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Caldwell Canyon Prospecting and Exploration and Trail Creek Exploration Drilling Programs Environmental Assessment

**Prepared for
United States Department of the Interior
Bureau of Land Management
Pocatello Field Office**

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It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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List of Acronyms

°F	Fahrenheit	KPLA	Known Phosphate Leasing Area
AUM	animal unit months	NEPA	National Environmental Policy Act
BLM	Bureau of Land Management	NRCS	Natural Resources Conservation Service
BMPs	Best Management Practices	NRHP	National Register of Historic Places
CFR	Code of Federal Regulations	P4	P4 Production, LLC
cfs	cubic feet per second	RC	Reverse Circulation
CIAA	Cumulative Impact Analysis Areas	RMP	Resource Management Plan
EA	environmental assessment	SWPPP	Storm Water Pollution Prevention Plan
EIS	environmental impact statement	TES	Threatened, Endangered, and Sensitive
EPMs	Environmental Protection Measures	TMDL	total maximum daily loads
ft	feet	USACE	US Army Corps of Engineers
IDAPA	Idaho Administrative Procedures Act	USFS	United States Forest Service
IDEQ	Idaho Department of Environmental Quality	USFWS	United States Fish and Wildlife Service
IDFG	Idaho Department of Fish and Game	VRM	Visual Resource Management
IDL	Idaho Department of Lands		
IDWR	Idaho Department of Water Resources		

Chapter 1

1.0 Introduction

P4 Production, LLC (P4), a wholly-owned subsidiary of Monsanto, is proposing to exercise the mineral exploration rights on the federal phosphate leases they currently own in the vicinity of the Caldwell Canyon and Trail Creek areas. In addition, P4 desires to explore for phosphate on a federally-owned mineral estate on Bureau of Land Management (BLM) lands, state lands, and under privately-owned surface lands located within and adjacent to their existing leases. The general area is approximately 15 miles northeast of the town of Soda Springs, in Caribou County Idaho (Figure 1). P4 has requested approval from BLM to conduct exploration drilling for phosphate and associated minerals on approximately 3,750 acres of the Caldwell Canyon (IDI-02, IDI-014080, and IDI-013738) and Trail Creek (IDI-013719, IDI-014081, and IDI-013720) federally designated known phosphate lease areas (KPLAs). In addition, P4 has applied for a prospecting permit (IDI-37319) for drilling on lands situated on 240 acres of unleased federal mineral estate adjacent to the Caldwell Canyon KPLA. The company also has applied for an exploration license to conduct drilling on 120 acres of unleased federal mineral estate in the Caldwell Canyon (40 acres; IDI-37306) and Trail Creek (80 acres; IDI-37307) KPLAs. Exploration drilling is proposed in the Caldwell Canyon KPLA in 2013 and 2014 and in the Trail Creek KPLA between 2015 and 2021.

The April 2012 Caldwell Canyon Exploration Plan (P4 Production, 2012a) includes a proposal for a total of 57 drill holes on 47 drill pads and 2.9 miles of temporary, new access roads between 2013 and 2014. The April 2012 Trail Creek Exploration Plan (P4 Production, 2012b) includes a proposal for a total of 122 drill holes on 98 drill pads and 8 miles of temporary, new access roads between 2015 and 2021. Depending on the geologic information obtained from the proposed drilling, it is possible that P4 would request additional exploration drilling above that described in these plans. In anticipation of additional requests and to allow for flexibility in the exploration plans, BLM has made a conservative assumption in this analysis that up to double the amount of drill holes and temporary roads proposed in the 2012 exploration plans could be drilled/constructed if unexpected geologic structures are encountered. This would extend drilling operations at the Caldwell Canyon property up to 2 more years (through 2016) and would result in up to 16.2 acres of total ground disturbance. Additional requests would extend drilling operations at the Trail Creek property up to 4 more years (through 2025) and would result in up to 43.4 acres of total ground disturbance.

