining and transportation sectors. Income from government, services, trade, and construction jobs would also increase. The only sectors that would not see appreciable impacts from the quarry expansion are agriculture, manufacturing and financial services (FIRE).

Figure 4.7-3. Alternative D – Impact on Income (bars represent income gain).



Social Impacts

Merchants, public officials, and community leaders were interviewed in 2006 to gain insight into how the quarry and its workers affect social conditions in the Challis area. Challis is an isolated community with strong social cohesion and a strong sense of community. Most residents interviewed have lived in the community for many years and expect to retire in Challis.

Mining has a long history in the Challis area and residents who were interviewed support local mining operations. In particular, they value the good jobs and income that are provided by the mines. The 1997 closure of the Hecla Mine in Custer County had a significant impact on the community and surrounding area.

Local business leaders indicated that Three Rivers Stone Quarry workers were an important source of income for most area businesses. Merchants commented that they had modified their selection and advertisements to cater to quarry workers. Realtors indicated that the quarry had a positive impact on the market and that rental housing was difficult to find in Challis or Clayton. The quarry owners have responded to this problem by purchasing rental housing in Challis for quarry workers. Several merchants commented that they hoped seasonal workers with Work Visas or Resident Cards would be allowed to bring their families as the quarry expanded operations.

Population

The Challis area is relatively isolated from other employment and population growth, so workers laid off at the Three Rivers Stone Quarry under Alternative A would have few options for work in the region. Most quarry workers are young and could possibly leave the area. As the full impact of the closure settled in the Challis area, a total of up to 307 people could possibly leave the area (including the families of quarry workers) due to the loss of approximately 181 jobs directly and indirectly associated with the quarry. This is based on the assumption that each job equates to approximately 1.7 residents. However, it is likely that less people would leave the area in the short-term due to the recent increase in employment opportunities at the Thompson Creek Mine. Long-term reduction in population would depend on continued employment at the Thompson Creek Mine or other unforeseen changes to the employment base in the area. The only other significant source of population and economic growth in the area that would remain would be retirement and property development, and these are not robust enough to offset the impact of the proposed quarry closure.

Under Alternative B, the rate of population growth is projected to remain the same since no new jobs would be created by the mining operations. Once the mining operations are completed under Alternative B (i.e. in 3 to 5 years), the population would likely decrease over time as under Alternative A. Long term population growth under Alternative C and D is projected to be about 87 people, and 145 people, respectively, depending upon the family size of new workers. This growth in population would result from the new jobs that would be created at and associated with the quarry and is based on the assumption that each new jobs would result in approximately 1.7 new residents.

Many of the new workers at the quarry would be young workers due to the hard physical labor involved in mine operations. Over time some would settle in the area with their families. The demographics of the new seasonal and year-round splitters are projected to stay the same as under current operations, thus there would be an increase in the number of Hispanic residents in the Challis area. Currently, about 14 percent of the splitters are year-round residents with their families. It is expected that this rate of residency for splitters would continue under all action alternatives.

Housing

The availability of housing in the Challis area, both rental and for sale, would likely increase over time under Alternative A, due to the projected decrease in population related to the loss of jobs associated with the closure of the quarry. Under Alternative B, the availability of housing is expected to remain at the current levels, with the demand for rentals exceeding the supply. Once the mining operations are completed under Alternative B (i.e. in 3 to 5 years), the availability of housing would likely increase, as under Alternative A. Demand for housing would increase under Alternative C and D due to the projected increase in population and seasonal jobs, and there would be a need for the purchase of new rental housing units, and given the low number of unoccupied homes in the Challis area, potentially for the construction of new homes.

Community Services

Due to the reduction in population projected over time for the Challis area under Alternative A, there would likely be a reduction in the number of children enrolled in the schools in Challis and Clayton. This would result in a reduction in the amount of funding that these schools would receive from the State of Idaho. Under Alternative B, the need and use of community services would be similar to current levels for up to 5 years, and then there would likely be a reduction in school enrollment and funding as under Alternative A. Under Alternative C and D, because of the projected increase in population in the Challis area and the assumption that the rate of workers bringing their families with them would stay the same as under current conditions, the number of children attending schools is expected to increase. This could potentially increase the demand for teachers and would increase the amount of school funding from the state. Currently the Challis School District has a vacant school building, so the District could house additional students. The Limited English proficiency program currently in place in the District would likely need to expand given the expected increase in Spanish speaking students. The increase in population would also increase the demand for healthcare workers and could increase the number of police incidents.

Fiscal Impacts on the City of Challis and Custer County

The four alternatives for the project were examined to estimate their potential fiscal impacts on Custer County. The estimated fiscal impacts were not significant for any of the alternatives.

Property taxes would not be impacted by mining operations on BLM land, because BLM land is not subject to property taxes. No off-site improvements are planned for the quarry.

The quarry has direct access to State Highway 75, so the quarry would not incur costs to local road maintenance districts.

Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Population and Low-income Populations," mandates that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, policies, and activities on minority populations and low-income populations," (Federal Order 12898, 2/11/94). Evidence shows that areas of low income or minority populations suffer a disproportionate risk of succumbing to adverse environmental conditions in their community. Some examples of this problem include toxic waste facilities, garbage disposal areas, or unmonitored factory dumping in impoverished, ethnic areas. In order to protect the rights and health of these populations, this Executive Order establishes, within the NEPA framework, a system to analyze the demographics of a proposed location.

Before a policy or proposal is instated, the proposed area must be checked to see whether it will disproportionately affect minority or low-income populations. The standards used to analyze a given location are as follows: if the demographics of a proposed location show a minority or low-income population greater than two times that of the state average, then that area is considered one of potential environmental injustice. If the demographics of a proposed location show a minority or low-income population greater, but not two times greater, than the state average and there are community-identified environmental justice related issues, the case should be identified and addressed as a potential environmental justice case. If the demographics of a proposed location demonstrate minority or low-income populations is equal to or less than that of the state average, then the area is not considered a potential for environmental injustice and there is no reason to disregard the proposal due to ethnic or financial discrimination.

The demographic and income data for Custer County and Idaho State are described below. Based on these data, the Proposed Project would not result in the potential for environmental injustice. Although the low-income population in Custer County is greater than the state average, there have been no community-identified environmental justice related issues associated with this project. Although the minority population in Custer County is less than the state average, a large proportion of the people employed by L&W Stone Corporation at the quarry (primarily the seasonal workers) are minorities, and gain financially and socially by the mining operations.

Custer County

Tables 4.7-6 and 4.7-7 compare the ethnic demographics and poverty levels for Custer County to the Idaho State averages. These tables show that Custer County demonstrates ethnic populations less than that of the state average, and low-income population (below poverty level) greater, but not two times greater, than the state average. The percent of minority populations in Custer County is 6.2 percent less than the state average. The percentage of individuals in Custer County with income in 2003 below the poverty level is 0.2 percent greater than the state average.

Table 4.7-6. Demographics for Custer County in Comparison to Idaho State Average (%).

	American Indian	African American	Asian	Hispanic	Two or more races	Total Minority
Custer County	0.6	0.0	0.0	5.9	0.6	7.1
Idaho State	1.4	0.6	1.0	8.9	1.3	13.3

(U.S. Census Bureau, 2006b)

Table 4.7-7. Poverty Levels for Custer County in Comparison to Idaho Average.

Region	% Individuals Below Poverty Level
Custer County	12.0
Idaho State	11.8

(U.S. Census Bureau 2006b)

4.7.4 Visual Resources

Past and current operations at the Three Rivers Stone Quarry have created changes to the landscape that are visible to varying degrees, depending upon the perspective, to users of the area. The visual resource analysis was conducted from the six Key Observation Points (KOPs) described in Chapter 3, Section 3.3.4 of this EIS. Depending on the alternative selected, additional changes to the landscape would occur and would be visible from these KOPs. The KOPs attempt to characterize the landscape from areas where the landscape is frequently visible by travelers, recreationists, residents, and other users of the area. Contrasts that are not visible from any of the KOPs would only be viewed by mine personnel and the occasional recreationist, such as a cross country hiker, hunter, or horseback rider. Therefore, visual contrasts arising from proposed actions that would not be visible from the six KOPs are not discussed in this analysis.

Impacts in this visual resources analysis are described as short-term or long-term and direct or indirect. Short-term visual impacts are those that would be visible for up to 5 years following the origin of impact. Long-term impacts would be visible 10 years after the origin of impact. Direct visual impacts are visible at the same time and location where the activity that caused the impact occurred. Indirect visual impacts become visible in areas or at times removed from the origin of the impact.

The analysis of visual impacts is based on the Visual Resource Management (VRM) system outlined in the Visual Resources Section 3.3.4. Visual impacts are described in terms of form, line, color, and texture. The analysis also considers perspective, line-of-sight obstructions, and observer activity based on the various land uses of the surrounding area. The photographs presented in Section 3.3.4, depict past visual impacts associated with mining operations at the quarry site. The visual simulations presented in Appendix C depict what the landscape would look like after the quarry expansion is completed and site reclaimed. These simulations represent how the Proposed Project Area would look under Alternative D and represent the "worst case scenario" in terms of potential visual impacts. A combination of the photographs, visual simulations, and site visits were used as the basis for this analysis.

The impact analysis describes increases or decreases in visual contrasts in terms of form, line, color, and texture. Some project actions would increase visual contrasts and other project actions would reduce visual contrasts. The analysis describes degrees of contrasts using criteria outlined in BLM Manual 8431; descriptive terms used include none, weak, moderate, and strong. Where elements of the proposed project would not be visible or perceived, there would be no impact. A weak degree of contrast would be seen but would not attract attention. A moderate degree of contrast would begin to attract attention and would begin to dominate the characteristic landscape. A strong degree of contrast would demand attention, would not be overlooked, and would be dominant in the landscape.

Existing Conditions versus Environmental Baseline Conditions for Visual Resources

The existing conditions represented in Section 3.3.4 from KOP 1 through KOP 6 (Figures 3.3-7 through 3.3-12) would typically be used as environmental baseline conditions for the assessment of visual impacts. An exception has been made for this EIS due to activities that have occurred at the quarry site in the recent past. This distinction becomes necessary because site conditions in 1992 represent the most recent level of disturbance analyzed under NEPA by the BLM. Visual impacts that have occurred at the site between 1992 and 2005 (Figures 3.3-1 through 3.3-5, Chapter 3) have not been formally analyzed. This analysis attempts to analyze those impacts that have occurred at the quarry site since the last BLM-approved level of disturbance.

Alternative A (No Action Alternative)

Direct Impacts

Direct visual impacts to visual resources would occur as a result of reclamation activities for approximately 2 years. Reclamation activities would result in moderate visual contrasts over the short-term and weaker visual contrasts over the long-term as equipment is removed and reclamation projects have time to take effect. Various degrees of visual contrast would be evident at the Proposed Project Area from perspectives associated with KOPs 1, 2, 3, and 6. A return to visual baseline conditions is impossible now due to permanent alterations to the landscape.

Administrative Area and Mining Roads

Surface disturbance at the administrative area and on the main mine access road (Figure 2.1-1) would increase over the short-term as reclamation activities are implemented. The increase in contrasts of line and texture at the administrative area would be moderate over the short-term when viewed from KOP 6 and weak when viewed from KOP 1 and 2. The areas would be roughened in order to prepare a seedbed. The texture would become coarser and line contrast could become increased along margins of the reclaimed areas adjacent to existing plant communities. Long-term visual contrast in line and texture at the administrative area and mining roads would eventually become weak as vegetation becomes established. Seeded vegetation could begin to resemble adjacent plant communities after approximately five growing seasons (specifically grasses and forbs) but sagebrush would not be completely established for at least ten years (Monsen 2000). Contrasts at the administrative site would be visible only from KOP 6. Contrasts associated with mining roads would be visible from KOP 1, KOP 2, and KOP 6 but would not be visible from other perspectives due to line-of-sight obstructions.

The appearance of heavy equipment used during reclamation activities would create moderate contrasts in the shape of certain forms on the landscape when viewed from KOP 6 over the short-term and weak contrasts when viewed from KOP 1 and KOP 2. Reclamation equipment would increase the appearance of regular standard geometric figures (e.g. squares, circles, cubes) in a landscape dominated by complex irregular geometric forms under baseline conditions. Over the long-term heavy equipment would be removed and there would be no direct visual contrasts associated with them.

Pit 1

The removal of mineral material at Pit 1 since 1992 has altered the appearance of landscape form, texture, line, and color. The reduction in dimensional mass of Pit 1 has altered the shape of the area from a shallow concave depression with scattered irregular rock outcrops to a deep slot-cut with angular, smooth textured rock features (Figures 3.3-1 through 3.3-3). The rock faces on either side of the slot cut are referred to in Figure 2.3-1 as the footwall and highwall. The smooth texture of the Pit 1 highwall and footwall promote increased color and texture contrasts by being more reflective than the more rugged rock outcrops that once appeared on this landscape. Recently exposed mineral materials display lighter hues of the browns and grays than the darker, more weathered rock outcrops and talus of the vicinity. The increased degree of visual contrasts at Pit 1 depends on proximity, perspective, and reclamation. Contrasts at Pit 1 would continue to be visible from KOPs 1, 2, 3, and 6. The increase in form, color, and texture contrast over the short-term would be strong when viewed from KOP 6, moderate when viewed from KOP 2, and weak when viewed from KOP 1 and KOP 3. Reclamation at Pit 1 would partially diminish some color and texture contrasts over the long-term. Coloring the highwall and footwall of Pit 1 could reduce the appearance of smooth-textured rock faces and reflectivity at Pit 1. If rock coloring is effective at reducing color and texture contrasts, the long-term contrasts at Pit 1 would move from strong to moderate at KOP 6, from weak to none at KOP 3, and from moderate to weak at KOP 1 and KOP 2.

Pit 2

None of the visual contrasts at Pit 2 would be visible from any of the KOPs due to perspective and line-of-sight obstructions.

Waste Rock Storage Areas

Reclamation associated with the Pit 1 rock storage area would increase the appearance of talus slopes over the long-term. Mineral material accumulation at the Pit 1 rock storage area since 1992 has resulted in a noticeable alteration of form in the localized landscape. The existing volume of rock piles would result in localized areas of short-term visual contrasts in the form, texture, and color elements of the landscape. Long-term contrasts from the Pit 1 rock storage area would be partially diminished as a result of reclamation activities. For example, contouring of the talus would diminish contrasts in landscape form and line while rock coloring could diminish some color contrasts over the long-term. However, long-term visual contrasts at the Pit 1 rock pile would persist from the increased amounts of talus, greater dimensional mass of the hillside, and the burial and removal of vegetation. The Pit 1 rock pile would become a more prominent feature of the landscape than it was under baseline conditions because talus slopes are more complex features than the surrounding shrub-steppe vegetation. The long-term increase in visual contrast at the Pit 1 rock storage area would depend on perspective and proximity. Until reclamation was complete, the short-term increase in form and texture contrasts would be strong when viewed from KOP 6 and moderate from KOP 1 and KOP 2. Upon completion of reclamation, form and texture contrasts from KOP 6 would be diminished from strong to moderate, while these contrasts from KOP 1 and KOP 2 would be diminished from moderate to weak. These contrasts would not be visible from perspectives associated with KOPs 3, 4, and 5.

None of the visual contrasts at the Pit 2 rock storage area would be visible from any of the KOPs due to perspective and line-of-sight obstructions.

Indirect Impacts

Indirect visual impacts from reclamation would include the appearance of heavy equipment along SH-75 (The Salmon River Scenic Byway) as traffic moved into and out of the reclamation site. Traffic on the highway would result in a weak increase in visual contrast over the short-term. These contrasts are expected to cease after the 2-year reclamation period.

Dust plumes from reclamation activities would continue to temporarily and partially obscure views of the landscape in the vicinity of the quarry site during periods of high winds. Visual contrasts arising from fugitive dust would generally be of short duration but would ultimately depend on the duration of the corresponding wind event. Dust would occasionally be visible over the short-term from up to 2 miles away depending on wind direction, aspect, and line-of-site. Indirect visual impacts from dust would be visible most often from the north and east of the project site, a result of the northwesterly wind pattern. Short-term contrasts from dust would occasionally be moderate from KOPs 2 and 6, and weak from KOPs 1, 3, 4, and 5. The appearance of dust originating from the quarry site would decrease incrementally over the long-term as reclamation activity is reduced and vegetation becomes established in disturbed areas. Long-term contrast from fugitive dust would be weak and is expected to return to baseline levels after all seeded vegetation becomes completely established (i.e., at least 10 years after planting). Dust suppression techniques would diminish the potential for dust to obscure the landscape for extended periods.

Implementation of the proposed weed management program would help achieve a return of naturalness at the quarry site by preventing establishment of vegetation that could otherwise contrast with the surrounding plant communities and limit the growth and vigor of new seedlings.

Summary

In summary, reclamation would diminish some visual contrasts relative to existing conditions and some contrast would persist long-term. Certain portions of the quarry site (i.e. Pit 1 footwall and Pit 1 waste rock storage) would continue to present moderate to weak increases of texture, form, and line contrasts over the long-term despite reclamation efforts. Meanwhile, reclamation would eliminate visual contrasts on other portions of the quarry. The mining roads and administration staging area, for example, would blend with the surrounding landscape resulting in weak or no visual contrast after successful reclamation. Short-term visual contrasts in landscape form, color, texture, and line at Pit 1 and the Pit 1 rock storage area would be strong. Reclamation would diminish some of these visual contrasts over the long-term. For example, contouring of the talus slope at the Pit 1 rock storage area would reduce the degree of visual contrast in form and line features. Rock coloring at Pit 1 and at the Pit 1 rock storage area could diminish the degree of visual contrast in the element of color. Long-term visual contrasts would move from strong to moderate at KOP 6, from weak to none at KOP 3, and from moderate to weak at KOP 1 and KOP 2. Reclamation would diminish visual contrasts at the quarry site, and the site would begin to match the surrounding landscape after approximately 5 years.

Alternative A, over the short-term, would meet VRM Class II objectives when viewed from KOP 1, KOP 3, KOP 4, and KOP 5 but would not meet those objectives when viewed from KOP 2 and KOP 6. Upon completion of reclamation, Alternative A would meet VRM Class II objectives from all KOPs.

<u>Alternative B</u>

Direct Impacts

Direct visual contrasts under Alternative B would be similar to those described under Alternative A but would be greater in duration because mining operations would continue for 3 to 5 years. Short-term visual contrasts at the quarry would continue as portrayed in the photographs of existing conditions (Figures 3.3-7 through 3.3-13). Reclamation would occur during and following completion of specific mining operations and would be completed after approximately 5 years. As with Alternative A, reclaimed vegetation could begin to resemble adjacent plant communities approximately five growing seasons after seeding (specifically grasses and forbs), but shrubs would not be completely established for at least 10 years from the seeding date (Monsen 2000).

Administrative Area

Structures (e.g. trailers and storage facilities) and equipment during the operational period would continue to increase form and color contrasts from the appearance of regular standard geometrical figures (e.g. squares, circles, cubes) relative to baseline conditions. Of the six KOPs analyzed, direct visual impacts at the administration area would be visible only from KOP 6. Items visible would include personal vehicles, industrial vehicles, mining equipment, pallets, trailers, storage facilities, tents (if assembled), an electrical transmission line, power poles, and flagstone material. Features and activities at the administration area would result in strong visual contrasts in the color and form elements of the landscape when viewed from KOP 6 over the short-term and the area would appear as an industrial site during the operational period with a corresponding reduction in naturalness. Most motorists traveling past KOP 6 would have view durations of approximately 30 seconds based on average rates of travel along SH-75. Motorists traveling from north to south would have a greater likelihood of experiencing contrasts at the administrative area than those traveling from south to north due to perspective. Visual impacts associated with reclamation in the administration area would be the same as those described under Alternative A.

Pit 1

The visual contrasts that have occurred at Pit 1 since 1992 are the same as those discussed under Alternative A. However, Pit 1 would continue to operate under this alternative, so the reduction of color and texture contrasts that results from reclamation would occur 5 years later than under Alternative A. Visual contrast at Pit 1 would increase over the short-term from the appearance of heavy equipment, structures, workers, removal of mineral material, and surface disturbance. There would be an increase in form contrasts visible at the footwall of Pit 1 relative to Alternative A because more mineral material would be removed there. Meanwhile, color and texture contrasts associated with the highwall from KOP 3 would decrease relative to Alternative A because mining activities would reduce the height of that feature, making its smooth reflective face less visible. The short-term increase in form, texture, and color contrasts at Pit 1 would be strong when viewed from KOP 6 and moderate when viewed from KOP 1 and KOP 2. Reclamation activities at Pit 1, such as coloring the highwall and footwall, would partially diminish visual contrasts over the long-term for the same reasons discussed under Alternative A. Contrast at Pit 1 would move from strong to moderate at KOP 6 and moderate to weak from KOP 1 and KOP 2.

Pit 2

Visual contrasts associated with Pit 2 would not be visible from any of the KOPs.

Waste Rock Storage Areas

The Pit 1 waste rock storage area would present observers with contrasts in landscape form, texture, and color as material accumulated there. The benches of the Pit 1 waste rock storage area would reduce the naturalness of the area because the terraced benches would create regular horizontal lines in the upland landscape where irregular vertical lines often dominate. The area would also present alterations in landscape color and texture, relative to 1992 conditions, as vegetated areas that appeared as fine textured browns and greens have since become covered by rock resulting in coarse slopes of darker browns. The short-term increase in form and color contrasts would be strong when viewed from KOP 6 and moderate when viewed from KOP 1 and KOP 2. Reclamation would diminish some of the contrasts of the Pit 1 rock storage pile for the same reasons discussed under Alternative A. After reclamation, long-term form and color contrast at KOP 6 could be diminished from strong to moderate, while contrasts at KOP 1 and KOP 2 could move from moderate to weak. Contrast at KOP 3 would be weak. The Pit 2 rock storage area would not be visible from any of the KOPs due to line-of-sight obstructions.

Mining Roads

Mining roads would continue to present observers with localized areas of moderate visual contrast. The movement of vehicles along these roads during mine operation would occasionally draw the attention of casual observers. These contrasts would be moderate when viewed from KOP 6, and weak when viewed from KOP 1 and KOP 2 during the operational period of the quarry (3 to 5 years). These contrasts would begin to diminish after reclamation. Long-term visual impacts from reclamation of mining roads would be the same as those described for Alternative A.

Indirect Impacts

Vehicle traffic along SH-75 would continue at its current rate from the hauling of flagstone from the quarry and workers commuting to and from the quarry, as described in Section 4.7.5 below. This traffic would result in a weak increase in visual contrasts along the highway as the appearance of trucks and personal vehicles would be increased (primarily between the quarry and Challis and Challis and Arco) relative to 1992 conditions for 3 to 5 years.

The visual contrasts from fugitive dust plumes would be similar to those described under Alternative A, but dust would temporarily and partially obscure views of the landscape over a longer operational time period. Increased contrasts from dust could result in temporary but recurring moderate visual contrasts from KOPs 2 and 6, and weak visual contrasts from KOPs 1, 3, 4, and 5. Fugitive dust would begin to subside at the site as vegetation on reclaimed areas becomes established on bare soils. This would take up to 5 years longer than under Alternative A, due to the 3 to 5-year operational period. Dust would generally be visible from up to 2 miles away from the quarry site depending on wind direction. Ongoing dust suppression efforts would diminish the potential for dust to obscure the landscape for extended periods.

Summary

In summary, visual contrasts at the quarry site would be similar to those discussed under Alternative A but operational impacts would continue for up to 5 years resulting in a prolonged duration of visual contrasts arising from land form alteration, vehicles, structures, and surface disturbance at the site relative to Alternative A. Increased contrast in landscape form and texture would be strong when viewed from KOP 6, and moderate when viewed from KOP 1 and 2. Reclamation would partially diminish the degree of short-term contrasts at the site for the same reasons as those discussed under Alternative A but alterations in landscape form would be visible at Pit 1 and the Pit 1 rock storage area over the long-term. Long-term visual contrasts at the site could move from strong to moderate when viewed from KOP 6 and moderate to weak when viewed from KOP 1 and 2. Direct visual contrasts would not be visible from the perspectives of KOPs 3, 4, or 5. After 5 years of operation plus 2 years of post-operational reclamation, visual contrasts would diminish and prominent features at the site could begin to match the surrounding landscape after approximately 10 years.

Alternative B, over the short-term, would meet VRM Class II objectives when viewed from KOPs 1, 3, 4, and 5 but would not meet those objectives when viewed from KOP 2 and KOP 6. Upon completion of reclamation, Alternative B would meet VRM Class II objectives from all KOPs.

Alternative C

Direct Impacts

Administrative Area

The visual contrasts associated with the administrative area would be similar in nature but greater in duration than those described under Alternative B. Operational contrasts would be visible for up to 27 years longer than those described under Alternative B and there would be some increased visual contrasts from grading and stormwater management activities. Grading the administrative area and constructing a stormwater detention pond, in addition to the structures and vehicles present at the site would result in a strong increase in the form, color, and texture elements of the landscape over the long-term when viewed from KOP 6.

The area would not be visible from any other KOPs considered in this analysis. Visual impacts associated with reclamation of the administration area would be the same as those described under Alternative A.

Pit 1

Direct visual contrasts from mining activity at Pit 1 would be similar but more extensive than those described under Alternative B. Pit 1 would extend to the north into what is now the Pit 1 rock storage area. Surface disturbance and removal of mineral material would reduce the dimensional mass and complexity of the landscape over the long-term. The footwall along the northwest portion of Pit 1 would become smooth and angular under this alternative. However, there would be less contrast in color and texture relative to Alternatives A and B from KOP 3 because the highwall feature would be leveled (see Appendix C, Figures 5 through 8). Leveling the highwall would decrease landform complexity from perspectives associated with KOPs 1, 2, 4, and 6 because the vertical highwall feature would become flatter. In place of the highwall, more background landscape would be visible (Appendix C, Figures 9 and 10). The floor of Pit 1 would become deeper relative to Alternative B but the pit floor would not be visible from any of the KOPs due to line-of-sight obstructions. The degree of contrasts would depend on proximity and perspective. The removal of mineral material at Pit 1 would strongly increase land form and texture contrasts over the long-term when viewed from KOP 6. These contrasts would be moderate when viewed from KOP 1 and KOP 2, but weak when viewed from KOP 4. There would be no contrast visible from KOP 3 and KOP 5. The visual contrasts from reclamation at Pit 1 would be the same as those described under Alternative A. Coloring of the footwall, if applied, could diminish color and texture contrasts for the same reasons as those discussed under Alternative A.

Pit 2

There would be no direct visual contrasts visible at any of the KOPs from the operations at Pit 2 due to line-of-sight obstructions.

Waste Rock Storage Areas

Visual contrasts at the Pit 1 waste rock storage area would be similar to those described under Alternative B. Operational impacts could be visible over the long-term under this alternative if reclamation is not employed within 10 years. Some of the waste rock present at the Pit 1 waste rock storage area would be moved to the Pit 2 waste rock storage area, reducing the appearance of talus near Pit 1. Although there would be reduced talus at the Pit 1 waste rock storage area, visual contrasts would not necessarily be reduced there because mining activity and surface disturbance would occur where the transferred waste rock once rested. Form, texture, and color contrasts at the Pit 1 waste rock storage area would be strong over the long-term when viewed from KOP 6, while these contrasts would be moderate when viewed from KOP 1 and KOP 2. Reclamation would diminish visual contrasts at KOP 6 from strong to moderate, while contrasts from KOP 1 and 2 would be diminished from moderate to weak. These contrasts would not be visible from perspectives associated with KOP 3, KOP 4, and KOP 5 due to line-of-sight obstructions.

Visual impacts associated with the Pit 2 waste rock storage area would be the same as those described under Alternative B. Although the Pit 2 waste rock storage area would be expanded under this alternative relative to Alternative B, the expansion area would not be visible from any of the KOPs due to line-of-sight obstructions.

Mining Roads

Visual contrasts associated with mining roads would be similar to those described under Alternative B except that operational impacts would appear on the landscape for up to 27 additional years due to an increased operational period. The degree and extent of visual contrast from mining roads under this alternative would be the same as Alternative B, but the duration of those contrasts would be greater under this alternative. Reclamation would diminish contrasts associated with the main mine access road for the same reasons discussed under Alternative A.

Exploration

The area proposed for exploration would not be visible from any of the KOPs. However, there could be a weak increase in form and color contrasts associated with equipment in this area that could be visible from KOP 4, depending on the height of the equipment used for exploration. A drill rig for example, could potentially draw the attention of the casual observer from KOP 4, particularly if there was movement associated with the equipment. Direct visual contrasts at the exploration area would be short-term if exploration activities were complete within 5 years or long-term if exploration activities occurred beyond the 10-year time frame.

Indirect Impacts

Some indirect visual contrasts would be greater under Alternative C relative to Alternative A or Alternative B due to the proposed expansion of and increased duration of operations in the quarry. Indirect visual contrasts would result during the mining process from vehicle traffic and dust.

The appearance of traffic along SH-75 would increase, as described in Section 4.7.5 below, from the hauling of flagstone from the quarry and workers commuting to and from the quarry, resulting in similar but greater visual contrasts over a longer time period. This would increase the appearance of trucks and personal vehicles on the highway (primarily between the quarry and Challis and Challis and Arco) relative to 1992 conditions for up to 30 years.

Although the amount of dust generated during daily and annual operations under Alternative C would be potentially greater than under Alternatives A and B, the appearance of dust and level of associated visual contrast would be similar. However, the potential for dust to obscure views of the landscape would be extended under this alternative relative to Alternatives A and B due to the proposed increase in operational period. Concurrent reclamation activities would reduce the amount of fugitive dust associated with wind-exposed bare ground and dust suppression efforts would diminish the potential for dust to obscure the landscape for extended intervals. Visual contrasts from dust would occasionally be moderate from KOPs 2 and 6, and weak from KOPs 1, 3, 4, and 5. Dust plumes would occur for short intervals, primarily during the dry season (June-September) for up to 30 years. Increased dust would temporarily be visible during high wind events from up to 2 miles away from the quarry.

Summary

In summary, visual contrasts at the KOPs would depend on perspective and the stage of operations/reclamation at the quarry. There would be a strong increase in landscape form, color, and texture contrasts visible from KOP 6 until reclamation was complete. These contrasts would be moderate when viewed from KOP 1 and KOP 2. Reclamation activities would diminish some of the contrasts visible from KOPs 1, 2, and 6. For example, contrast in landscape line, form, and color would be partially diminished as the remaining rock at the Pit 1 waste rock storage area was contoured to match the topography of the existing landscape and colored, or modified in another BLM-approved manner, to better resemble the weathered talus of the region. Direct contrasts would be weak when viewed from KOP 3 moving to none once the Pit 1 highwall became reduced in height and exploration activities ceased. There would be a long-term weak increase in landscape form contrast at KOP 4 from leveling of the Pit 1 highwall. There would be no direct contrast visible from KOP 5 but indirect impacts would occasionally cause weak contrasts there over the long-term. After reclamation was successfully completed, some contrasts would be partially diminished. Contrasts in landscape color and texture could move from strong to moderate at KOP 6, and from moderate to weak at KOP 1 and KOP 2, but alterations in landscape form would be visible at Pit 1 and the Pit 1 waste rock storage area over the long-term. Some reclamation at the site would be concurrent with operations and would diminish contrasts once completed.

The quarry site would begin to match the surrounding landscape after approximately 35 years.

Alternative C, over the short-term, would meet VRM Class II objectives when viewed from KOPs 1, 3, 4, and 5 but would not meet those objectives when viewed from KOP 2 and KOP 6. Upon completion of reclamation, Alternative C would meet VRM Class II objectives from all KOPs.

Alternative D

Direct Impacts

Administrative Area

Visual contrasts associated with the administrative area would be similar to those described under Alternative C in terms of type and extent but would be greater in terms of duration due to the increased operational period (40 years) proposed under this alternative. Long-term form and color contrasts from KOP 6 would continue to be strong for up to 40 years and would begin declining once equipment is removed and reclamation is implemented. Visual contrasts from reclamation of the administration area would be the same as those described under Alternative A.

Pit 1

Direct visual contrasts from mining activity at Pit 1 would be the same as those described under Alternative C in terms of type and extent but could be greater in terms of duration due to the increased operational period proposed under this alternative.

Pit 2 and Pit 2-E

Visual contrasts associated with Pit 2 would not be visible from any of the KOPs, as under Alternatives A, B, and C. However, direct visual contrasts from the operation of the Pit 2 expansion area (Pit 2-E) would occur because contrasts in the form, color, and texture at Pit 2-E would be visible from KOP 6 and KOP 2. Specifically, the rock outcrop knob that appears on the horizon from these perspectives would be reduced in height and eventually removed as mining activity progressed, (see Appendix C, Figures 5 and 6). Surface disturbance near the top of the knob would moderately increase color and texture when viewed from KOP 6 and KOP 2 because the knob would display lighter hues of browns and grays as weathered mineral materials were removed. After reclamation, contrasts in color would be diminished but there would be a localized reduction in landscape complexity, as the rocky outcrop would become level and the horizon would become partially smoothed.

Landscape texture at the rocky outcrop knob would be altered from coarse to fine and shadows would be less apparent. There would also be a weak increase in horizontally trending lines where the rock outcrop once stood and a weak increase in texture and color contrasts when viewed from KOP 6 and KOP 2 over the long-term. Contrasts at Pit 2 would not be visible from KOPs 1, 3, 4, or 5.

Pit 3

Direct visual impacts from mining activity at Pit 3 would not be visible from any of the KOPs due to line-of-sight obstructions. However, there could be weak contrasts in form visible from KOP 4 depending on the height of equipment used for mining operations. For example, a drill rig may temporarily increase contrasts, particularly if there was movement associated with the equipment.

Waste Rock Storage Areas

Direct visual contrasts at the Pit 1 waste rock storage area during operations and after reclamation would be the same as those described under Alternative C. Reclamation would be concurrent with operations under Alternative D, so reclamation of the Pit 1 waste rock storage area would occur under the same schedule as Alternative C. Visual impacts at the Pit 2 waste rock storage area would not be visible from any of the KOPs due to line-of-sight obstructions.

Exploration

Although the exploration area would be smaller under Alternative D, visual contrasts associated with the exploration area would be the same as those described under Alternative C. Surface disturbance would not be visible from any of the KOPs. Equipment of a certain height would occasionally be visible from KOP 4, resulting in a weak increase in form, and possibly color contrast.

Mining Roads

Visual contrasts associated with mining roads would be similar to those described under Alternative B but duration of those impacts would be greater under this alternative. The degree and extent of visual contrast from mining roads under this alternative would be the same as Alternative B, but the main mine access road would not be reclaimed for 40 years.

Indirect Impacts

Some indirect visual contrasts would be greatest under Alternative D relative to the other alternatives due to the proposed increased expansion of and duration of operations in the quarry. Indirect visual contrasts would result during the mining process from vehicle traffic and dust.

Although the amount of dust generated during daily and annual operations under Alternative D would be potentially greater than under the other alternatives, the appearance of dust and level of associated visual contrast would be similar. However, the duration of indirect visual contrasts from fugitive dust would be greater due to the proposed increase in operational period under this alternative. Contrasts from dust in the vicinity of the quarry site could occur for up to 40 years. Dust suppression efforts would diminish the potential for dust to obscure the landscape for extended intervals.

The appearance of traffic along SH-75 would increase for the same reasons discussed under Alternative B and C resulting in similar visual contrasts but over a longer time period. Trucks and personal vehicles on the highway (primarily between the quarry and Challis and Challis and Arco) would increase the most under this alternative.

Summary

In summary, visual contrasts at the KOPs would depend on perspective and the stage of operations at the quarry. There would be a strong increase in landscape form, color, and texture contrasts visible from KOP 6 over the long-term resulting from landform alterations at Pit 1 and Pit 2 and from activities and structures at the administrative area. These impacts would be moderate when viewed from KOP 1 and KOP 2. Reclamation activities would diminish some of the contrasts visible from KOPs 1, 2, and 6. For example, contrast in landscape form would be partially diminished as rock from the Pit 1 waste rock storage area would be used as backfill for Pit 2. Contrasts in line, form, and color would be partially diminished as the remaining rock at the Pit 1 waste rock storage area was contoured to match the topography of the existing landscape and colored, or modified in another BLM-approved manner, to better resemble the weathered talus of the region. After successful reclamation, contrasts in landscape color and texture could move from strong to moderate at KOP 6 and from moderate to weak at KOP 1. Contrasts at KOP 2 would continue to be moderate even after reclamation due to permanent alterations in landscape form. Direct contrasts in form and color from KOP 3 and KOP 4 would be weak moving to none once the Pit 1 highwall became reduced in height and exploration activities ceased. There would be no direct contrast visible from KOP 5 but indirect impacts would occasionally cause moderate to weak contrasts there over the long-term. The major feature that would increase visual contrasts under Alternative D relative to Alternatives B and C is Pit-2E (Figure 2.7-1). Activities at Pit 2-E would reduce landscape complexity by removing a rock outcrop feature, and would increase the appearance of horizontal lines in an area where vertical lines are common. Some reclamation at the quarry site would be concurrent with operations and would diminish contrasts once completed. The quarry site would begin to match the surrounding landscape after approximately 45 years.

Alternative D, over the short-term, would meet VRM Class II objectives when viewed from KOPs 1, 3, 4, and 5 but would not meet those objectives when viewed from KOPs 2 and 6. Upon completion of reclamation, Alternative D would meet VRM Class II objectives from all KOPs.

4.7.5 Transportation, Access and Public Safety

Alternative A (No Action Alternative)

Under Alternative A, mining activities would cease and all roads associated with the operations, except the power-line access road, would be ripped, recontoured to blend with the natural slope, and revegetated. The power-line access road would be reclaimed to a single-lane road for future public access, and gates, which currently limit Tribal and restrict public motorized access, would be removed. Traffic associated with mining operations on SH-75 would no longer occur, resulting in a reduction of current daily traffic on SH-75 by about 7 percent.

Alternative B

Under Alternative B, a portion of the existing power-line access road and other access roads would continue to be used and constructed, as needed, to facilitate extraction of flagstone. Access roads would be upgraded, where needed, to ensure compliance with mine safety regulations (see Chapter 2, Section 2.4.9). The roads would be adequate for quarry production, motorized access and safety. These roads would be reclaimed once no longer necessary for operations. Due to liability and safety concerns, public access to or through the site would continue to be restricted for the life of the quarry (5 years) as under the current operating plan. Members of the public, government, and private organizations (i.e. the power company) would be able to obtain access to or through the site during operating hours by check-in with quarry personnel; access would not be available during periods of non-operation. Tribal members would work directly with the BLM regarding access (see Section 4.7.2).

Alternative B is considered the baseline for traffic counts and impacts of quarry-generated traffic on SH-75 as it represents the existing mine operation (See Section 3.3.5). Under Alternative B, daily traffic associated with the mine operation accounts for approximately 10 percent of the daily vehicle use on SH-75 between the bridge over the East Fork of the Salmon River and US-93. The current 10 percent of the total daily traffic volume associated with mining activities would not be expected to result in a deterioration of safety conditions on SH-75.