Surface ownership in the approximately 4,110-acre application area consists of 65 percent private, 29 percent state (Trail Creek KPLA only), and 6 percent public (BLM-administered; Caldwell Canyon KPLA only). Of the privately owned surface, 36 percent is owned by P4 (Caldwell Canyon KPLA only). The federally-owned mineral estate in these areas is managed by the BLM, Pocatello Field Office. Within the properties, both vanadium and phosphate resources have been the interest of past exploration programs. P4 is primarily interested in defining the extent of the phosphate ore reserve and determining its value.

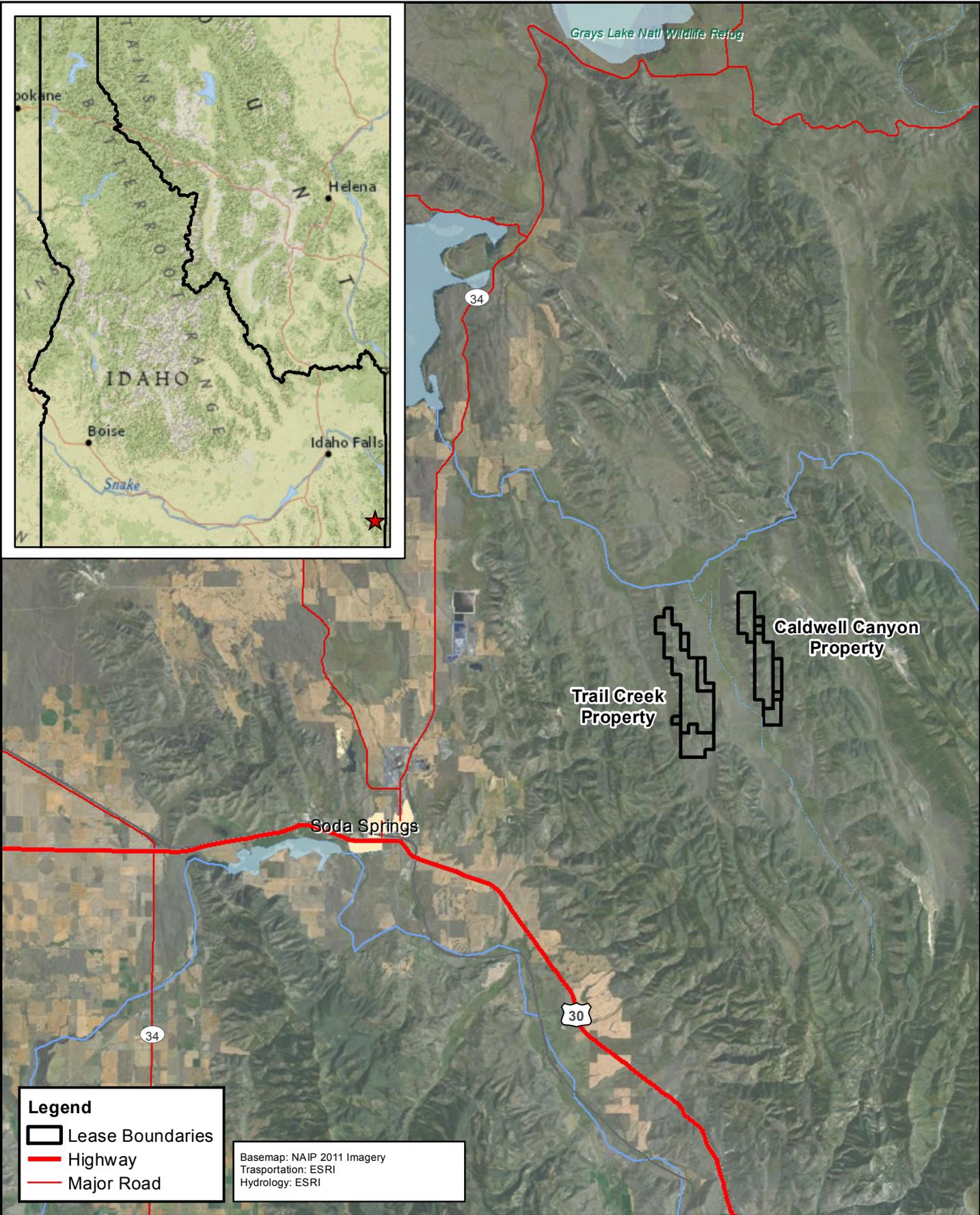
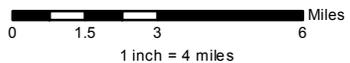


Figure 1
Project Vicinity Map
Caldwell Canyon/Trail Creek EA



Date: 5/30/2013

P4 Production



This Environmental Assessment (EA) was prepared by the BLM, Pocatello Field Office, to address the Caldwell Canyon Exploration Plan and the Trail Creek Exploration Plan submitted to the BLM on April 24, 2012 (P4 Production 2012a and 2012b). This EA documents the potential impacts to the human environment from exploration drilling associated with the requested approvals and applications. The BLM has prepared this environmental assessment according to mandates of the National Environmental Policy Act (NEPA) and implementing regulations (40 Code of Federal Regulations [CFR] 1500-1508 and 43 CFR pt. 46) and the Mineral Leasing Act and its implementing regulations (including 43 CFR subpts. 3505 and 3506). The Mineral Leasing Act guides the leasing, bonding, operations, and reclamation associated with federal solid leasable resources, such as phosphate.

1.1 Project Background

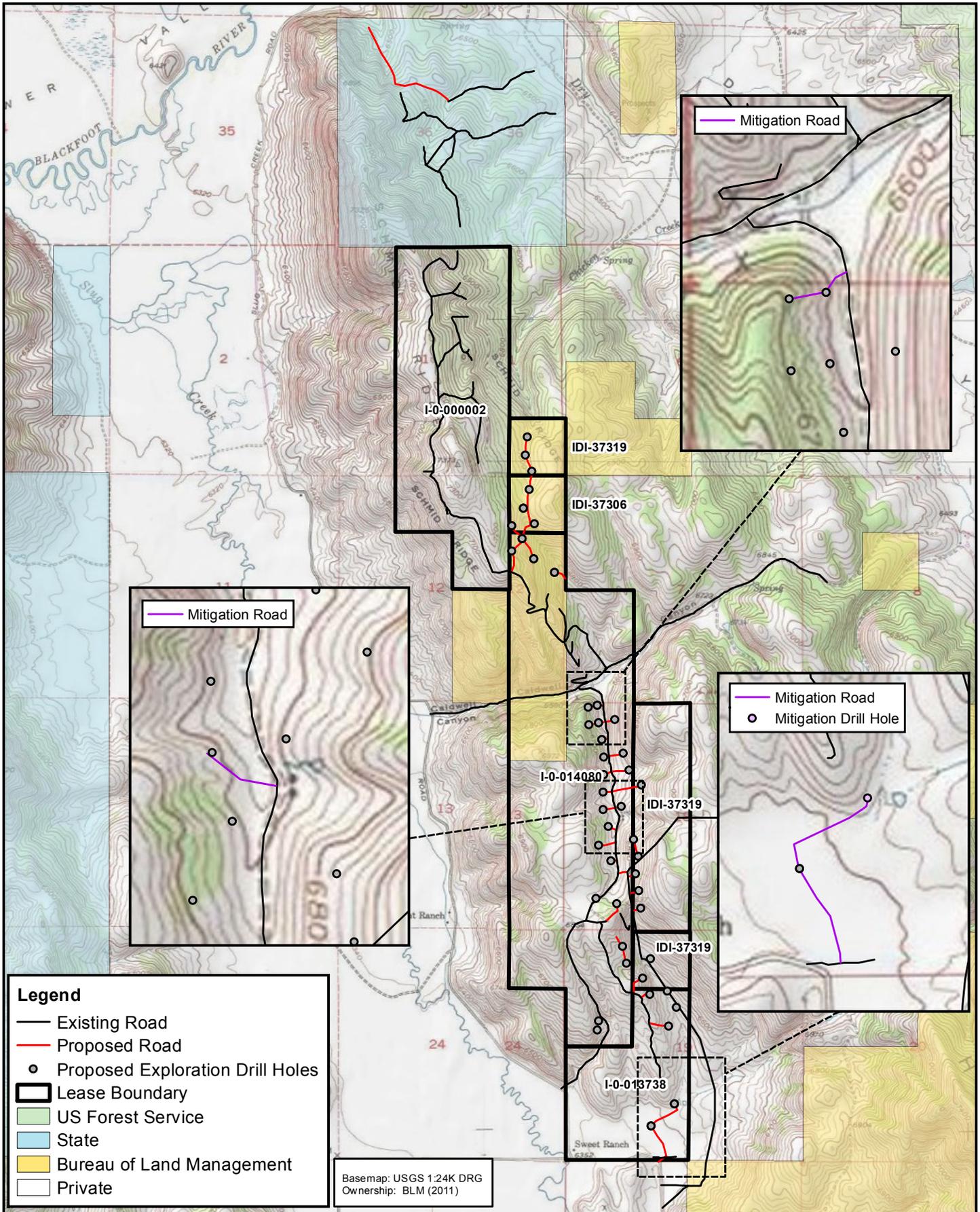
P4 owns and operates an elemental phosphorous plant located just north of Soda Springs, Idaho. Exploration activities have occurred within the Caldwell Canyon KPLA since the 1940s, with more recent exploration performed by P4 in the 1990s and between 2008 and 2011. Federal phosphate leases owned by P4 and formerly explored in this KPLA include Federal Leases I-02, IDI-013738, and I-014080. Minerals management activities such as the proposed exploration drilling are administered by the BLM, Pocatello Field Office. Within the area, both vanadium and phosphate resources have been the interest of past exploration programs. Exploration activities have occurred within the Trail Creek KPLA since the late 1970s, with more recent exploration performed by P4 between 2001 and 2003. Formerly explored P4 Phosphate leases in this KPLA include Federal leases IDI-013719, IDI-013720, and IDI-014081. Recent exploration performed by P4 has included a combination of Reverse Circulation (RC) and Core drilling.