Under all action alternatives, explosives would be stored safely on site in two, secure magazines set back from public roads and haul roads, and from each other, as detailed in Chapter 2, Section 2.4.4 and in Appendix B.

Alternative C

Under Alternative C, access roads would continue to be used and constructed as needed to facilitate extraction of flagstone, and several additional small, "two-track" roads would be constructed for exploration activities. The roads would be adequate for quarry production, motorized access and safety. These roads would be reclaimed once no longer necessary for operations. As under Alternative B, current public access policies initiated by Three Rivers Stone Quarry and authorized by BLM would continue to be enforced at the site, but for a longer period (up to 30 years).

Daily vehicle use associated with mining operations would increase traffic volume on SH-75 by about 3 percent over Alternative B. This increase in traffic would not result in a noticeable increase in congestion on the highway or risk to drivers.

Alternative D

Under Alternative D, access roads would continue to be used and constructed as needed to facilitate extraction of flagstone. A new road would be constructed to the south of current operations so that Pit 3 could be accessed. Additional small, "two-track" roads would be constructed for exploration activities, but the number would be lower than under Alternative C. The roads would be adequate for quarry production, motorized access and safety. Roads would be reclaimed once no longer necessary for operations. As under Alternative B and Alternative C, current public access policies would continue to be enforced at the site for the life of the mining operation, but for a longer period (up to 40 years).

Daily vehicle use associated with mining operations would increase traffic volume on SH-75 by about 5 percent over Alternative B. Impacts would be the same as described under Alternative B and Alternative C.

4.7.6 Land Uses and Private Property

Alternative A (No Action Alternative)

Under Alternative A, mining activities would cease and the existing Interim Mining Plan for the project site would be terminated. The power line right-of-way (ROW) agreement between BLM and Salmon River Electric Cooperative would still be maintained for access to electric power lines. Likewise, the state highway ROW agreement proximal to the Proposed Project Area would continue. Grazing would still be allowed in the project site under the terms of the current Split Hoof Allotment grazing permit, although cattle generally do not utilize forage at the site. Recreation would no longer be restricted in the quarry site by locked gates and mining operations (see Section 4.7.7). Private property rights of land owners outside of, but in the vicinity of, the current quarry site would not be altered.

Alternative B

Under Alternative B, existing mining operations would continue under the Interim Mining Plan. Access to the electric power lines in the Proposed Project Area would still be granted to the Salmon River Electric Cooperative through the ROW agreement with the BLM, and cattle grazing would still be permitted under the terms of the current 10-year grazing permit for the Split Hoof Allotment (see Section 4.7.8). The state highway ROW agreement would not be affected. Access would continue to be restricted for public safety purposes in the quarry site by locked gates (see Section 4.7.7) and land would not be available for other uses or ROW applications, with the exception of the ROW application described below.

Under all action alternatives, a ROW application for the proposed 14.4 kV transmission line would be submitted by L&W Stone to the BLM. This ROW application would be included in the proposed Plan of Operations and would be made part of the Record of Decision for this EIS.

Alternative C

Existing mining operations would be expanded under an approved Plan of Operations. Impacts under Alternative C would be similar to those described under Alternative B. However, additional areas, specifically those proposed for exploration, may have access restricted for public safety purposes.

Alternative D

Existing mining operations would be further expanded over that proposed under Alternative C by an approved Plan of Operations. Areas in the vicinity of Pit 2E and Pit 3 would become unavailable for use by the public. Additional areas in the vicinity of Pit 2E and Pit 3 and the area proposed for exploration may have access restricted for public safety purposes. Impacts to land use and private property would be the same as under Alternative C.

4.7.7 Recreation

This section addresses impacts of the Proposed Project on recreational opportunities at the quarry site and in its vicinity. Impacts to visual resources and public access are addressed in Sections 4.7.4 and 4.7.5, respectively.

Alternative A (No Action Alternative)

Under Alternative A, mining activities would cease, access gates would be removed, and the site would be reclaimed. Recreational use of the quarry site (rockhounding, hunting, and Off-Highway-Vehicle (OHV) use, etc.) would likely increase. Additional recreational activities (hiking, camping, and wildlife viewing) in the immediate project vicinity that are potentially displaced because of mining activities could resume which would enhance the recreational values of the Upper Salmon River Special Recreation Management Area (SRMA). Recreational activities along the Salmon and East Fork Salmon rivers would continue unchanged.

Alternative B

Mining activities on approximately 100 acres would continue under Alternative B (of which approximately 92 are already disturbed). Recreational use of the Proposed Project Area would continue to be restricted in the areas of operation and road access to the quarry would continue to be closed for up to 5 years. Mining operations could also discourage recreation in the near vicinity (because of noise and visual disturbance); potentially shifting such activities to a distance where mining activities would no longer affect the user’s experience.

Recreational activities along the Salmon and East Fork Salmon rivers (kayaking, rafting, fishing, camping, etc.) would continue unchanged. Recreationists may occasionally hear noise that is generated from mining operations. The noise from the loudest of these operations (blasting) would be short-term and temporary and would likely be masked to some degree by the noise of the river. Noise generated from the quarry would not likely impact recreational activities on the two rivers or alter the users’ experience.

Mining activities at the quarry would only result in minor impacts to the Upper Salmon River SRMA. Opportunities for river recreation and access to the river would not be affected by the actions proposed under Alternative B. However, the scenery viewed from a short stretch of the Salmon River and SH-75 would be altered by the quarry operations, as described in Section 4.7.4, and public access to the quarry site would be restricted, as described in Section 4.7.5. The objectives of the SRMA would still be met. Potential impacts to the SRMA from quarry operations would occur in an area consisting of less than 1 percent of the entire SRMA. The Proposed Project could draw additional visitors that are interested in seeing an active mining operation.

Alternative C

Impacts to recreation would be similar to those described under Alternative B, but the visual impacts would occur for a longer duration. In addition, there would be a greater portion of the quarry site that public access would be restricted to for a longer period, as described in Sections 4.7.4 and 4.7.5, respectively.

At present the Proposed Project Area and the area immediately surrounding it are primarily dark at night. Existing light is generated primarily from the lights of the few residences in the area. If mining operations were to occur at night, the addition of lights at the quarry would introduce a new element into the nighttime environment of quarry site and its vicinity. These lights could potentially alter the ambient evening light level at the East Fork Campground and be visible to travelers on SH-75.

Although the objectives of the Upper Salmon River SRMA would still be met, the scenic values would be reduced to some degree over Alternative B because of the longer duration of the proposed operations. As discussed under Alternative B, potential impacts from the quarry to the SRMA would occur in an area consisting of less than 1 percent of the entire SRMA.

Alternative D

Impacts to recreation would be similar to those described under Alternatives B and C, but would have greater visual impacts for a longer duration and a greater area of and a longer-term access restriction to the quarry site, as described in Sections 4.7.4 and 4.7.5, respectively. As under Alternative C, if mining operations occurred during the night, glare from the lights could potentially alter the ambient evening light level at the East Fork Campground and could be visible from the SH-75 travel corridor. Although the objectives of the Upper Salmon River SRMA would still be met, the scenic values of the Salmon River corridor in the vicinity of the Proposed Project Area would be reduced over Alternative B and C because of the increase in visual impacts and longer duration of the proposed operations. However, the impacts to the scenic values would still occur in less than 1 percent of the entire SRMA.

4.7.8 Livestock Grazing

Alternative A (No Action Alternative)

Under Alternative A, mining activities would cease and the site would be reclaimed. Once vegetation becomes reestablished in reclaimed areas, there is the potential for cattle forage in the Split Hoof Allotment to increase. However, the increase in terms of animal unit months (AUMs) would be small, at around 4 to 5 AUMs. This increase in AUMs would not likely lead to use of the quarry area by cattle given the steep topography, lack of access (due to cliffs, roads, and rivers), and overall low forage productivity of the area.

Alternative B

Existing mining operations would continue under Alternative B. The amount of forage available for cattle in the Proposed Project Area and in the Split Hoof Allotment would be reduced by less than 1 AUM, based on 12 to 15 acres per AUM. The permit for the Split Hoof Allotment would be expected to be maintained by the same permittee who has mostly left the allotment ungrazed since 2000. Due to the low forage productivity of the area, it is likely that the allotment would continue to be ungrazed. No impact to livestock grazing would be expected under Alternative B.

Alternative C

Impacts under Alternative C would be similar to Alternative B. The Split Hoof Allotment would be reduced by less than 3 AUMs. This would not result in a reduction of permitted livestock numbers for the allotment. It is likely that, as described under Alternative B, the allotment would continue to be ungrazed given the current and future low availability of forage, the steep topography, and general lack of access.

Alternative D

Impacts under Alternative D would be similar to Alternative C. The Split Hoof Allotment would be reduced by less than 5 AUMs and the number of permitted livestock would not change. Otherwise, potential impacts under Alternative D would be the same as under Alternative C.

4.7.9 Special Designations

Wild and Scenic Rivers

The Challis Resource Management Plan (RMP) requires that public land uses within corridors eligible for further study for possible inclusion in the National Wild and Scenic Rivers System be managed to maintain the level of development that resulted in the river segment's tentative classifications, ensure non-degradation of outstandingly remarkable values, and maintain free-flowing characteristics. The RMP requires a plan of operations for any mineral activity exceeding casual use in these areas.

<u>Alternative A (No Action Alternative)</u>

Mining activity was occurring at the Three Rivers Stone Quarry at the time (1993) that the East Fork Salmon River and the Salmon River were both found eligible for further study for possible inclusion in the National Wild and Scenic Rivers System. Although the quarry has expanded since this time, the scenic, recreational, and fishery qualities enjoyed along the East Fork Salmon River, and the recreational, fishery, and geologic qualities enjoyed along the Salmon River have not changed substantially. However, mining has permanently altered the geologic features of the quarry site.

Under Alternative A, mining operations would cease and the site would be reclaimed. Following reclamation activities the Proposed Project Area would appear less altered and would mostly blend in with the surrounding landscape. The scenic, recreational, and fishery qualities of the East Fork Salmon River and the recreational, fishery, and geologic qualities of the Salmon River would not be affected under Alternative A. The free-flowing nature of the rivers would also not be affected.

<u>Alternative B</u>

As described in Section 3.3.9, the outstandingly remarkable values for the East Fork Salmon River are scenic, recreational, and fisheries. The quarry would not be visible from the East Fork Salmon River and recreational opportunities along the river would not change with continued mining. Degradation of these remarkable values would not result from continued mining under Alternative B. Although there could be short-term impacts to habitat for fisheries from the mining operations, as described in Section 4.6.4, degradation of fisheries would not be anticipated with continued mining. The free-flowing characteristic of the East Fork Salmon would not be affected by the mining operations under this alternative.

As described in Section 3.3.9, the outstandingly remarkable values for the Main Salmon River are recreational, fisheries, and geologic. Recreational opportunities along the river would not change with continued mining; degradation of this remarkable value would not result with continued mining under Alternative B. Although there could be short-term impacts to habitat for fisheries from the mining operations, as described in Section 4.6.4, degradation of fisheries would not be anticipated. Even though the Proposed Project would result in alterations to geology through the removal of flagstone and waste rock, degradation of the overall geology along the Salmon River would not be anticipated with continued mining. Following reclamation activities, the quarry would appear less altered and would mostly blend in with the surrounding landscape, reducing the potential for any impacts to the geologic quality of the Salmon River. The free-flowing characteristics of the Salmon River would not be affected by the mining operations under this alternative.

Alternative C

Although mining would be expanded under Alternative C above the rates that occurred when the rivers were tentatively classified under the National Wild and Scenic Rivers System, and above the rates proposed under Alternative B, degradation of the outstandingly remarkable values of the East Fork and Salmon rivers in the vicinity of the quarry would not be anticipated. Although the scenery would be modified by the mining operations, the quarry would not be visible from the East Fork Salmon River; degradation of this remarkable value would not result. Some of the expansions would be visible from specific locations along the Salmon River for a brief period of time (Section 4.7.4). However, scenic quality is not an outstandingly remarkable value for the Main Salmon River. As under Alternative B, impacts to fisheries habitat could occur, but degradation of fisheries values for the East Fork Salmon River and Salmon River would not be anticipated with expanded mining. As under Alternative B but to a greater degree, impacts to geology would be realized through expanded mining under Alternative C, but would not result in degradation of the overall geology along the Salmon River. The free-flowing characteristics of the East Fork Salmon River and the Salmon River would not be affected.

Alternative D

Impacts under Alternative D to wild and scenic rivers would be the same as those described under Alternative C. Degradation of the outstandingly remarkable values of the East Fork Salmon River and Salmon River would not occur and the free-flowing characteristics of these rivers would not be affected.

Areas of Critical Environmental Concern/Research Natural Areas

One management decision in the RMP (USDI-BLM 1999) common to all ACECs (including the East Fork Salmon River Bench ACEC/RNA) is to develop a land use activity plan to manage ACEC values in coordination with other resource uses and values in the ACEC, unless management would be addressed through an existing activity plan. Applicable to this management decision are the following goals and stipulations for mineral management, as stated in the RMP:

> **Goal 2:** Provide saleable and non-energy leasable minerals to meet local demand while minimizing adverse impacts to other resource values.
>
> **#4:** Mineral material disposals and non-energy mineral leasing would be allowed in ACECs when the actions are determined through the ID team and NEPA process to be consistent with maintenance of ACEC values.
>
> **Goal 3:** Maintain the availability of public lands for locatable mineral exploration and development. Minimize adverse effects of locatable mineral development activity on other resources.
>
> **#4:** ACECs would be open to locatable mineral entry, subject to approval of a plan of operations.

Alternative A (No Action Alternative)

Under Alternative A, mining operations would cease and disturbed areas would be reclaimed. However the portion of Pit 1 that overlaps the East Fork Salmon River Bench ACEC/RNA would not be reclaimed. This would result in a continued permanent alteration of this portion of the ACEC/RNA. However, this permanent alteration to the ACEC/RNA would not be expected to alter the values of the ACEC/RNA or impact the resources it was designated to protect. An appropriate buffer would be maintained during reclamation activities to prevent any rockfall into, or disturbance of, the ACEC/RNA adjacent to the quarry.

Alternative B

Under Alternative B, the southern end of Pit 1 would continue to be located in the northern end of the East Fork Salmon River Bench ACEC/RNA. This activity has not and would not compromise the cliffs that preclude livestock entry to the ACEC/RNA. The proposed operations would not expand further into the ACEC/RNA. Due to the depth of Pit 1, there would be no potential for rock fall into the ACEC/RNA from continued mining operations in Pit 1. Measures would be in place to prevent and contain potential fuel spills and associated impacts to the ACEC/RNA (see Chapter 2, Section 2.4.15). No roads would be created in the ACEC/RNA. A weed management plan would be implemented to monitor and control the potential spread and establishment of invasive weeds from the quarry site into the ACEC/RNA (see Appendix B, BMPs).

Impacts from reclamation would be the same as those described under Alternative A.

Alternative C

Although Pit 1 would be expanded under Alternative C, it would not expand further into the ACEC/RNA. Impacts under Alternative C and measures to prevent potential impacts would be the similar to those described under Alternative B. In addition, a 50-foot buffer zone would be maintained between the proposed exploration area and the cliffs to minimize potential rockfall into the ACEC/RNA.

Alternative D

Pit 1 would be expanded under Alternative D, as under Alternative C, and a new pit, Pit 3, would be excavated adjacent to a portion of the East Fork Salmon River Bench ACEC/RNA. Since the flagstone in Pit 3 extends to the cliffs within the ACEC/RNA, a 50-foot buffer zone would be maintained between the pit and the cliffs to mitigate visual impacts. This would also serve to protect the plant communities in the ACEC/RNA from potential rockfall, although occasional rockfall in the ACEC/RNA from operations in Pit 3 could still occur. As under the other action alternatives, the potential for the spread and establishment of non-native plants in the ACEC/RNA would exist, and would be addressed under a weed management plan (see Appendix B).

Impacts from reclamation would be the same as those described under Alternative A.

4.8 CUMULATIVE EFFECTS (IMPACTS)

Cumulative impacts result when the effects of an action are added to or interact with the combined effects of all other ongoing actions in a particular place and within a particular time. While impacts can be differentiated as direct and indirect, and short-term and long-term, cumulative impacts consider the compounding effects of all actions over time and space. The cumulative impacts of an action can be viewed as the total combined effects of all activities on a particular resource, ecosystem, or human community, no matter what entity (Federal, state, or private) is taking the actions.

This cumulative impacts section provides a general description of regional influences and then discusses the cumulative impacts for each resource by alternative. A region of influence or cumulative effects analysis area is defined for each individual resource. The cumulative impact discussion combines the regional influences (influences outside the quarry site) with the individual resource impacts (influences inside the quarry site as a result of the Proposed Project) as discussed in the previous sections of Chapter 4, Environmental Consequences.

Regional influences discussed include: mining; recreation; invasive species and noxious weeds; livestock grazing; and lands and realty actions (projects). Each discussion of cumulative impacts begins with a description of the region of influence for that resource followed by a discussion of past and current trends, as well as future anticipated trends. Past and current trends describe the current regional status of the resource being discussed, as well as noteworthy events from the past that contributed to the current situation. Future anticipated trends discuss the potential outcomes of current trends in the foreseeable future. Following the past, current and future trends section is a description of cumulative impacts for each of the alternatives. This part of the analysis addresses the region-wide affect that management proposed could have on the resource being discussed.

The time of influence for which cumulative impacts are analyzed for the Proposed Project is from 1997 to the year 2047. The year 2047 was selected as an end-point because in that year, full quarry expansion under Alternative D would be complete and the operators of the Proposed Project would need to submit a new plan of operation or stop operations and reclaim the quarry site.

4.8.1 Regional Influences

Mining and Mineral Exploration

Minerals were first discovered in Custer County in 1873, with the discovery of gold, which started a mining boom that lasted into the early 1900s. Large-scale mining (gold, silver, copper, lead, etc.) has become a part of the history for most of Idaho’s mountainous regions, and many abandoned mines and associated “ghost towns” are scattered in this region. Custer County, however, has ridden the surging waves associated with the boom-and-bust nature of the industry with some operating mines still present today (Idaho Mountain Express 2005).

Several small mining claims in the vicinity of the Proposed Project Area were mined for minerals in the last half of the century, but most were closed in the 1980s and 1990s (USDI-BLM 2007). In 1967, Cyprus Minerals Corporation staked claim to hundreds of mining claims at Thompson Creek in Custer County, about 12 miles west of Clayton, Idaho. In 1981, the Thompson Creek Mine began developing a molybdenum mine, with commercial production beginning in 1983. Mining continues today in a large open pit within an overall mine footprint of approximately 2,500 acres of mixed land ownership (private and public).

Approximately 16,000 acres around the mine are covered by mining claims controlled by Thompson Creek Mining Company (USEPA 1992). The mine was Custer County's largest private employer for most of the 1980's and 1990's, and after a short period where employment was cut due to low prices of molybdenum, the mine, is once again Custer County's largest private employer. During peak operations, the mine's annual production of 15 million pounds represented 8 percent of the world molybdenum supply. Production at this mine is anticipated to continue at least through 2014, with quantities depending on market demand, and more developmental drilling is planned to explore the extent of molybdenum at the mine (Challis Messenger 2007).

A block of mining claims controlled by L&W Stone covers approximately 310 acres associated with the Three Rivers Stone Quarry. Mining for building stone/landscape rock has occurred on these claims since the late 1970s. The quarry is now one of the largest single flagstone quarries in the U.S. with its products sold in 33 cities (Challis Messenger 2003). The demand for this resource has been increasing and is expected to continue due to increases in home building.

Recreation

The natural beauty and outstanding recreation opportunities draw thousands of visitors to Idaho annually. As the U.S. and Idaho populations grow, so too does demand for outdoor recreation opportunities. In addition, changing industries and lifestyles in Idaho and the surrounding region are contributing to a shift in natural resource use and management away from traditional product-oriented industries to more amenity-based industries. Tourism is the fastest growing economic activity in Idaho, and will likely intensify over the next 5 to 10 years based on current population estimates (IDPR 2003). While outdoor recreational activities and tourism can help many rural communities diversify or supplement a reduction in historic consumptive, industrial-based activities, proactive management will be needed to minimize the social and environmental costs associated with increased non-consumptive uses. Maximizing benefits while minimizing or mitigating the costs to natural resources is vital to the sustainability and health of these communities.

The 2003-2007 Idaho Statewide Comprehensive Outdoor Recreation and Tourism Plan (SCORTP), developed under the direction of the Idaho SCORTP Task Force (IDPR 2003), ranked the relative importance of 19 issues associated with outdoor recreation. Idahoans ranked the following as their top 10 issues:

1. Protecting water quality
2. Protecting existing access to public lands

3. Protecting natural resources on public lands
4. Educating youth about natural resources and the environment
5. Controlling invasive species
6. Educating adults about natural resources and the environment
7. Providing recreation safety instruction to youth
8. Providing outdoor recreation education for youth
9. Providing access for the disabled
10. Rehabilitating outdoor recreation facilities

In addition to these issues, several key outdoor activities have increased appreciably in Idaho and are likely to continue to increase in the future (Cordell *et al.* 2004; IDPR 2003). These activities were also found to be more prevalent in Idaho and other rural states than the rest of the nation as a whole. They include, but are not limited to motorized vehicle use, hunting, and water-based recreation. A number of other activities, including non-pool swimming, canoeing, and visiting a beach or waterslide are generally associated with water-based activities and were therefore included (Cordell *et al.* 2004). According to a national study by Cordell *et al.* (2004), the Rocky Mountain Region will see a significant demand increase for water-based activities over the next several years.

The demand for OHV use has grown significantly. In 1960, when the first of the U.S. national survey was done for the Outdoor Recreation Resources Review Commission, off-road motorized recreation was not even on the "radar" as a recreational activity. However, from 1982 to 2001, OHV use became one of the fastest growing activities in the country, growing in number of participants greater than 12 years old by over 100 percent (Cordell *et al.* 2004). Based on their survey (from fall 1999 to summer 2000), an estimated 37.6 million people 16 years of age or older (17.6% of the population) had ridden or driven motor vehicles off-road at least once in the past 12 months. That number increased to an estimated 49.6 million by Fall 2003 to Spring 2004 (rising to 23.2% of the population).

Similarly, according to the 2002 SCORTP report, Idahoans participate in more wildlife-based activities than the rest of the nation, with hunting being the number one activity. Idahoans hunt big game four times as often as the national average, and hunt waterfowl nearly six times as often. Non-consumptive wildlife activities, such as viewing animals, were also higher than the national average (IDPR 2003).

Recreation activities in the vicinity of the Proposed Project Area include boating, camping, fishing, hunting, hiking, mountain biking, rock hounding, OHV use, and scenic driving. Most recreation is concentrated along the main Salmon River and East Fork Salmon River, and SH-75 is part of the Salmon River Scenic Route.

Based on current population trends, the demand for these and other outdoor recreational activities in Custer County and surrounding regions in Idaho is likely to increase in the future. As a result, the region will need resources for biking, picnicking, walking, camping and family gatherings in coming years to meet population projections (IDPR 2003). Based on these estimates, a greater emphasis is likely to be placed on facilities development and management of recreational activities in order to reduce the overall potential impacts to natural resources and conflict between user groups.

Invasive Species and Noxious Weeds

Invasive species and noxious weeds are harmful, non-native plant species that damage our economy and environment by displacing ecologically or economically valuable native rangeland species or agricultural crops or threaten the integrity of streams and lakes. As international commerce and travel increases, so does the threat that unwanted species will arrive in Idaho or infest areas where they are not now established.

Over the years, Idaho, like all other states, has enacted statutes and created programs designed to prevent and manage a wide variety of invasive species. Often, these programs are administered in cooperation with various partners and range from monitoring site-specific populations to landscape-wide trends. The agencies involved in this important work include: Custer County Weed Department; Idaho Department of Lands; Idaho Department of Fish and Game; Idaho Transportation Department (ITD); BLM, U.S. Forest Service (USFS), Idaho Power Company; private landowners; and U.S. Department of Agriculture's Animal, Plant Health Inspection Service.

In addition, the University of Idaho colleges of Agriculture and Natural Resources and the Cooperative Extension Service play important research and educational roles. Local governments, industries and their associations, various interest groups and individuals work cooperatively in control and educational efforts. These groups often come together to develop cooperative weed management areas and the Idaho Weed Awareness Campaign.

The Idaho Strategic Plan for Managing Noxious Weeds was released in February of 1999, which created Statewide Cooperative Weed Management Areas (CWMA) that develop and integrate weed management plans. These weed management programs are responsible for identifying local and regional invasive species and noxious weed concerns and educating local landowners on treatments and government aids. Currently there are 32 successfully functioning CWMA that cover approximately 82 percent of the state, including the area surrounding the Three Rivers Stone Quarry (Custer County CWMA). This cooperative process has since lead to the establishment of the Idaho Invasive Species Council (IISC), which was established by Executive Order No. 2001-11. The primary task of IISC is to “provide policy level direction and planning for combating harmful invasive species infestations throughout the state and for preventing the introduction of others that may be potentially harmful”. In addition to these and other invasive species and noxious weed management programs implemented by the state, and on a county-by-county basis, various Federal statutes have been put in place to combat invasive species and noxious weeds.

Noxious weed treatments in the Proposed Project Area could result in cumulative benefits within the larger region of influence. Eradication of new populations of noxious weeds in the Proposed Project Area would eliminate the potential spread of weeds into the adjacent ACEC/RNA and a possible seed source for this and other areas in the region. This would reduce crop losses, decrease wildlife habitat degradation, and improve recreational site quality.

Livestock Grazing

Approximately 771,224 acres (97.3%) of the 792,567 acres of BLM-administered public lands in the Challis Field Office are currently allocated for livestock grazing. This area is divided into 62 grazing allotments for administrative purposes. The Three Rivers Stone Quarry is within the 9,263-acre Split Hoof Allotment, which is permitted for grazing by cattle. Additional grazing allotments surround this allotment, including the Bald Mountain Allotment to the west of the Salmon River, above the confluence with the East Fork, and the Spud Creek Allotment on the south side of the Salmon River and west side of the East Fork Salmon River, below the confluence. Grazing is not permitted on the 78-acre East Fork Salmon River Bench ACEC. Livestock grazing in 40 of the 62 allotments, including the three listed above, is managed under the terms and conditions of an Allotment Management Plan (AMP). Each AMP contains management objectives for the allotment, prescribes the manner and extent of grazing allowed, describes range improvements necessary to implement grazing practices, and details a monitoring system to determine whether the objectives are being met. Range condition and trend in the Split Hoof, Bald Mountain and Spud Creek allotments ranges primarily from fair to poor, with condition in the Proposed Project Area rated poor (USDI-BLM 1999). However, these allotments have been categorized as “Maintain” in the Challis RMP, meaning that they are proposed for retention, the range condition and trend is satisfactory, site potential for improvement is moderate or low, there are no significant resource problems, and management is achieving management goals.

Private land flanks the Salmon River and East Fork Salmon River for the majority of its length in the Challis Resource Area, and some of this land is grazed by livestock. Where livestock operators on private lands in the region do not implement BMPs, riparian area vegetation and downstream water quality could be adversely affected. For example, where livestock are allowed unrestricted access to stream banks, or where upland grazing increases off-site erosion and sedimentation, pollutants could be increased locally and travel downstream. Unmanaged grazing in riparian areas may also reduce stream bank stability, resulting in blowouts during high run-off events and increased sediment loads that reduce water quality further downstream. Infestations of invasive species including noxious weeds on private lands, which is sometimes a result of improperly managed grazing, could become a seed source for lands elsewhere. Riparian vegetation would be adversely affected by invasion of noxious and other weed species. Riparian areas could improve where land managers install range improvements, such as fences, cattle guards, pipelines, and water developments to enable livestock use while protecting water quality and riparian vegetation.

Land and Realty Actions (Projects)

Cumulative impacts are an aggregate of many direct and indirect effects and include actions, which have occurred or can reasonably be expected to occur both within and outside of the Proposed Project Area. The following are key land and realty cumulative actions within the vicinity of the quarry site assessed in this EIS (Table 4.8-1). Projects include proposed activities on land administered by the BLM Challis Field Office, land administered by the Challis National Forest (Challis District) and Sawtooth National Forest, and on state highways and other roads maintained by the Idaho Transportation Department in the Upper Salmon River Subbasin.

Table 4.8-1. Land and Realty Actions (Projects) Located in the Vicinity of the Three Rivers Stone Quarry.

<table>
<tr><th>Project</th><th>Status</th><th>Purpose</th><th>Expected Completion/ Decision</th><th>Agency</th></tr>
<tr><td rowspan="3">Idaho State Highway 75</td><td>Proposed for FY 2007</td><td>Bridge Replacement</td><td>2007 or later</td><td>ITD</td></tr>
<tr><td colspan="4">Description: Replacement of existing Salmon River Bridge west of Clayton, Idaho.</td></tr>
<tr><td colspan="4">Location: Project begins at milepost 220.2 and ends at milepost 220.8, west of Clayton, Idaho.</td></tr>
</table>

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<table>
<tr><th>Project</th><th>Status</th><th>Purpose</th><th>Expected Completion/ Decision</th><th>Agency</th></tr>
<tr><td rowspan="3">Idaho State Highway 75</td><td>Proposed for FY 2008</td><td>Bridge Replacement</td><td>2008 or later</td><td>ITD</td></tr>
<tr><td colspan="4">Description: Replacement of existing bridge over the East Fork Salmon River.</td></tr>
<tr><td colspan="4">Location: Project begins and ends at milepost 227.0, just east of Clayton, Idaho.</td></tr>
<tr><td rowspan="3">Challis Bridge Sand and Gravel Pit (BLM Project #ID-330-2007-CE-352)</td><td>Completed</td><td>Mineral material disposal</td><td>Completed</td><td>BLM</td></tr>
<tr><td colspan="4">Description: Dispose of up to 50,000 cubic yards of sand and gravel to Idaho Transportation Department during the next 40 years. Initial disposal would be by free use permit to Custer County Road and Bridge for 6,000 yards.</td></tr>
<tr><td colspan="4">Location: Approximately 3 miles SE of Challis, Idaho.</td></tr>
<tr><td rowspan="3">Redbird Mine Land Sale EA, #ID-330-2006-EA-1480</td><td>Draft Under Preparation</td><td>Land Sale</td><td>June 2008</td><td>BLM</td></tr>
<tr><td colspan="4">Description: FLPMA sale of 298 acres of public land.</td></tr>
<tr><td colspan="4">Location: 3 miles west of Clayton, Idaho</td></tr>
<tr><td rowspan="3">Clayton Water Development (BLM Project #ID-330-2007-EA-3267)</td><td>New Proposal/ Scoping in Progress</td><td>Water pipeline</td><td>October 2007</td><td>BLM</td></tr>
<tr><td colspan="4">Description: Installation of a 200-foot water pipeline, 60,000 gallon water storage tank, a 500-foot access road, a new well, pump, and fire hydrants.</td></tr>
<tr><td colspan="4">Location: Clayton, Idaho</td></tr>
<tr><td rowspan="3">Morgan Creek Allotment (BLM Project #ID-330-2007-EA-3272)</td><td>Draft EA Under Preparation</td><td>Grazing permit renewal</td><td>May 2007</td><td>BLM</td></tr>
<tr><td colspan="4">Description: Ten year grazing permit renewal.</td></tr>
<tr><td colspan="4">Location: Located approximately 6 miles north of Challis.</td></tr>
</table>

Table 4.8-1. Land and Realty Actions (Projects) Located in the Vicinity of the Three Rivers Stone Quarry.

<table>
<tr><th>Project</th><th>Status</th><th>Purpose</th><th>Expected Completion/ Decision</th><th>Agency</th></tr>
<tr><td rowspan="3">Persistence Mine (BLM Project #ID-330-2006-EA-1461)</td><td>Draft EA Under Preparation</td><td>Amend Plan of Operations</td><td>January 2007</td><td>BLM</td></tr>
<tr><td colspan="4">Description: Continued mining operations at what was formerly called Rat's nest mine for specimens of mineral crystals with new waste rock disposal area.</td></tr>
<tr><td colspan="4">Location: 13 miles southeast of Challis, Idaho.</td></tr>
<tr><td rowspan="3">Travel Management Plan for the Challis Field Office (BLM Project #ID-330-2006-EA-2403)</td><td>Draft EA Under Preparation</td><td>Travel Plan</td><td>December 2007</td><td>BLM</td></tr>
<tr><td colspan="4">Description: Comprehensive travel planning effort to address a designated route system (roads and trails).</td></tr>
<tr><td colspan="4">Location: Field Office-wide</td></tr>
<tr><td rowspan="3">Salmon-Challis National Forest Travel Management Plan EIS</td><td>In Progress</td><td>Recreation Management</td><td>August 2008</td><td>USFS</td></tr>
<tr><td colspan="4">Description: Prepare an environmental impact statement to designate a portion of the National Forest roads, trails, and areas open to public motor vehicle use on the Salmon-Challis National Forest, and assign the type of use(s) and season of use allowed on each road and trail or portion thereof.</td></tr>
<tr><td colspan="4">Location: Forest Wide</td></tr>
<tr><td rowspan="3">Eight Mile Dredging EA</td><td>On Hold</td><td>Mineral and Geology</td><td>N/A</td><td>USFS</td></tr>
<tr><td colspan="4">Description: Use of a small 2.5-inch suction dredge to extract gold bearing gravels from Eight Mile Creek.</td></tr>
<tr><td colspan="4">Location: Eight Mile Creek within the Yankee Fork Salmon River Drainage. Yankee Ranger District.</td></tr>
<tr><td rowspan="3">Garden Creek Fuels Reduction (USFS Project)</td><td>In Progress</td><td>Fuels Management</td><td>June 2007</td><td>USFS</td></tr>
<tr><td colspan="4">Description: Treat approximately 4,000 acres with prescribed fire and 350 acres with mechanical thinning to reduce hazardous fuels. Wildland Interface.</td></tr>
<tr><td colspan="4">Location: Garden Creek drainage 6 miles southwest of Challis, Challis Ranger District.</td></tr>
</table>

Table 4.8-1. Land and Realty Actions (Projects) Located in the Vicinity of the Three Rivers Stone Quarry.

<table>
<tr><th>Project</th><th>Status</th><th>Purpose</th><th>Expected Completion/ Decision</th><th>Agency</th></tr>
<tr><td rowspan="3">Reauthorization Of Grazing on the Spud Creek and Marco Creek Allotments</td><td>In Progress</td><td>Grazing Management</td><td>May 2008</td><td>USFS</td></tr>
<tr><td colspan="4">Description: Authorize continued livestock grazing on the Spud and Marco Creek Allotments consistent with existing management in order to continue to meet or move toward desired resource conditions.</td></tr>
<tr><td colspan="4">Location: East Fork of the Salmon River, Challis Ranger District, Idaho.</td></tr>
<tr><td rowspan="3">Morgan Creek and Eddy Creek Range Allotments EIS (USFS Project)</td><td>In Progress</td><td>Grazing Management</td><td>June 2008</td><td>USFS</td></tr>
<tr><td colspan="4">Description: Authorize continued livestock grazing on the Morgan Creek and Eddy Creek Cattle and Horse Allotments.</td></tr>
<tr><td colspan="4">Location: Morgan Creek and Eddy Creek Allotments, Challis Ranger District.</td></tr>
<tr><td rowspan="3">Mosquito Flat Dam Outlet Pipe Sleeving and Special Use Permit Renewal EA (USFS Project)</td><td>On Hold</td><td>Special Use Management</td><td>N/A</td><td>USFS</td></tr>
<tr><td colspan="4">Description: Issue a special use permit of the Mosquito Flat Water Users to replace the outlet pipe and to operate and maintain the dam for 5 years.</td></tr>
<tr><td colspan="4">Location: Upper Challis Creek, Challis Ranger District, Morgan, Idaho.</td></tr>
<tr><td rowspan="3">Forest-wide Noxious Weed EIS (USFS Project)</td><td>In Progress</td><td>Watershed Management</td><td>September 2007</td><td>USFS</td></tr>
<tr><td colspan="4">Description: Control noxious and invasive, non-native exotic weed species. Use an integrated pest management approach throughout Salmon-Challis NF.</td></tr>
<tr><td colspan="4">Location: Salmon-Challis NF except Frank Church River of No Return Wilderness.</td></tr>
<tr><td rowspan="3">Challis Creek Sediment Reduction (USFS Project)</td><td>Completed</td><td>Watershed Management</td><td>Implemented 2006</td><td>USFS</td></tr>
<tr><td colspan="4">Description: Restoration of the original alignment of FS Road #40537 and decommissioning of the existing alignment to reduce sediment delivery to an unnamed tributary of Challis Creek.</td></tr>
<tr><td colspan="4">Location: Road #40537 adjacent to tributary of Challis Creek. Challis Ranger District.</td></tr>
</table>

Table 4.8-1. Land and Realty Actions (Projects) Located in the Vicinity of the Three Rivers Stone Quarry.

Project	Status	Purpose	Expected Completion/ Decision	Agency
Morgan Creek Water Developments (USFS Project)	**Completed**	Grazing Management	November 2006	USFS
	Description: Construct Ellis Creek Pipeline; reconstruct Watts Spring Pipeline on the Morgan and Hat Creek Allotments.			
	Location: Ellis Creek and Watts Spring Creek ~14 miles north of Challis, Idaho. Challis Ranger District.			
Garden Creek Prescribed Burn DM (USFS Project)	**Completed**	Fuels Management	September 2006	USFS
	Description: Treat approximately 4,000 acres with prescribed fire to reduce hazardous fuels. Wildland Urban Interface.			
	Location: Garden Creek drainage 6 miles west of Challis, Idaho. Challis Ranger District.			
Eddie Basin Prescribed Burn (USFS Project)	**Completed**	Fuels management	June 2005	USFS
	Description: Prescribe burn a mosaic pattern over 30 to 70 percent of approximately 13,280 acres over a 3 to 5 year period.			
	Location: Eddy Basin Area, Challis Ranger District.			
Special Use Pasture Permit Renewal DM (USFS Project)	**In Progress**	Grazing management	September 2005	USFS
	Description: Reissuance of Special Use Permit for continued use of a pasture. Pasture use will be reduced from 30.6 acres to approximately 9.5 acres.			
	Location: Challis Creek Drainage, Challis Ranger District.			
Alturas Ski Trail Bridge Replacement	**Developing Proposal**	Recreation Management	April 2007	USFS
	Description: Replace the existing ski trail bridge over Alturas Lake Creek. With the existing Murphy Bridge on the Harriman Trail at a new location. Construct ski trail on each side of bridge. Rehab. Ski trail by old bridge site.			
	Location: Alturas Ski Trail north of Alturas Lake Creek Road 205. Sawtooth National Recreation Area (SNRA).			

Table 4.8-1. Land and Realty Actions (Projects) Located in the Vicinity of the Three Rivers Stone Quarry.