An EA was completed for the North Caldwell exploration plan in 2002, which included the I-02 and I-014080 federal phosphate leases (BLM, 2002a). The EA assessed the potential impacts to the human environment from exploration drilling and enlarging the size of the existing federal leases. A Finding of No Significant Impact and Decision Record and Rationale were issued for this EA in November 2002 (BLM, 2002b).

An EA was completed for the Trail Creek exploration plan in 2000, which included the ID-013719, ID-014081, and ID-013720 federal phosphate leases (BLM, 2000a). The EA assessed the potential impacts to the human environment from exploration drilling and enlarging the size of the existing federal leases. A Finding of No Significant Impact and Decision Record and Rationale were issued for this EA in August 2000 (BLM, 2000b).

1.2 Project Location

The Project Area consists of portions of two lease areas: Caldwell Canyon (IDI-014080, IDI-013738, IDI-37319, and IDI-37306) as shown on Figure 2 and Trail Creek (IDI-013719, IDI-014081, IDI-013720, and off-lease area IDI-37307) as shown on Figure 3. The term "Project Area" is used in this document when referring to the identified lease areas together. When the lease areas are described separately, they are referred to as the Caldwell Canyon property and the Trail Creek property.



Legend

- Existing Road
- Proposed Road
- Proposed Exploration Drill Holes
- ▭ Lease Boundary
- US Forest Service
- State
- Bureau of Land Management
- Private

Basemap: USGS 1:24K DRG
 Ownership: BLM (2011)