Project	Status	Purpose	Expected Completion/ Decision	Agency
Casino Creek Trail Relocation EA	**In Progress**	Recreation Management	June 2007	USFS
	Description: Reconstruct approximately 2 miles of Martin-Big Casino Trail #646 in Big Casino drainage, 4 miles of Little Casino Trail #232, and 0.5 miles of Sunny Gulch Trail #616.			
	Location: Northwest corner of White Cloud Mountains, 5 miles east of Stanley, Idaho. SNRA.			
Obsidian 1 & 2 Cattle and Horse Allotment Management Plan DM	**In Progress**	Grazing management	September 2007	USFS
	Description: To authorize continued grazing use within the Obsidian 1& 2 Cattle and Horse Allotment. SNRA.			
	Location: Challis Creek Drainage, Challis Ranger District**.**			
Road 682 Valley Creek Ford Closure and Site Restoration DM	**On Hold**	Wildlife, Fish, Rare Plants; Watershed Management	N/A	USFS
	Description: Remove and rehabilitate the Road #682 ford through Valley Creek, including 500 feet of approach west within the floodplain.			
	Location: Near Blind Summit, 9.5 miles northwest of Stanley, Idaho, SRNA.			
Rough Creek Culvert Replacement Project DM	**In Progress**	Wildlife, Fish, Rare Plants	May 2007	USFS
	Description: Replace undersize culvert on the lower end of Rough Creek with one that spans the creek to improve fish passage and reduce impact to habitat and water quality from potential diversion of stream flows.			
	Location: Rough Creek off the Salmon River, 3 miles west of Sunbeam and 8 miles north of Stanley, Idaho. SNRA.			

Additional land and realty actions are anticipated by private individuals in the reasonably foreseeable future. Such actions include increased construction of homes and rental units in the Challis area as well as recreational homes in the greater Custer County area.

4.8.2 Cumulative Impacts by Resource

Physical Resources

Air Quality

The region of influence of the cumulative effects analysis for air quality is Custer County. The Proposed Project would result in release of dust particles into the atmosphere due to surface disturbance during excavation, vehicle travel, and blasting, the emission of carbon monoxide during the use of commuter and transport vehicles and operation of heavy equipment, and the release of minor amounts of ANFO. These impacts would be temporary, and levels of particulate matter in the air would be reduced by dust suppression techniques. Other actions in Custer County that could add cumulatively to the effects of the Proposed Project on air quality include increased use of recreational vehicles and scenic driving, prescribed fire, road construction and restoration projects, housing construction, and continued mining at other mines. Impacts to air quality from these other projects are typically temporary and site-specific. The Proposed Project under all alternatives, combined with other past, current, and reasonably foreseeable future projects are not expected to result in measurable cumulative impacts and would not affect Custer County's attainment status.

Geology, Minerals, and Soil

The region of influence for the cumulative effects analysis for geology, minerals, and soil is the Upper Salmon River Subbasin. Cumulative environmental impacts to these resources from the Proposed Project would be limited to potential increased loading of sediment to the Salmon River. Unfortunately, there is no "cookbook" method on how to examine the cumulative effects of potential sediment loading by mining at the Three Rivers Stone Quarry within the broader category of all sediment-producing human activity within the Upper Salmon River Subbasin. One simple way would be to compare the area of surface disturbance created by mining to the overall area of surface disturbance created by all individual human activities in the watershed that may cause additional sediment loading to the Salmon River. However, all such potential sediment-producing activities do not add up to a cumulative effect because of thresholds and compensation in natural systems. This refers to the ability of natural systems (such as the Salmon River drainage) to cope with a certain level of disruption. If the threshold level is not exceeded, then the system can compensate. The small increase in area of surface disturbance under all action alternatives over existing conditions represents a minimal cumulative effect to potential increased loading of sediment to the Salmon River. No cumulative effects would be generated under Alternative A since there would not be an increase in surface disturbance.

Hazardous Substances and Petroleum Products

The region of influence of the cumulative effects analysis for hazardous substances is Custer County. The Proposed Project would not use or generate any acutely hazardous materials or wastes or "listed wastes". This section addresses the potential for cumulative actions related to chemicals, as defined in Section 3.1.5, Chapter 3, and petroleum products including antifreeze, brake fluid, radiator flushing fluids, hydraulic fluid, fuel de-icing additives, degreasing solvents, packaging material from explosives, ammonium nitrate, fuel oil, and fuel. The Proposed Project under all alternatives could result in potential spills of these materials. However, because of the topography and hydrology of the site and the adherence to the Chemical Spill Prevention, Control, and Countermeasures Plan, it is improbable that a leak or spill from mining operations would reach the rivers or ACEC/RNA adjacent to the Proposed Project Area. Many of the realty actions described above in addition to other mining operations also create the potential for chemical and petroleum spills and possible contamination of Upper Salmon River Subbasin rivers and tributaries and other areas with special designation. However, BMPs and a Spill Prevention, Control, and Countermeasures Plan would typically be required for most of the realty actions and mining operations described above, substantially reducing the risk and the potential for cumulative effects relating to chemicals and petroleum products. The largest potential for fuel or chemical spills would be from vehicles and chemical or fuel transport trucks traveling on SH-75.

Water Quality

The region of influence for the cumulative effects analysis for water quality is the Upper Salmon River Subbasin. This region was selected because the Salmon River, which is adjacent to the Proposed Project Area, runs through the entire length of this subbasin. The floodplain of the Salmon River has been modified considerably by conversion to cropland, and riverbanks have been altered by the construction of numerous dikes and diversions associated with residential development, agriculture, and SH-75, US-93, and SH-21. Recreation, especially river floating in rafts and drift boats, is an increasing use of the river corridor and there are several associated developed campgrounds and day use area. Other past, current, and future impacts to this river or its tributaries, could add to the cumulative impacts to the Upper Salmon River Subbasin. Although impacts several miles upstream may not be detectable in the river in the immediate vicinity of the Proposed Project Area, impacts to salmonids migrating through the river could be realized.

Water quality, native fish populations, and riparian habitat conditions have been issues of concern in the Upper Salmon River Subbasin. The cumulative effects of mining, grazing in riparian areas, timber harvest and associated roads, exotic fish and plant introduction, residential and recreational development, and human-caused stream alteration and diversion of surface waters have combined to limit the production and survival of native resident and anadromous fishes throughout the subbasin. There are also numerous restoration projects that have been completed, are under construction, or are planned in the subbasin to offset historic management and land use impacts on fish and fish habitat. These projects have resulted in an improvement in water quality and fisheries to many miles of streams in the subbasin.

There are 11 stream and river segments on nine waters in the Upper Salmon River Subbasin that were listed in 1998 under Section 303(d) of the Clean Water Act (CWA), including two reaches of the Salmon River between Hell Roaring Creek and the East Fork Salmon River. These reaches of the Salmon River were listed because of elevated levels of sediment or temperature. However, these reaches are now considered to be in full support of Aquatic Life Beneficial Uses. The Upper Salmon River does not require having a Total Maximum Daily Load (TMDL) developed for sediment or temperature because it is in full support of its beneficial uses. Of the other 10 listed stream and river segments, only Challis Creek is not fully supporting the beneficial uses of salmonid spawning and coldwater biota as defined in the Idaho Water Quality Standards and the CWA. A TMDL has been prepared for this water body to restore full support of these beneficial uses. The other stream segments are listed for sediment, temperature, nutrients, flow alteration, or habitat alteration. TMDLs are not required because the stream segments are either in full support of beneficial uses or best management practices are being implemented for these streams that should result in attainment of water quality standards and beneficial use support in the near future. Upper reaches of the East Fork Salmon River, which is adjacent to the Proposed Project Area, was added to the 2002/2003 Integrated 303(d)/305(b) Report for “unknown” pollutants, but was determined to be in full support of beneficial uses in the Upper Salmon Subbasin Assessment and TMDL (IDEQ 2003).

The largest source of sediment delivery into the Salmon River comes from the Yankee Fork during heavy intensity, long duration precipitation events. Slate Creek also contributes a primary source of upstream sediment. The East Fork of the Salmon River, upstream of the Proposed Project Area receives heavy livestock use, and during heavy precipitation events, can also deliver sediment via erosion to the Salmon River. Natural sources of sediment include Maln Gulch, Bradshaw Basin, and Alkali spring, all located downstream from the Proposed Project Area. Other potential sources of sediment are recreational-related from Bayhorse Creek.

Past land use in the Salmon River Basin including mining, logging, and grazing has likely altered to some degree the amount of sediment discharge into and temperature of the river.

Land owners and land managers have conducted channel management practices including construction of jetties, barbs, and levees, riprapping banks, blocking side or oxbow channels, channel straightening, and removal of riparian vegetation and large woody debris (King 2002).

Present, and reasonably foreseeable future projects occurring in the subbasin include livestock grazing, mining, recreation, and realty actions such as bridge replacement, road closure, water developments, and maintenance and resource management actions such as culvert replacement and watershed management. Impacts of these actions, both negative and beneficial, could add cumulatively to the impacts of the Proposed Project on water quality.

Alternative A

Potential impacts to 303(d) listed streams and other water resources would occur under Alternative A primarily during the period of quarry reclamation. However, reclamation would be localized and short-term and BMPs to avoid impacts would be implemented. Implementation of Alternative A would not generate cumulative negative impacts in the Upper Salmon River Subbasin. Conversely, reclamation of the existing mining roads would stabilize the soil and reduce or eliminate a potential source of sedimentation into the Salmon River and East Fork Salmon River. Therefore, implementation of Alternative A along with other restoration activities in the Upper Salmon River Subbasin would add cumulative, beneficial impacts to the watershed.

Alternative B

Indirect impacts to the surface water of the Salmon and East Fork Salmon rivers and to stream substrate could occur under Alternative B through the delivery of fine sediment, fuel, lubricants, nitrate, and/or pre-mixed ANFO from the quarry site and through continued diversion of surface water for dust abatement. The Proposed Project would use BMPs to avoid impacts to 303(d) listed streams and other water resources. However, the current water detention basins are not sufficient to prevent sediment entry into the Salmon River and East Fork Salmon River during high rain events and snowmelt. Therefore, impacts from the Proposed Project would add cumulatively to those from other management activities occurring in the Upper Salmon River Subbasin.

Alternative C

The Proposed Project would use BMPs to avoid impacts to the Salmon and East Fork Salmon rivers. The existing stormwater detention basin at the quarry would be improved and a new one created near the administrative area to capture surface runoff and sediment from the proposed mining operations. However, there would still be the risk of sediment delivery to the Salmon River and East Fork Salmon River due to the increase in hardened surfaces resulting from the proposed expansion of the quarry. Therefore, the Proposed Project could add cumulatively to the effects of other past, present, and reasonably foreseeable future projects occurring in the Upper Salmon River Subbasin. Examples of other projects that could result in sediment delivery to the Salmon River and its tributaries are bridge replacement projects on SH-75 and Alturas Lake Creek, grazing permit renewals on Federal lands, continued grazing on private land, the Clayton water development project, mineral projects such as dredging in Eight Mile Creek, and trail reconstruction in Casino Creek. Conversely, some Federal projects have been designed to reduce impacts to streams such as the proposed U.S. Forest Service's Challis Creek Sediment Reduction project, FS Road 682 rehabilitation project, and Rough Creek culvert replacement project.

Alternative D

Under Alternative D, the Proposed Project could add cumulatively to the effects of other past, present, and reasonably foreseeable future projects occurring in the Upper Salmon River Subbasin. Although the cumulative effects of Alternative D would be similar to Alternative C, the risk of potential sediment delivery to the Salmon River and East Fork Salmon River would be increased over Alternative C due to the proposed greater expansion area of the quarry. The risk to the East Fork Salmon River would be reduced to some degree over Alternative C due to the proposed construction of a new stormwater detention basin near Pit 2-E and Pit 3.

Noise

The region of influence for the cumulative effects analysis for noise is Custer County. This area was selected because noise that occurs as a result of the Proposed Project could have a cumulative effect when considered in concert with other projects in the county. The Proposed Project would not contribute cumulatively to noise impacts resulting from projects outside the county. Past and current sources of noise (both natural and anthropogenic) in this area include wind, the East Fork River and Salmon River, wildlife, mining, road maintenance projects, recreational activities, livestock grazing, motorized vehicular traffic, and air traffic. With the exception of noise from vehicular traffic and mining operations, which is fairly regular, the majority of the anthropogenic sources of noise are generally site specific and temporary within the region.

Future management actions and other activities in this area that have the potential to create noise over ambient levels include maintenance of SH-75 and the East Fork Salmon River road, improvement of SH-75 (bridge replacement projects), road and trail restoration and reconstruction projects, water development projects, mining, dredging, prescribed burning, recreation, air traffic, and motorized vehicular traffic. Of these actions, noise from recreation, mining, and traffic exist currently, but could be elevated in the future. Noise associated with development projects would primarily be from operation of heavy machinery, and potentially some blasting and would be temporary within the region.

Alternative A and Alternative B

No cumulative impacts would be generated from Alternatives A and B because noise levels from these actions would be the same as or less than those that currently exist and would not exceed the 55 dBA threshold recommended by the EPA for determining acceptable sound levels for residential land use at the noise-sensitive receptors described in Section 4.5.6.

Alternative C and Alternative D

Noise from mining activities under Alternative C would approach the 55 dBA threshold recommended by the EPA for determining acceptable sound levels for residential land use at the noise-sensitive receptors described in Section 4.5.6 and noise under Alternative D would exceed this limit. However, the increase in dBA over existing conditions at these sensitive receptors would be small. Mining activities under these alternatives would include the use of explosives and heavy equipment. Blasting would be audible from some areas within the analysis area, and noise from heavy equipment use would be audible within and in the vicinity of the Proposed Project Area. Noise from traffic associated with travel to and from the quarry (commuters and trucks hauling flagstone) would increase due to the increase in number of employees and tons of flagstone removed. The sound of blasting, heavy machinery, and traffic could add cumulatively to other noise in the county if these sounds were heard in concert with heavy equipment and traffic associated with other projects in the analysis area. The potential for cumulative impacts would be greater under Alternative D due to the increase in blasting, heavy equipment use, and traffic, and the increase in duration of operations.

Biological Resources

Vegetation

The region of influence for the cumulative effects analysis on vegetation is the area encompassed by the Split Hoof, Bald Mountain, and Spud Creek grazing allotments. This region was selected based on the primary influences to vegetation (invasive species, livestock grazing, fire and recreation). The vegetation in this region is dominated by Wyoming big sagebrush communities, with a component of mountain big sagebrush and Douglas fir/woodland communities also present. Condition of the range in this area is primarily fair to poor, with the condition in and in the immediate vicinity of the Proposed Project Area being poor.

Inventories conducted in the late 1990's show that noxious weeds continue to spread within the Resource Area, especially adjacent to major and secondary roadways and along the Salmon River (infestations are generally associated with vehicle traffic and/or ground disturbing practices) (USDI-BLM 1999). Of particular concern are spotted knapweed and leafy spurge.

Other direct and indirect impacts to vegetation in the area would be associated with activities currently outlined in the Challis RMP including: wildlife use, continued livestock grazing, vegetation treatments, range improvement projects, and recreation. These uses and potential modifications are not expected to alter the existing vegetation beyond the levels identified in the Challis RMP. The Proposed Project under all alternatives would not result in cumulative impacts to vegetation.

Special Status Plant Species

The cumulative effects area for special status plant species is defined as the area within the boundary of the Proposed Project Area. This area was chosen given the low dispersal capabilities of the endemic plant species found within the Challis Planning Area. There are no known populations of special status plant species within the quarry boundary. Viable population of special status plant species, if observed in the quarry, would be maintained under all action alternatives. Therefore, there would be no cumulative impacts to special status species from the continuation or expansion of mining activities.

Fish and Wildlife

The region of influence for the cumulative effects analysis on big game species is defined as an approximately 16 square mile area centered on the Proposed Project Area. This area was chosen because it represents the extent of the area that big game using the Proposed Project Area could be displaced by mining activities. It is highly unlikely that negative impacts to big game from the proposed alternatives would extend to an area more than a few miles around the Proposed Project Area, with the sole impact, outside of areas of direct habitat loss, being the displacement of animals. In most cases, this would be beyond the next ridge or around the next bend. This area is also used to analyze cumulative impacts to those wildlife species with less mobility and smaller home ranges. For highly mobile wildlife species, such as migratory birds, the region of influence for cumulative impacts would need to be analyzed throughout their entire home range, including where they migrate from and where they are migrating to. This could lead to a potentially enormous scale of cumulative impacts analysis. It is not possible to define all projects and potential actions that could have a cumulative impact for the highly mobile species in the analysis area, and specific data are not available regarding highly mobile wildlife found or observed in the Proposed Project Area. Therefore, a region of influence is not defined for these species. The region of influence for the cumulative effects analysis on fish species is the Upper Salmon River Subbasin, since impacts to water quality upstream could impact fish and fish habitat downstream.

Big Game

The management action in the region of influence for the cumulative effects analysis that has the greatest potential to impact big game is recreation. Recreation has been and is expected to increase in the future in this area, thus the potential for human/wildlife encounters and noise from human activities would increase. If these encounters occurred during the winter months, they could increase the energy expenditure of the animals. The Proposed Project under all alternatives would not notably impact elk or antelope, but the noise, surface disturbance, and presence of humans would potentially impact deer wintering in the area. The anticipated increase in recreation would add cumulatively to the effects of the Proposed Project under all alternatives on deer. If other land and realty actions discussed above are located in winter range and would be conducted during winter months, these could also add cumulatively to the potential impacts of mining operations during the winter on big game. Livestock grazing occurs throughout the region of influence and grazing permits have been and are in the process of being renewed. Livestock grazing can result in competition for resources with big game. However, only mule deer regularly use the Proposed Project Area, and because of the difference in food preferences between livestock and deer (grazing verses browsing), livestock grazing is not expected to add cumulatively to the effects of the Proposed Project on mule deer.

Upland Game Birds and Non-game Birds

The potential impacts from the Proposed Project on upland game birds and non-game migratory and resident birds from fragmentation of habitat could add cumulatively to the effects of other management projects that affect sagebrush habitat in the region.

Furbearers

The impacts from the Proposed Project on large furbearers from habitat loss would be minor. Impacts would primarily be those resulting from human/wildlife encounters and noise, and would be limited to the period when these animals traveled through the Proposed Project

Area. Because of the large home ranges of these animals, these impacts are not considered great enough to add cumulatively to other past, current, and future impacts in the area.

Management actions in the region of influence for the cumulative effects analysis that have the potential to impact small furbearers are those projects resulting in the loss and destruction of habitat, such as grazing, mining, fuels reduction/prescribed burn, and development. Under Alternatives B, C, and D, the Proposed Project would add incrementally to the cumulative effects of past, current, and future foreseeable project on small furbearers. Because of the small home ranges of small furbearers, loss of habitat from the Proposed Project would potentially have a greater impact than for the larger furbearers. However, only a small amount of habitat would be disturbed. Under Alternative A, a portion of small mammal habitat would be restored. The cumulative effects generated by this project and other projects in the analysis area to small furbearers in the analysis area would be minor.

Small Mammals

The cumulative impacts to small mammals would be the same as those described above for small furbearers.

Fish

Cumulative impacts to game and non-game fish and their habitat would be the same as discussed below for special status fish species.

<u>Special Status Fish and Wildlife Species</u>

The region of influence for the cumulative effects analysis on special status wildlife species is an approximately 16 square mile area centered on the Proposed Project Area. This area should encompass the home ranges of all special status wildlife that potentially use habitat in the quarry site and its vicinity, with the exception of lynx and wolves which are highly mobile. However, these species would not be negatively impacted by the proposed alternatives. The region of influence for the cumulative effects analysis on special status fish species is the Upper Salmon River Subbasin, since impacts to water quality upstream could impact fish and fish habitat downstream.