Date: 5/30/2013

P4 Production

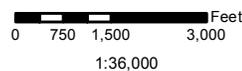
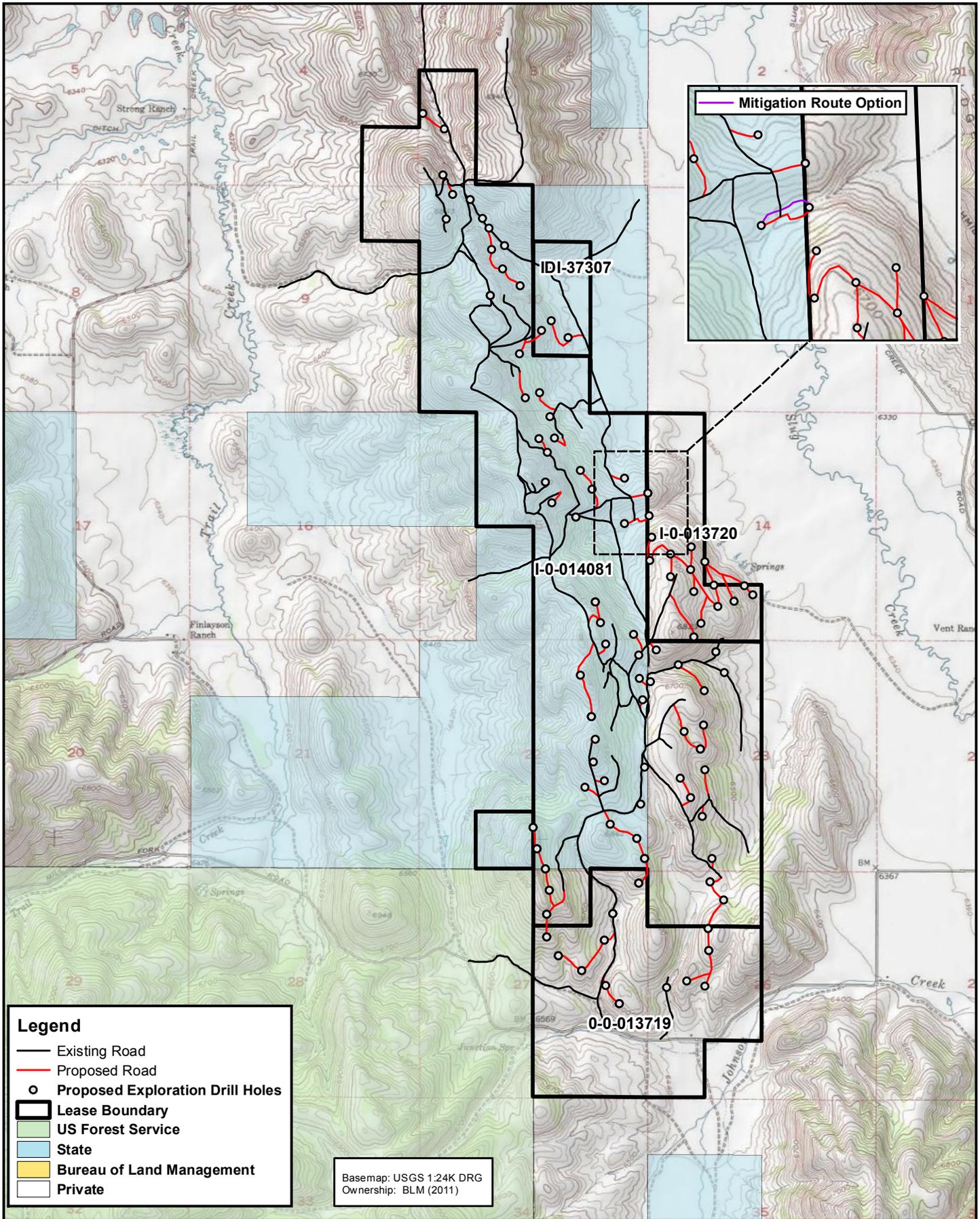


Figure 2
Caldwell Canyon Property
Caldwell Canyon/Trail Creek EA



Legend

- Existing Road
- Proposed Road
- Proposed Exploration Drill Holes
- Lease Boundary
- US Forest Service
- State
- Bureau of Land Management
- Private

Basemap: USGS 1:24K DRG
 Ownership: BLM (2011)