Bald Eagle

Regional impacts to bald eagles would result primarily from past, current, and future recreational activity along the Salmon and East Fork Salmon River and to a lesser extent from road construction and bridge replacement projects, road maintenance, and vehicular traffic. These activities could add cumulatively to the effects of the Proposed Project on wintering bald eagles. The Proposed Project would not generate cumulative impacts to nesting eagles, since no nesting eagles occur in the quarry site or its vicinity.

Gray Wolf and Canada Lynx

The potential for negative impacts from the Proposed Project on wolves and lynx is limited primarily to those resulting from infrequent human/wildlife encounters that could occur if these animals traveled through the quarry site. Wolves may benefit in terms of prey availability if deer are displaced from the Proposed Project Area to areas used regularly by wolves. Given the low likelihood and temporal nature of human/wildlife encounters, the cumulative effects generated by this project and other projects in the analysis area to wolves and lynx are considered minor.

Pygmy Rabbit

The Proposed Project would not result in impacts to pygmy rabbits or their habitat. No cumulative impacts to this species would be generated.

Greater Sage-Grouse

Regional impacts to sage-grouse and their habitat would result primarily from past, current, and future range management treatments, grazing, mining development, construction and development projects, and drought. Under all action alternatives, the Proposed Project would result in a small amount of habitat loss and an increase in human disturbance. This would add incrementally to the cumulative impacts (habitat loss, alteration, and human disturbance) generated from other past, current, and future projects in the analysis area.

Peregrine Falcon

Due to the distance of the peregrine falcon nesting territories from the quarry site, the Proposed Project is not expected to generate impacts that would add cumulatively to those generated from other past, current, and future projects in the analysis area.

Sockeye Salmon, Chinook Salmon, Steelhead, Bull Trout and Cutthroat Trout

Past, present, and reasonably foreseeable future projects occurring in the Upper Salmon River Subbasin include livestock grazing, mining, recreation, and realty actions such as bridge replacement, road closure, culvert replacement, water developments, and watershed management. Impacts of these actions, both negative and beneficial, could add cumulatively to the impacts of the Proposed Project on special status fish species and their habitat. These impacts are directly associated with those described for water quality above.

Alternative A

Implementation of Alternative A along with other restoration activities in the Upper Salmon River Subbasin would add cumulative, beneficial impacts to fish habitat in the watershed (see the water quality subsection above for additional detail).

Alternatives B, C, and D

Potential impacts from the proposed action alternatives to special status fish habitat (potential delivery of fine sediment, fuel, lubricants, ammonium nitrate, and pre-mixed ANFO to the Salmon and East Fork Salmon rivers from the quarry site) would add cumulatively to impacts from other management activities occurring in the Upper Salmon River Subbasin (see the water quality subsection above for additional detail). The degree of impacts potentially generated would be lowest for Alternative B and highest for Alternative D due to the increased risk of sediment delivery to the Salmon River and East Fork Salmon River associated with the proposed increases in mining-related surface disturbance and associated roads and other hard-packed surfaces. However, under alternatives C and D, improvements would be made to the stormwater detention system that would capture a greater percentage of sediment than under Alternative B. The stormwater detention system proposed under Alternative D would capture a greater amount of sediment than the one proposed under Alternative C.

Wild Horses and Burros

The cumulative effects area for wild horses is defined as the Challis HMA. The proposed alternatives would not impact the viability of the wild horse population in the Challis HMA and it is anticipated that the appropriate management level of wild horses in the HMA would be retained. The Proposed Project under all alternatives would not result in cumulative impacts to wild horses in the Challis HMA. There are no burrows in the Challis HMA so there would be no cumulative impacts to burros.

Other Resources

Cultural Resources

Numerous prehistoric and historic sites have been located along the Salmon River Corridor and past management and development activities have had adverse affects on potentially significant sites. However, none of the proposed alternatives would result in impacts to cultural resources eligible for the National Register and would not result in cumulative impacts to cultural resources along the Salmon River corridor.

Tribal Treaty Reserved Rights and Interests

The Challis Field Office area is defined as the cumulative effects area for Tribal rights and interests since this area is comprised of lands (aboriginal, traditional, or unoccupied) on which the Shoshone-Bannock Tribes reserved the right to hunt, fish and gather natural resources in the Fort Bridger Treaty of 1868. Historically, the East Fork Salmon River was an important fishery resource for the Tribes, and fishing on this river continues to this date. According to information provided by the Shoshone-Bannock Tribes during consultation for this EIS, the past creation of the East Fork campground removed an important cultural site for the Tribes and the excavation of Pit 1 at the quarry removed a landmark marking the confluence of the East Fork Salmon and main Salmon Rivers. Further expansion of the quarry would change the visual appearance of the landscape to Tribal members using the area for fishing and other activities. Free access to the land where the quarry is located would also continue to be limited under all action alternatives. However, the BLM would work with the Shoshone-Bannock Tribal members regarding access needs so that treaty rights are honored. Therefore, the expansion of the quarry would not result in any future cumulative impacts to Tribal rights and interests.

Social and Economic Conditions

The cumulative effects area for social and economic conditions is Custer County, as opposed to the smaller Challis area assessed in Section 3.3.3. The population of Custer County increased by approximately 5 percent between 1990 and 2000, and then decreased by approximately 6 percent between 2000 and 2005, for an overall decreasing trend since 1990 of about 1 percent. Populations have fluctuated primarily based on the availability of jobs, with a large portion of jobs in the region being in the mining and forestry industry. Economic conditions in the county have improved over this time period, with the median household income and per capita income increasing 24 percent and 26 percent, respectively, between 1989 and 1999 (U.S. Census Bureau 2007).

It is expected that under Alternative A, the cumulative effects of closing the quarry would result in a slight decrease in population, household income, and industrial output in Custer County. Under Alternative B, the population and economic trends of the Custer County area would remain about the same, with a continued increase in the number of second home owners in the Stanley area. The expansion of the Three Rivers Stone Quarry under Alternatives C and D would reverse the population trend in the county, increasing it due to the increase in jobs associated directly and indirectly with the quarry. The high paying wages at the quarry would also promote an increase in the economy in the county. This would add cumulatively to the increase in spending that is occurring in the county as a result of increases in recreation from users outside the county and the second home owners in the Stanley and surrounding areas.

Visual Resources

Cumulative visual impacts include those indirect impacts that would result from a proposed action estimated to be negligible in and of themselves but would become significant when considered within the context of past, present, or future actions affecting visual resources in the area.

Direct and indirect visual impacts would become more dispersed at distances increasing from the Proposed Project Area. Line-of-sight analysis indicates that the quarry site would not be directly visible from distances beyond 7 miles in any one direction due to obstruction. Beyond the 7-mile radius, indirect visual impacts such as vehicle traffic and dust from the quarry site could occasionally be visible, but would become dispersed enough to cause no noticeable contrast. The area of analysis for cumulative visual impacts includes the Proposed Project Area itself and that area encompassed within a 7-mile radius from the Proposed Project boundary.

Surface disturbing activities are expected along SH-75 in the future and would be visible to the casual motorist. The visual contrasts to motorists would be in addition to those described for any of the proposed alternatives. Examples of the types of projects that would occur in addition to the impacts from the Proposed Project include bridge replacements and pavement rehabilitation. These projects would add to the number of localized areas of surface disturbance experienced by motorists and the appearance of equipment along SH-75. These impacts would be of short duration, usually less than 1 minute, due to the rates of speed along SH-75.

The appearance of industrial vehicles (semi-trucks, dump-trucks, etc.) along SH-75 is anticipated to increase as a result of projects other than those proposed under this EIS. The Challis Bridge Sand and Gravel Pit would be located along a route proposed by L&W Stone for hauling flagstone to market. The appearance of industrial vehicles along SH-75 would increase cumulatively as a result of the Proposed Project, and the gravel pit. Other mining activities in the Salmon River watershed often utilize SH-75 for access to mines or markets. The appearance of industrial vehicles described under each alternative would be in addition to those used at the Persistence Mine (13 miles southeast of Challis), and the Thompson Creek Mine (12 miles west of Clayton).

Area-wide reductions in visibility could occur as a result of prescribed fire activity, agricultural burning, and wildfire. The appearance of fugitive dust from the Proposed Project Area during operation and reclamation could result in minor cumulative impacts to visibility in the vicinity of the quarry site. The impacts to visibility from fugitive dust are expected to be infrequent and of short duration, however if added to the impacts from smoke in the atmosphere could result in some cumulative reductions of visibility at the local level over the short-term.

The Salmon River Scenic Byway Corridor Management Plan (in progress) is expected to identify the scenic values that local residents want to promote along SH-75. Although the Plan was not complete at the time of this document, it is expected that some cultural modifications would appear along SH-75 as a result of Plan implementation. These modifications could include interpretive signage, custodial facilities, and scenic pull-out areas, for example. The Plan may call for removal or preservation of certain cultural modifications along the SH-75 travel corridor and for preservation of historic structures visible from the road. Removal or alteration of some cultural modifications along SH-75 to coincide with the thematic values identified in the Plan may result in a return to naturalness in some localized areas. However, it could also result in the persistence of historic structures on the landscape. The plan may result in an increase in the number of visitors that travel along SH-75 because one of its main goals is to promote tourism.

Transportation, Access, and Public Safety

The cumulative effects area for Transportation and Access is defined as the SH-75 corridor between Challis and Clayton, the East Fork Salmon River Road, and the Three Rivers Stone Quarry. This area was selected as it represents the corridor traveled daily by quarry employees, is part of the Salmon River Scenic Byway Corridor, and includes the area within the immediate vicinity of the quarry used by recreationists. Traffic on this stretch of the highway has increased and is expected to continue to increase in the future during the snow-free seasons due to the increase in recreation in the area and in the Stanley Basin. Increases in traffic associated with the mining operations, as described in Section 4.7.5, would add cumulatively to this projected increase in traffic. Although roads would be constructed to assist in mining activities under the action alternatives, these would be temporary, would not be available for recreational use, and would be reclaimed when no longer needed so would not add cumulatively to the effect of increased unimproved roads in the area.

Gates restricting public access through the quarry would remain, ensuring continued safety to the public and quarry employees. Because of the restrictions, and adherence to mining safety procedures, the Proposed Project would not result in any cumulative effects as it relates to public safety.

Land Uses and Private Property

The cumulative effects area for Land Use is defined as Custer County. The Proposed Project Area has had some type of mining claim since the mid-1960s. Land within the quarry boundary would continue to be used for mining for up to 5 to 40 years, depending on the alternative selected. Other past, existing, and potential future land uses within the cumulative effects area include mineral exploration and development, electric power-line rights-of-way, state highway rights-of-way, cattle grazing, recreation, and scattered rural living and associated agriculture. Some of the mines in the area have closed, such as the Hecla Mine, and others continue to be developed, such as the Thompson Creek Mine and Persistence Mine at a rate commensurate with market demand. Impacts of the proposed expansion of the Three Rivers Stone Quarry on land use and private property rights would be minimal, related primarily to restricted recreational access of the quarry and the lack of potential for development of this land for other uses. These impacts would not add cumulatively to the impacts of other land uses and private property development occurring in the area.

Recreation

The cumulative effects area for recreation is defined as the Upper Salmon River SRMA. This area was selected given that dominant recreational activities in the vicinity of the quarry, and overall on the Challis Field Office, are associated with the Salmon River and East Fork Salmon River (camping, floating, boating, fishing, etc.). Recreation within the SRMA would continue to increase over time, and demand for the improvement of and addition of recreational facilities, such as campgrounds, potable water, toilets, pullouts, and trails, would also increase. Cumulative effects to the recreation opportunities in the SRMA from any of the proposed alternatives would be expected to be negligible. Although public access has been and would continue to be restricted within the quarry, this area is not a high-use recreation area and the restricted area would represent less than 0.5 percent of the SRMA. This would not affect the ability to access like areas in the vicinity and would not affect the opportunities for recreating on and immediately adjacent to the Salmon River and East Fork Salmon River. Recreational use and opportunities within the Proposed Project Area have been limited in the past and are not expected to change markedly over time. The site where the quarry is located would still remain important visually to the recreational experience of people using the Salmon River, and as the quarry expands, the visual experience of the recreationists on the river would continue to be modified. However, this impact on the potential visual enjoyment of the area would not cause a change in recreation opportunities.

Livestock Grazing

The region of influence for the cumulative effects area for livestock grazing is the BLM Challis Field Office boundary. Livestock grazing would continue to be one of the primary resource uses of land within the BLM Challis Field Office area, and renewal of several grazing allotment permits are proposed on land administered by both the BLM and USFS in the Upper Salmon River Subbasin. The cumulative effects to livestock grazing as a result of the Proposed Project, under all alternatives, is expected to be negligible given that the impacts would result in no more than an approximated reduction or addition of up to five AUMs in the Split Hoof Allotment (which overlaps the quarry site). Also, grazing for this permitted allotment has not occurred since it was transferred to Bald Mountain Cattle in 2000.

Special Designations

Wild and Scenic Rivers

Portions of the quarry site are visible from the East Fork Salmon River and the Salmon River, which are tentatively classified under the National Wild and Scenic Rivers System. However, the Proposed Project would not result in degradation of the outstandingly remarkable values of the Salmon and East Fork Salmon rivers in the vicinity of the quarry. The Proposed Project, under any alternative, would not result in cumulative impacts to Wild and Scenic Rivers on lands administered by the BLM Challis Field Office.

Areas of Critical Environmental Concern

The region of influence for the cumulative effects analysis for ACEC/RNA is restricted to the East Fork Salmon River Bench ACEC/RNA and the Three Rivers Stone Quarry. The quarry overlaps approximately 4 acres of the northwest corner of the East Fork Salmon River Bench ACEC/RNA. Prior to 2004, mining in a portion of Pit 1 was expanded into this ACEC/RNA and a road was created in the ACEC/RNA to access the southern portion of this pit. During road construction, material fell onto the slopes below, partially covering vegetation in the ACEC/RNA. This road has since been reclaimed and no additional roads exist within the ACEC/RNA boundary. The Proposed Project would not further expand into the ACEC, however, the 4 acres of native vegetation that previously existed prior to expansion of Pit 1 has been permanently removed. Vegetation, although altered, was replanted in the road, and the 4 acres of vegetation that were disturbed were not on the bench proper (the river terrace bordering the East Fork Salmon River), which is the habitat that the ACEC/RNA was ultimately designated to protect.

4.9 UNAVOIDABLE ADVERSE EFFECTS

The Proposed Project design features, BMPs, and proposed reclamation would avoid or minimize many of the potential adverse effects of the mining operation. However, not all adverse effects can be avoided, nor would reclamation be 100 percent effective in remediating all impacts. There would be at least a minimal amount of unavoidable adverse impact on all resources present in the Proposed Project Area for at least a short time, due to the presence of equipment and humans in the area and the time necessary for restoration to be effective. The magnitude of these impacts would vary between each of the alternatives. Unavoidable adverse impacts associated with the Proposed Project would include:

- Short-term impacts to air quality from dust generation and vehicle emissions.
- Soil compaction and destruction of soil textures from road construction and other surface disturbing activities. In addition, soil loss would occur during surface disturbing activities due to wind and water erosion.
- Noise disturbance to humans and wildlife from mine equipment and blasting.
- Loss of vegetation and potential habitat for wildlife.
- Loss of mule deer winter range and operations in winter range during the winter months.
- Potential disturbance to wintering bald eagles.
- Loss of jobs (Alternative A only).
- Changes to the viewshed from the mining activities and construction of roads.
- Restricted access to the quarry site by the public.

4.10 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible and irretrievable impact is defined as a permanent reduction or loss of a resource that once lost cannot be regained. Most mining projects result in an irreversible and irretrievable commitment of the material that is removed (gold, coal, stone, etc.). Flagstone would be removed from the geologic resource at the quarry if any of the proposed action alternatives are implemented. These actions would constitute an irreversible commitment of the geologic resource resulting from removal of flagstone from the quarry.

A portion of waste rock from the Pit 1 waste rock storage area would be made available as a mineral material by sale or free-use permits in the form of a community pit. The amount of waste rock that would be removed as a mineral material from the Pit 1 waste rock storage area is estimated to be as much as 20,000 cubic yards per year. Waste rock removed from the community pit would be dispersed throughout the region as rip rap, construction material, and for other uses.

The Proposed Project would not further expand into the East Fork Salmon River Bench ACEC/RNA, and the road that formerly accessed the southern portion of Pit 1 was reclaimed. However, the 4 acres of native vegetation that previously existed prior to expansion of Pit 1 has been permanently removed.

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CHAPTER 5.0

CONSULTATION AND COORDINATION

The Proposed Project is on public lands primarily managed by the Challis Field Office of the Idaho Bureau of Land Management (BLM). However, a variety of other organizations, agencies and people maintain an interest in the area or use the area for specific purposes. These include, but are not limited to the following: the Shoshone-Bannock Tribes; Idaho Department of Fish and Game (IDFG); U.S. Fish and Wildlife Service (USFWS); National Marine Fisheries Service (NMFS); Idaho Department of Lands IDL); Idaho Transportation Department (ITD); Custer County; grazing permittees; private landowners; and mining claimants. BLM established a coordinated effort for participation in the analysis process by the following:

- Through formal consultation with the Tribes;
- Through contacting, meeting with and providing information to various groups and local governments; and
- By seeking the active participation of the public in the scoping process and throughout the analysis process.

This chapter addresses the consultation and coordination that has taken place in both an informal and formal setting with the Shoshone-Bannock Tribes; Federal, state and local governments; interest groups; and the general public.

5.1 SPECIFIC CONSULTATION ACTIONS

5.1.1 Formal and Informal Government-to-Government Consultation with Tribes

During the initial public scoping period the BLM held an official consultation meeting with the Shoshone-Bannock Tribal Business Council on January 12, 2006. The purpose of the meeting was to provide information on the Proposed Project, answer questions, and solicit Tribal input. On this same date a letter from the Shoshone-Bannock Tribes providing comments on the proposed quarry expansion was received by the BLM.

Table 5.1-1 lists chronologically meetings and consultation with the Shoshone-Bannock Tribes since the initial public scoping period. Consultation occurred prior to the preparation of this document as part of the actions associated with the Environmental Assessment prepared for the Three Rivers Stone Quarry Expansion in 2004 (USDI-BLM 2004). These records of consultation are also included in Table 5.1-1.

Table 5.1-1. Consultation with the Shoshone-Bannock Tribes.

Date	Type of Contact
February 26, 2003	Technical staff of the Shoshone-Bannock Tribes are given copies of the Amended Plan of Operations (APOO) at a meeting in Fort Hall.
July 2003	Formal government-to-government consultation was initiated and BLM requested comments from the Tribes.
September 16, 2003	BLM had a formal coordination meeting at the Shoshone-Bannock Tribes tribal offices with the Fort Hall Business Council to discuss the proposed operations and the environmental assessment.
November 4, 2003	Fort Hall Business Council provided the BLM with written comments and concerns regarding the APOO.
January 12, 2006	Consultation meeting between BLM and Shoshone-Bannock Tribes, including Fort Hall Business Council. Power Point presentation made to Tribes. Fort Hall Business Council provided the BLM with written comments and concerns regarding the proposed expansion of the quarry.
June 27, 2006	Mine site visit and visual resource field assessment with Iralene V. Osborne of the Shoshone-Bannock Tribes.
July 3, 2006	Letter to Iralene Osborne of the Shoshone-Bannock Tribes from URS Corporation (URS) staff regarding the June 2006 site visit. Photographs of site visit attached.
August 15, 2006	Transmittal Form to Iralene Osborne of the Shoshone-Bannock Tribes from URS noting enclosure of an additional requested CD of photographs taken during the June site visit.