Date: 5/30/2013

P4 Production

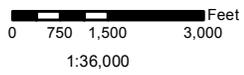


Figure 3
 Trail Creek Property
 Caldwell Canyon/Trail Creek EA

The general geology of the area is as follows: Sedimentary outcrops exposed on Schmid Ridge include the Pennsylvanian/Permian-Wells Formation. Overlying the Wells Formation is the Permian Phosphoria Formation. The Phosphoria Formation is divided into three members: Meade Peak Phosphatic Shale Member - phosphatic shale, siltstone, mudstone, and minor dolomite limestone; Rex Chert Member - chert with minor mudstone; and the Cherty Shale Member - cherty mudstone, mudstone, siliceous shale, and argillaceous chert. Overlying the Phosphoria Formation is the Triassic Dinwoody Formation. This formation consists of shale and siltstone at the base and interbedded limestone near the top. The Phosphoria Formation, which includes the phosphatic ore beds, crops out nearly the entire length of the Project Area. The main structural feature of the area is the Schmid Ridge syncline that dips from 35 to 55 degrees to the east. There are numerous faults, both normal and transverse, along the syncline. Topographically, the deposit at Caldwell Canyon lies near the top of Schmid Ridge (BLM, 2002a).

1.2.1 Caldwell Canyon

The Caldwell Canyon property is located within a 1,389-acre non-federal tract (surface) and a 240-acre federal tract (Figure 2). All subsurface mineral estate is owned by the United States and managed by the BLM. This includes 1,349 acres of land under current P4 Phosphate leases and 280 acres not under current leases. Surface property consists of BLM-administered public lands and privately-owned lands. The property is bounded to the north and west by Lower Valley and to the east by Dry Valley. It can be accessed from Trail Canyon Road or the Blackfoot River Road to Slug Creek Road from Idaho State Highway 34. From these roads, access into the Project Area can be gained via two-track unimproved trails used primarily by ranchers to manage grazing of livestock. Table 1 describes the three existing phosphate leases on the Caldwell Canyon property proposed for exploration by P4 and the two off-lease areas proposed for prospecting and exploration.

Table 1. Lease Information for the Caldwell Canyon Property

Lease	Township	Range	Section	Subdivision	Surface Ownership	Acres
IDI-02 ¹	8S	43E	1	SW ¹ / ₄ NE ¹ / ₄ ,S E ¹ / ₄ NW ¹ / ₄ ,E ¹ / ₂ SW ¹ / ₄ ,W ¹ / ₂ SE ¹ / ₄	Private	240
	8S	43E	1	Lots 2,3	Private	80
	8S	43E	12	W ¹ / ₂ NE ¹ / ₄ ,NE ¹ / ₄ NW ¹ / ₄	Private	120
IDI-014080 ¹	8S	43E	12	SE ¹ / ₄ NE ¹ / ₄ ,E ¹ / ₂ SE ¹ / ₄	BLM	120
	8S	43E	13	NE ¹ / ₄ NE ¹ / ₄	BLM	40
	8S	43E	13	SE ¹ / ₄ NE ¹ / ₄ ,E ¹ / ₂ SE ¹ / ₄	Private ²	120
	8S	43E	24	NE ¹ / ₄ NE ¹ / ₄	Private ²	40
	8S	44E	7	Lots 3,4	Private ²	95
	8S	44E	18	Lots 1-4	Private ²	190
	8S	44E	19	Lots 1,2	Private ²	93
IDI-013738 ¹	8S	44E	19	SE ¹ / ₄ NW ¹ / ₄ ,E ¹ / ₂ SW ¹ / ₄	Private ²	120
	8S	44E	19	Lots 3,4	Private ²	92
IDI-37319 (off lease prospecting permit)	8S	43E	1	SE ¹ / ₄ SE ¹ / ₄	BLM	40
	8S	44E	18	E ¹ / ₂ NW ¹ / ₄ , E ¹ / ₂ SW ¹ / ₄	Private ²	160
	8S	44E	19	NE ¹ / ₄ NW ¹ / ₄	Private ²	40
IDI-37306 (off lease exploration license)	8S	43E	12	NE ¹ / ₄ NE ¹ / ₄	BLM	40

¹ Located within the federally designated Caldwell Canyon KPLA

² Owned by P4 Production, LLC

1.2.2 Trail Creek

Trail Creek is located within a 2,480-acre non-federal tract (surface) referred to in this document as the Trail Creek property (Figure 3). All subsurface mineral estate is owned by the United States and managed by the BLM. This includes 2,400 acres of land under current P4 Phosphate leases and 80 acres not under current leases. The State of Idaho owns 48 percent of the surface land within the lease area; the rest of this area is privately owned.