5.1.2 Intergovernmental (State and Local) and Interest Group Coordination

Members of state, county, city governments and interest groups were contacted about the Proposed Project and invited to comment. In response, State agencies including the IDL and the Idaho Geological Survey, and the Lemhi & North Custer County Economic Development Corporation submitted comment letters through the public scoping process. In addition, comment letters were received from the Western Watersheds Project and the Idaho Conservation League. A field tour of the quarry was conducted with the Challis Experimental Stewardship Group in June 2007.

5.1.3 Resource Advisory Council

A resource Advisory Council (RAC) is an advisory board established by the Governor of Idaho to coordinate with the BLM and provide input on important issues. A RAC consists of members of the public; each representing one or more of the many resources the BLM manages. Early on in the analysis process, the Idaho Falls District RAC was presented with an overview of the Proposed Project and invited to participate in the analysis. The RAC was first introduced to the project at a RAC meeting on January 20, 2005. Ongoing information about the Proposed Project has been presented at additional RAC meetings on June 7, 2005 (included site tour), September 7, 2005, November 29, 2005, March 14, 2006, and September 20, 2006 (included site tour).

5.1.4 Congressional Staffs

Local Congressional Staffs were briefed on the Proposed Project by the Challis Field Office Manager, David Rosenkrance at meetings in Idaho Falls on January 19, 2006 and July 18, 2006.

5.1.5 Consultation with Federal Agencies

The BLM, NMFS and USFWS operate under an interagency agreement in a cooperative approach to fish and wildlife management. The BLM enters into consultation with the USFWS pursuant to Section 7 of the *Endangered Species Act of 1973, as amended*. The consultation process includes both "informal" and "formal" consultation. A biological evaluation process is used by these agencies to identify which listed or proposed species could be affected by the proposed action, to evaluate the possible effects, and to determine if formal consultation is required. In December 2003 a Biological Assessment (BA) for aquatic species was prepared based on the BLM Preferred Alternative from the 2004 EA. On December 23, 2003 the USFWS provided a letter concurring with the finding of the BA of "may affect, not likely to adversely affect" for bull trout or their proposed critical habitat. On January 22, 2004 the NMFS also provided a letter concurring with the findings of the BA.

Since Alternative D involves actions not described in the BA upon which these consultations were based in 2003, consultation would be undertaken with the USFWS and NMFS to update concurrence for threatened and endangered fish species. Since no impacts to Federally listed terrestrial species would result from implementation of the proposed alternatives, a BA for terrestrial species would not be submitted to the USFWS.

Initial Public Scoping Mailing List

At the beginning of the NEPA process, a mailing list of approximately 42 interested parties was developed. The mailing list included names and addresses from existing BLM mailing lists, potentially affected Federal, state and local agencies, organizations, Tribes, and other interested private parties. The list was used to inform the interested parties, through project publications, of various opportunities for their involvement in the Proposed Project.

The initial mailing list was used to include interested parties during the course of the project through newsletters. A Public Scoping Notice Newsletter was prepared and mailed on October 28, 2005. The Notice invited the public to participate in the scoping process and to comment on the Proposed Project. The mailing address and email address for submitting comments were provided in the scoping newsletter as well as a pre-addressed comment form. The Public Scoping Notice Newsletter served to inform the recipients of the public scoping process for the preparation of the EIS for the Proposed Project and the time, date, and location of the scheduled scoping meetings. The notice included background information on the Proposed Project, the purpose and need, and identified preliminary resource issues.

A letter was mailed on November 2, 2005 with information correcting an error that was contained within the original newsletter. The first and third page of the newsletter incorrectly stated that the public scoping process would continue through November 21, 2005. The Notice of Intent published in the Federal Register on October 21, 2005 indicates that the scoping period will be open for 45 days. Therefore, the correct scoping period for the Three Rivers Stone Quarry Expansion EIS was from October 21, 2005 through December 5, 2005. The public scoping period for the proposed Three Rivers Stone Quarry Expansion ended on December 5, 2005. This letter was mailed to all parties that had received the Scoping Notice Newsletter.

5.1.6 Public Scoping Meetings

Public scoping meetings were held in Challis, Idaho on November 16, and in Boise, Idaho on November 17, 2005. The scoping meetings were held in an "Open House" format and featured informal, one-on-one question and answer interactions by interdisciplinary team members. Attendees signed a registration sheet as they entered the room. Team members then escorted attendees to stations set up around the room, which detailed the proposed action, resource issues, planning criteria, Proposed Project design, proposed alternatives to be analyzed in the EIS, and a proposed schedule for completing the EIS. Following presentations, attendees were encouraged to mail in written comments/questions or to sit and fill out comment cards specific to the Proposed Project. Table 5.1-2 lists the agencies, groups and individuals who responded during the scoping process.

Table 5.1-2. Agencies, Groups and Individuals Who Responded During the Scoping Process.

Agencies	
Federal	
U.S. Environmental Protection Agency	
Citizens Groups	
Western Watersheds Project	North Custer & Lemhi County Economic Development Corporation
Idaho Conservation League	
Individuals	
Monte Severe	Jackie Ingram
D.W. "Pete" Peters	Virginia Gillerman
Patricia Maloney	Danny L. Hazzard
Ms. Helen Stands	

5.2 LIST OF PREPARERS

Personnel contacted or consulted during preparation of this Drat EIS are listed in Table 5.2-1. The list of preparers and participants is given in Table 5.2-2.

Table 5.2-1. Personnel Contacted or Consulted for the Three Rivers Stone Quarry Expansion Project.

Agency or Organization	Name	Position
BLM Challis Field Office	Dave Rosenkrance	Challis Field Office Manager
	Keith Andrews	Wildlife Biologist
	Jeff Christenson	Outdoor Recreation Planner
	Arn Berglund	Fisheries Biologist
	Carol Hearne	Archaeologist
	Patricia Jones	Hydrologist
	Dana Perkins	Ecologist
	Ken Gardner	Geologist
	Carren Morgan	Rangeland Management Specialist
BLM Idaho Falls District	Joe Kraayenbrink	Idaho Falls District Manager
	Chuck Horsburgh	Project Manager
	David Howell	Public Affairs Specialist
U.S. Fish and Wildlife Service	Sandi Arena	Wildlife Biologist

Table 5.2-1. Personnel Contacted or Consulted for the Three Rivers Stone Quarry Expansion Project.

Agency or Organization	Name	Position
Idaho Department of Fish and Game	Greg Painter	Environmental Staff Biologist Salmon River Field Office
	Beth Waterbury	Non-Game Wildlife Biologist, Salmon River Field Office
Shoshone-Bannock Tribes	Iralene Osborne	Visual Resources
Independent Contractor	Caryol Elzinga	Plant Ecologist

Table 5.2-2. List of Preparers and Participants for the Three Rivers Stone Quarry Expansion Project.

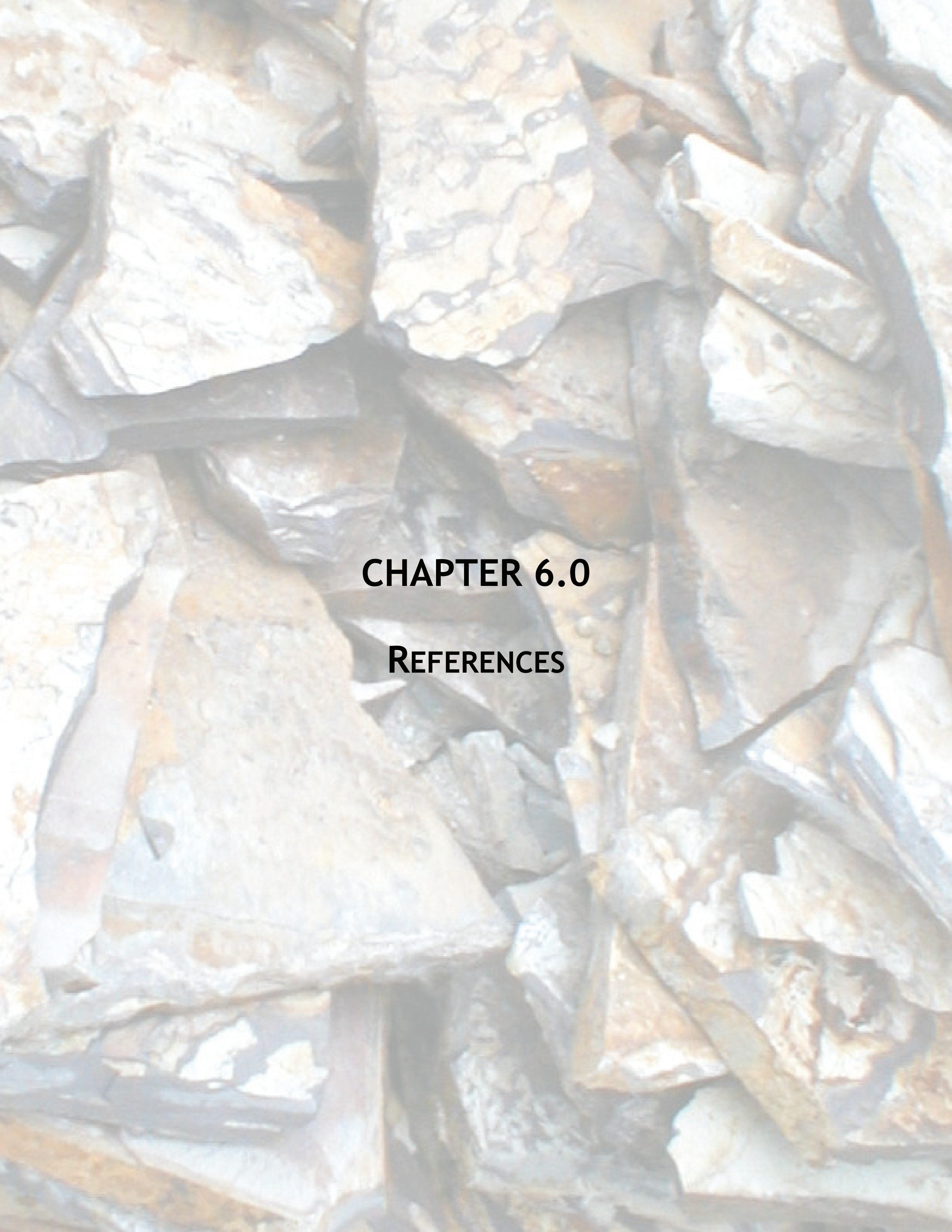
Name	Education/Experience	Draft EIS Responsibility
BLM Interdisciplinary Team		
Chuck Horsburgh	BS Geology 32 Years Experience	Project Manager
Dave Rosenkrance	BS Engineering 16 Years Experience	Challis Field Office Manager
Keith Andrews	BS Wildlife Biology 17 Years Experience	Wildlife
Jeff Christenson	BS Forestry/Recreation Management 11 Years Experience	Recreation, VRM
Arn Berglund	BS Wildlife and Fisheries Resources 19 Years Experience	Fisheries
Ryan J. Beatty	BS Fisheries Science and Limnology, MS Zoology 6 Years Experience	Fisheries
Carol Hearne	BA Anthropology, MS Cultural Resource Management 17 years Experience	Cultural Resources
Patricia Jones	BS Geology 11 Years Experience	Hydrology, Hazardous Materials, Roads

Table 5.2-2. List of Preparers and Participants for the Three Rivers Stone Quarry Expansion Project.

Name	Education/Experience	Draft EIS Responsibility
Dana Perkins	BS Animal Science and Wildlife Biology, MS Renewable Natural Resources, Ph. D. Ecology 31 Years Experience	Botany
Ken Gardner	BS Geology, MS Geochemistry 15 years Experience	Minerals and Geology
David Howell	BA Mass Communications, M. Ed. Educational Studies 16 Years Experience	Public Affairs
URS Corporation		
Aaron English	BS Wildlife Biology 14 Years Experience	Project Manager, Public Involvement
Dave Schwarz	BS, MS, and PhD Geology 20 Years Experience	Geology, Minerals, Soils and Hydrology
Suzy Cavanagh	BS and MS Geology 9 Years Experience	Geology and Soils
Brandt Elwell	BS Geography, MS Forestry 11 Years Experience	GIS Analysis
Marcy Westover	BS Botany 6 Year Experience	Vegetation
Kavi Koleini	BS Environmental Science 7 Years Experience	Visual Resources
Jarod Blades	BS Environmental Science 7 Years Experience	Wildlife Resources
Sheyna Wisdom	BS Biology, MS Marine Science 8 Years Experience	Noise
Mark Storm	BS Aeronautics and Astronautics 15 Years Experience	Noise
Peter Martinez	MA GIS 12 Years Experience	Data Management and Administrative Record Management
Rebecca Thompson	BS Botany, MS Wildlife Biology 10 Years Experience	Biological Resources

Table 5.2-2. List of Preparers and Participants for the Three Rivers Stone Quarry Expansion Project.

Name	Education/Experience	Draft EIS Responsibility
Ryan Baum	BS Biology, MS Geographic Information Sciences 3 Years Experience	GIS
Sandra Steele	BBA Management 17 Years Experience	Document Production, Coordination, Quality Assurance
Visual Genesis		
Jason Pfaff	BS Landscape Architecture 11 Years Experience	Visual Resources/Computer Simulations
Ted Bierman	BS Cartography 4 Years Experience	Visual Resources/Computer Simulations
Dan Green and Associates		
Dan Green	PhD Resource Economics 35 Years Experience	Socioeconomics



CHAPTER 6.0

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APPENDICES

APPENDIX A

NOTICE OF INTENT TO PREPARE AN EIS PUBLISHED IN THE FEDERAL REGISTER

water supply pump station with the water filtration/injection plants.

The BLM consulted with the U.S. Fish and Wildlife Service about potential effects on listed threatened and endangered species from project construction and operation. The Service reviewed the DEIS and provided comments. In March 2005, the BLM submitted a Biological Assessment to the Service, concluding that the project may adversely affect the Uintah Basin hookless cactus; may adversely affect the Colorado pikeminnow, humpback chub, bonytail and razorback sucker; and may adversely modify designated Critical Habitat for the four fish species through depletions from the Upper Colorado River System. In its Biological Opinion, the Service concurred with the BLM's conclusions for these species.

The Biological Opinion contains recommended conservation measures to protect and recover the Uinta Basin hookless cactus and the four Colorado River native fish. The BLM has adopted nearly all these conservation measures (with minor modifications), and has included these measures in the conditions of approval. One exception is the Service's recommendation that no further surface occupancy by oil and gas facilities be approved in the Pariette ACEC. Due to valid existing lease rights, the BLM cannot stipulate a blanket ''no surface occupancy'' requirement for oil and gas development within this ACEC. However, BLM has decided to defer authorization of new wells and access roads within the ACEC boundaries until the needed inventories are completed.

The FEIS is a complete document. It includes the Biological Opinion received from the Service, plus a presentation of substantive public comments received on the DEIS. The FEIS also includes BLM's responses to these comments. The FEIS includes changes to the text in response to public comments on the DEIS. These changes were made to clarify, correct and/or expand information to aid the public's understanding of the proposed project, reasonable alternatives and their effects on the environment.

Dated: August 31, 2005.

William Stringer,

Field Manager, Vernal Field Office.

[FR Doc. 05–21043 Filed 10–20–05; 8:45 am]

BILLING CODE 4310–22–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

Notice of Intent To Prepare an Environmental Impact Statement (EIS) and Initiate the Public Scoping Process

AGENCY: Bureau of Land Management, Interior.

SUMMARY: Pursuant to Section 102(2)(c) of the National Environmental Policy Act of 1969 and the Federal Land Policy and Management Act of 1976, notice is hereby given that the Bureau of Land Management (BLM), Challis Field Office, will be directing the preparation of an Environmental Impact Statement (EIS) that will analyze the mining impacts resulting from L&W Stone's Amended Plan of Operations in Custer County, Idaho.

DATES: The scoping comment period will commence with the publication of this notice and will end 45 days after publication of this notice. Two public meetings will be held during the scoping comment period. Comments on the scope of the EIS, including concerns, issues, or proposed alternatives that should be considered in the EIS should be submitted in writing to the address below. The dates of public meetings to be held in Challis and Boise, Idaho will be announced through the local media, newsletters, and BLM's National Environmental Policy Act (NEPA) mailing list. The draft EIS is expected to be available for public review and comment in June 2006 and the final EIS is expected to be available in August 2007.

ADDRESSES: Written comments should be sent to Chuck Horsburgh, Project Leader, Idaho Falls District Office, 1405 Hollipark Drive, Idaho Falls, Idaho 83401. Faxes should be sent to 208–524–7505. Comments received on this proposal, including names and addresses, will be considered part of the public record and will be available for public inspection during regular office hours, Monday–Friday, 8–4:30 p.m. Individual respondents may request confidentiality. If you wish to withhold your name and street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials for organizations or businesses, will be available for public inspection in their entirety.

FOR FURTHER INFORMATION CONTACT: Chuck Horsburgh, Project Leader, Idaho Falls District Office, 1405 Hollipark Drive, Idaho Falls, Idaho 83401; or phone at (208) 524–7530.

SUPPLEMENTARY INFORMATION: L&W Stone Corporation mines locatable flagstone on public lands administered by the BLM's Challis Field Office in Custer County, Idaho. L&W Stone submitted an Amended Plan of Operations for their quarry under the 43 CFR 3809 Regulations in December 2002. The BLM completed an Environmental Assessment (EA) regarding the Amended Plan of Operations, signed a Finding of No Significant Impact (FONSI), and approved the project. As a result of a lawsuit that was filed objecting to that approval, the BLM was ordered by a Federal District Court judge to prepare an EIS for the Amended Plan of Operations. The Amended Plan of Operations will serve as the basis for the EIS project description. The BLM will analyze a range of alternatives in the EIS. As proposed in the Amended Plan of Operations, the quarry would operate for up to 40 years. The main product that is mined is large-diameter sheets of rock called flagstone which is used in both indoor and outdoor decorative construction.

Dated: August 30, 2005.

David Rosenkrance,

Challis Field Manager, BLM.

[FR Doc. 05–21042 Filed 10–20–05; 8:45 am]

BILLING CODE 4310–GG–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[WY–100–05–1310–DB]

Notice of Intent To Prepare a Supplemental Environmental Impact Statement (SEIS) for the Pinedale Anticline Oil and Gas and Exploration and Development Project, Sublette County, Wyoming, and Possible Amendment to the Pinedale Resource Management Plan

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of Intent (NOI) to conduct public scoping and prepare an SEIS to the Pinedale Anticline Oil and Gas, and Exploration and Development Project Final Environmental Impact Statement (FEIS) and Record of Decision (ROD), July 2000.

SUMMARY: Pursuant to section 102(2)(C) of the National Environmental Policy Act (NEPA) of 1969, as amended, the

APPENDIX B

BEST MANAGEMENT PRACTICES

The following Best Management Practices (BMP) are a compilation of measures taken from the guide stipulations in BLM Manual Handbook H-2801-1, site-specific stipulations developed for other projects, and site-specific stipulations developed for the Three Rivers Stone Quarry Expansion Project.

AIR QUALITY

1. L&W Stone shall meet Federal, state, and local emission standards for air quality and shall submit for the authorized officer's review a technical report addressing criteria and methodology of how activities at the proposed quarry will be designed to meet said standards.

2. The holder shall furnish and apply water or other means satisfactory to the authorized officer for dust control.

3. The holder will be responsible for controlling dust by reducing travel speed and/or applying water as a dust suppressant. Dust will be considered a nuisance/hazard when a visible plume of dust extends more than 300 feet from the source and an estimated opacity exceeds 20 percent (objects partially obscured). Additional methods of dust control that may be used by the holder include, but are not limited to:

    - Application of water to gravel and dirt roads and other disturbed areas as needed to suppress dust;
    - Application of water to specific activities in the quarry that generate dust plumes (i.e., excavating or blasting);
    - Curtailing of dust-generating activities during high winds;
    - Implementation of mandatory speed limits on vehicles using access roads or traveling through the quarry; and,
    - Limitation of number of vehicles allowed in the quarry.

HAZARDOUS MATERIALS

1. The holder(s) shall comply with all applicable Federal, state and local laws and regulations, existing or hereafter enacted or promulgated, with regard to any hazardous materials, as defined in this paragraph, that will be used, produced, transported or stored on or within the Three Rivers Stone Quarry or any of the quarry facilities, or used in the construction, operation, maintenance or termination of the quarry or any of its facilities. "Hazardous material" means any substance, pollutant or

contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. 9601 *et seq*., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the RCRA of 1976, as amended, 42 U.S.C. 6901 *et seq*. and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U. S. C. 2011 *et seq*. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

2. L&W Stone agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, *et seq*. or the Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901 *et seq*.) in the quarry (unless the release or threatened release is wholly unrelated to L&W Stone's activity in the quarry.) This agreement applies without regard to whether a release is caused by L&W Stone, its agent, or unrelated third parties.

3. L&W Stone shall submit its contingency plan to the authorized officer prior to scheduled start-up.

   a. Include provisions for oil or other pollutant spill control.
   b. The agencies responsible for contingency plans in central Idaho shall be among the first to be notified in the event of any spill of oil or other pollutant.
   c. Provide for restoration of the affected resource.
   d. Provide that the authorized officer shall approve any materials or devices used for oil spill control and any disposal sites or techniques selected to handle oil, matter, or other pollutants.
   e. Include separate and specific techniques and schedules for cleanup of spills of oil or other pollutants on land or waters.

4. The holder would not refuel any equipment within 500 feet of any live water source.

5. Fuel and lubricant storage areas would comply with the applicable regulations as described in 30 CFR 56.4101, 40 CFR Part 112, and the IDL BMPs.

SEDIMENT AND EROSION CONTROL/STORMWATER MANAGEMENT

Surface water management for disturbed sites would be applied on a site-specific basis and may include any, or a combination, of the following methods:

- Water bars (mine roads);
- Rolling dips (mine roads);
- Drainage and diversion ditches;
- Berms;
- Straw bales (certified to be free of noxious weed seed); and/or
- Silt fencing.

Additional BMPs, specified by Idaho regulations for managing surface water, would include the following:

- Flow dissipaters;
- Culverts at drainage crossings;
- Sediment traps/catch basins; and
- Graveling selected road surfaces.

When used as the primary means of controlling water flow, water bars would be spaced as follows:

- 300 feet to 500 feet apart where road grades are 2 percent to 5 percent;
- 200 feet to 300 feet apart where road grades are 6 percent to 10 percent;
- 100 feet to 200 feet apart where road grades are 11 percent to 15 percent; and
- Less than 100 feet apart where road grades are 16 percent to 20 percent.

Water bars would be constructed typically by cutting each water bar into solid soil to a minimum depth of 6 inches next to the cutbank and 8 inches at the road shoulder, with an adverse grade on the downgradient side of the water bar. A continuous, firm berm of soil 6 inches above normal grade, parallel to the water bar, would be constructed on its downhill side. A bank tie-in point, cut 6 to 12 inches into the roadbed, would be included. The completed water bar would extend across the full roadway width, aligned at an angle of 30 to 40 degrees relative to the roadway. If inspections show that erosion is occurring below the water bars, riprap or a silt fence would be installed at the place of erosion. Also, inspections would include a check to be sure that the lower end is open and is clear of sediment, so that water can easily flow away from the roadway.

Where appropriate, such as on long inclines to keep stormwater from flowing down roads, and where road grades are less than 5 percent, rolling dips would be constructed in place of water bars. Rolling dips would be built into the road, following the natural contours of the land. The typical dip would be 1 foot deep, with a 23-foot long approach on the downgrade side and a 66-foot long approach on the upgrade side. Inspections of rolling dips would ensure that outflows are kept free of debris to prevent ponding of water on the road (IDEQ 2001).

The primary water control method on mine roads would be drainage ditches or sumps constructed along road edges to collect stormwater runoff. Silt fences and straw bales would be utilized where drainage ditches or sumps are inadequate to control erosion of mine roads. The silt fences and straw bales would be regularly maintained and replaced when necessary.

Silt fences would be made of burlap and/or pervious polypropylene, nylon, polyester, or polyethylene and must meet Idaho State standards (IDEQ 2001). Posts that hold up the filter fabric would be spaced no more than 10 feet apart when using a wire mesh support and no more than 6 feet apart when using extra strength filter fabric, which does not require a wire mesh support. When fabric is spliced together, there would be at least 6 inches of overlap of material. Inspection of silt fences would include checking for damage, such as rips and tears, and for the height of accumulated sediment. When the height of sediment reaches half the height of the fabric material, the sediment would be removed and stored as topsoil, if appropriate; otherwise, it would be placed in a waste rock storage area.

Straw bales would be used only where water flows and drainage areas are limited in size. The straw bales would be embedded into the soil at least 6 inches and anchored with wooden stakes, typically 2 inches by 2 inches by 36 inches, or with steel drift pins driven 18 inches into the ground. Bales would be inspected after the first runoff event, and after major runoff events thereafter. The bales would be placed in a single row lengthwise on the contour for sediment control in sheet flows. Gaps between the bales would be filled with tightly wedged straw. Inspections would ensure that runoff is flowing through the bales and not around or unimpeded under the bales. In addition, sediment would be removed when it has reached 1 foot in height behind the bales and stored as topsoil, if suitable. Otherwise, the sediment would be placed in the waste rock storage area (IDEQ 2001).

Sediment traps/catch basins and flow dissipaters (such as rip-rap) would be constructed if the water management controls described above do not adequately control the flow of water over roads and other disturbed surfaces. Berms would be constructed at the toe of the waste rock piles and other disturbed areas, such as the administration area and chemical and fuel storage facilities, to collect surface runoff and prevent sediment discharge to the East Fork Salmon

River and Salmon River. Diversion ditches would be constructed around the waste rock storage areas as necessary to divert drainage around the areas.

SEEDING AND MULCHING

The holder shall prepare a seedbed by: (1) scarifying the disturbed area, (2) distributing topsoil uniformly, and (3) disking the topsoil, as directed by the authorized officer.

The holder shall seed all disturbed areas with a BLM-approved seed mixture(s). The seed mixture(s) shall be planted in the amounts specified in pounds of pure live seed (PLS)/acre. There shall be no primary or secondary noxious weed seed in the seed mixture. Seed shall be tested and the viability testing of seed shall be done in accordance with Idaho State law(s) and within 6 months prior to purchase. Commercial seed shall be either certified or registered seed. The seed mixture container shall be tagged in accordance with Idaho State law(s) and available for inspection by the authorized officer.

Seed shall be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture shall be evenly and uniformly planted over the disturbed area. (Smaller/heavier seeds have a tendency to drop to the bottom of the drill and are planted first. The holder shall take appropriate measures to ensure this does not occur.) Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre noted below, as specified by an authorized officer, are to be doubled. The seeding will be repeated until a satisfactory stand of vegetation is established as determined by the authorized officer. Evaluation of growth must be made but will not be made before completion of the second season after seeding. The authorized officer is to be notified a minimum of 14 days prior to seeding of the project.

Seed Mixture

Species of Seed_____ Variety_____ Pounds/acre PLS (seed mix to be determined)_____
Total (to be determined) lbs/acre PLS
PLS formula: % of purity of seed mixture times % germination of seed mixture = portion of seed mixture that is PLS.

The holder will apply clean, weed-free straw mulch to all disturbed areas. Mulch will be applied concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Mulch will be uniformly spread over at least 75 percent of the ground surface in disturbed areas to minimize the effects of water and wind erosion and to preserve moisture in areas requiring vegetation. Mulch will be anchored by disking or punching, depending the percent slope.

RESOURCE PROTECTION

1. Use of pesticides shall comply with the applicable Federal and state laws. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of the Interior. Prior to the use of pesticides, L&W Stone shall obtain from the authorized officer written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the authorized officer. Emergency use of pesticides shall be approved in writing by the authorized officer prior to such use.

2. L&W Stone shall be responsible for weed control on disturbed areas within the limits of the quarry. The holder is responsible for consultation with the authorized officer and/or local authorities for acceptable weed control methods. Weed treatments would be conducted consistent with the Challis BLM Field Office and the Custer County Noxious Weed Control Program.

3. The prevention and spread of noxious and invasive weeds is a high priority to nearby communities. Under EO 13112, Federal agencies shall not fund, or authorize actions likely to cause or promote the introduction or spread of invasive species in the United States. L&W Stone would prepare a noxious and invasive weed plan as part of the Plan of Operations. The weed plan would include pre-mining weed inventories and a post-mining monitoring plan to prevent and treat the spread of weeds. Mining equipment would be cleaned and free of weeds prior to coming onto the quarry. Only certified weed free straw and hay would be used as mulch or for temporary erosion control measures.

4. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. L&W Stone shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. L&W Stone will be responsible for the cost of evaluation, and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

5. The holder shall protect all survey monuments found within the quarry. Survey monuments include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey Corners, reference corners, witness points, United States. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, L&W Stone shall immediately report the incident, in writing, to the authorized officer and the respective installing authority if known. Where General Land Office or Bureau of Land Management monuments or references are obliterated during operations, L&W Stone shall secure the services of a registered land surveyor or a Bureau cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the *Manual of Surveying Instructions for the Survey of the Public Lands in the United States*, latest edition. L&W Stone shall record such survey in the appropriate county and send a copy to the authorized officer. If the Bureau cadastral surveyors or other Federal surveyors are used to restore the disturbed survey monument, L&W Stone shall be responsible for the survey cost.

PUBLIC ACCESS AND SAFETY

Gates installed by L&W Stone must include a BLM lock and a lock for the Salmon River Electric Cooperative, Inc. The BLM would provide keys to the lock to those with legal access rights such as grazing permittees and mining claimants, and others at the discretion of the BLM, but with advance notice to L&W Stone. Signs which inform the public of the location of the gate, the hours it is locked, and a phone number to call would be placed at the access road(s) to the quarry site from Spar Canyon.

EXPLOSIVES

If blasting activities require closure of State Highway 75 or the East Fork Road, Idaho Department of Transportation procedures would be followed. In addition, the Challis BLM Field Office Manager would be notified prior to any road closures or limitations associated with the mine's activities.

Two explosives magazines would be used to store explosives safely per 30 CFR 56.6000-6201. Caps, detonators, and primers would not be stored in a magazine with explosives, including dynamite.

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APPENDIX C

VISUAL SIMULATIONS – ALTERNATIVE D

Appendix C portrays the Proposed Project Area after completion of Alternative D. The photographs labeled "Proposed Project" are simulations, created using a computer model that employs digital photography, topography, engineering diagrams, and aerial photographs. Alternative D was chosen to represent all of the action alternatives because it represents the greatest amount of surface disturbance and presumably the greatest degree of environmental impact in terms of visual resources. The reader should keep in mind that the simulated landscapes in this appendix are post-operational. That is, mining operations proposed under Alternative D have ceased and the Proposed Project Area has been reclaimed. Resource specialists used this visual simulation as a tool to assist with visual contrast ratings under each alternative. The appendix is presented here to enhance the reader's understanding of the visual impacts of implementing the proposed actions.

Figure 1 is a bird's-eye-view of the camera locations (Key Observation Points; KOPs) used to create each visual simulation. A shaded cone extends outward from each location which represents the field of vision presented in each photograph and simulation. Figure 2 profiles the camera locations as they relate to the existing and proposed landforms. Figure 3 is a photograph of the Three Rivers Stone Quarry from KOP 1. Figure 4 is a simulation of what the quarry would look like from KOP 1 after completion of Alternative D. Figure 5 is a photograph of the Three Rivers Stone Quarry from KOP 2. Figure 6 is a simulation of what the quarry would look like from KOP 2 after completion of Alternative D. Figure 7 is a photograph of the Three Rivers Stone Quarry from KOP 3. Figure 8 is a simulation of what the quarry would look like after completion of Alternative D. Figure 9 is a photograph of the Three Rivers Stone Quarry from KOP 4. Figure 10 is a simulation of what the quarry would look like from KOP 4 after completion of Alternative D. All photographs of the quarry in this appendix were taken in July 2006.

Figure 1

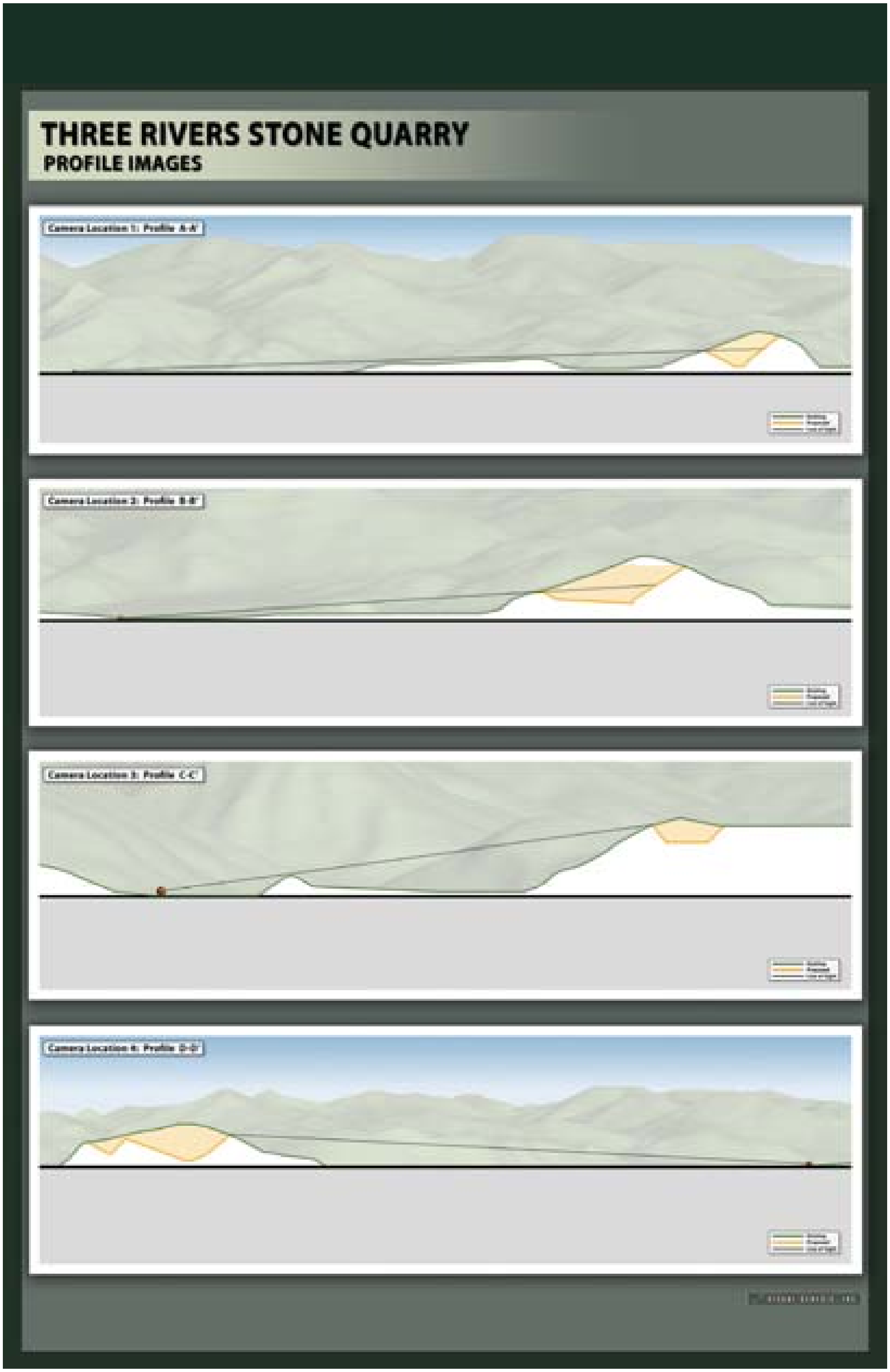
THREE RIVERS STONE QUARRY
PROFILE IMAGES
Camera Location 1: Profile A-A'
Camera Location 2: Profile B-B'
Camera Location 3: Profile C-C'
Camera Location 4: Profile D-D'

Figure 2

Figure 3

Figure 4

Figure 5

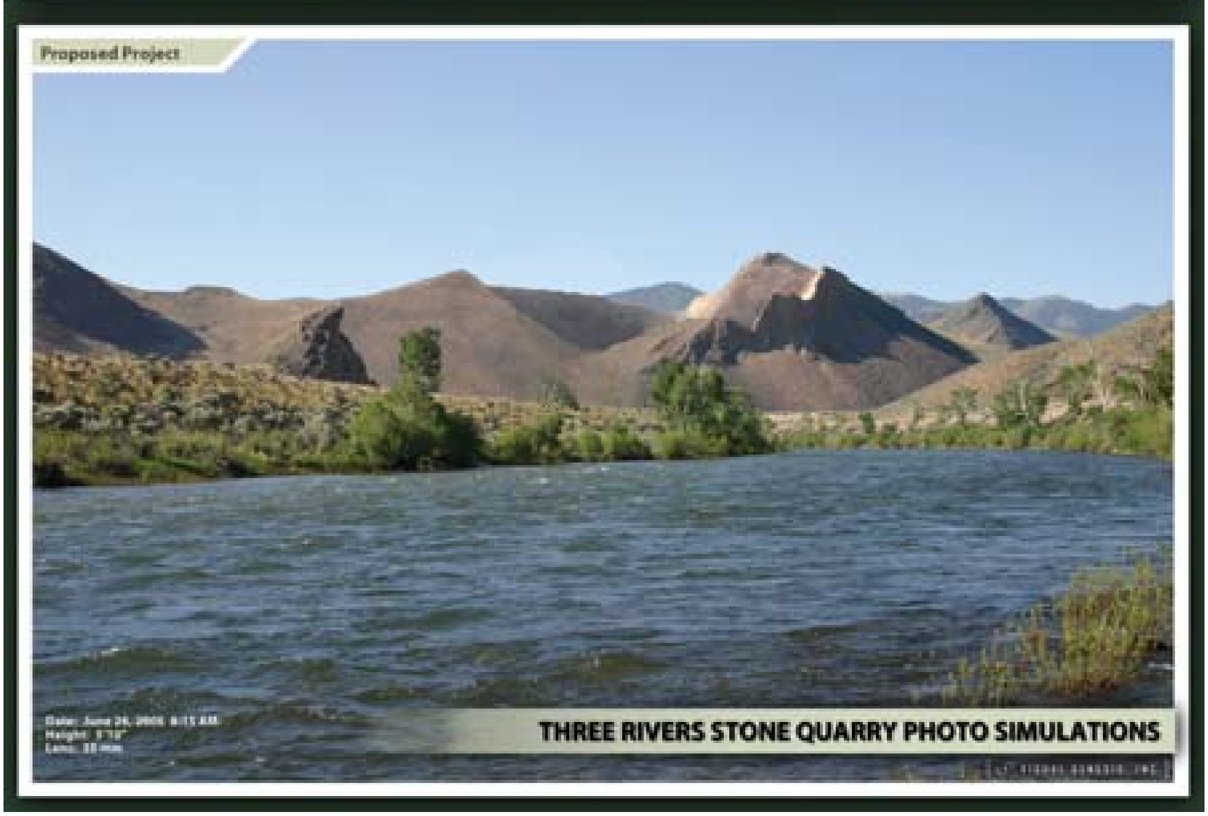

Figure 6

Figure 7

Figure 8

Figure 9

Figure 10

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