The Trail Creek property is located on an area of rolling hills to moderately steep topography and is bounded by Lower Valley to the north and Trail Creek to the west. The Blackfoot River flows to the north, Slug Creek to the east, Johnson Creek to the south, and Trail Creek to the west of the lease area. All proposed activities would occur on privately and State of Idaho owned surface within the KPLA. The property can be accessed from Trail Canyon Road or the Blackfoot River Road to North Trail Creek Road from Idaho State Highway 34. From these roads, access into the Project Area can be gained via two-track unimproved trails used primarily by ranchers to manage grazing of livestock. Table 2 describes the three existing phosphate leases on the Trail Creek Property proposed for exploration by P4 and the one off-lease area proposed for exploration.

Table 2. Lease Information for the Trail Creek Property

Lease ¹	Township	Range	Section	Subdivision	Surface Ownership	Acres
IDI-013719	8S	43E	22	SE $\frac{1}{4}$ SW $\frac{1}{4}$	State	40
	8S	43E	26	S $\frac{1}{2}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ S W $\frac{1}{4}$	Private	200
	8S	43E	27	NE $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$	Private	280
IDI-014081	8S	43E	3	W $\frac{1}{2}$ SW $\frac{1}{4}$	Private	80
	8S	43E	4	SE $\frac{1}{4}$ SE $\frac{1}{4}$	Private	40
	8S	43E	9	NE $\frac{1}{4}$ NE $\frac{1}{4}$	Private	40
	8S	43E	10	W $\frac{1}{2}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$	State	360
	8S	43E	15	E $\frac{1}{2}$ NW $\frac{1}{4}$, E $\frac{1}{2}$	State	400
	8S	43E	22	E $\frac{1}{2}$	State	320
	8S	43E	23	W $\frac{1}{2}$	Private	320
	8S	43E	26	N $\frac{1}{2}$ NW $\frac{1}{4}$	Private	80
	8S	43E	27	NW $\frac{1}{4}$ NE $\frac{1}{4}$	Private	40
IDI-013720	8S	43E	14	W $\frac{1}{2}$ W $\frac{1}{2}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$	Private	200
IDI-37307 (off lease exploration license)	8S	43E	10	SW $\frac{1}{4}$ NE $\frac{1}{4}$, N W $\frac{1}{4}$ SE $\frac{1}{4}$	State	80

¹All leases are located within the federally designated Trail Creek KPLA

1.3 Purpose and Need for Action

The purpose and need for the BLM is to evaluate and respond to the Caldwell Canyon Exploration Plan and Trail Creek Exploration Plan submitted to the BLM by P4 in April

2012. The plans include formal requests to conduct exploration activities on established federal leases, as allowed by the Mineral Leasing Act of 1920. To ensure that the Proposed Action conforms to the Pocatello Approved Resource Management Plan (BLM, 2012a) and applicable laws and regulations, the BLM needs to evaluate the Proposed Action and issue decisions related to the proposed on-lease exploration and proposed off-lease exploration license and prospecting permit applications.

The drilling, as proposed by P4, is needed to confirm the nature and extent of historic drill results and more confidently define potential phosphate resources within the Caldwell Canyon and Trail Creek properties. The proposed exploration plan would provide detailed geologic data and chemistry information to determine the extent and quality of the Meade Peak Member of the Phosphoria Formation within the BLM-managed mineral reservations. Additional information is needed to identify fault locations, overburden thicknesses, phosphate ore alteration depths, and added structural information. P4 Production would use this information together with previously obtained data to evaluate the economic feasibility of recovering these potential phosphate reserves. The BLM administers mineral leasing underlying lands managed by federal entities and manages mineral estate beneath surface lands owned by non-federal entities, such as states and private landowners (split estates), and has a duty to allow mineral exploration and extraction under the Federal Land Policy and Management Act (Sec. 102. [43 U.S.C. 1701] (a)(12).

Actual mining of the deposit, or granting any new federal mineral lease with rights to mine, is not part of the Proposed Action and is outside the scope of this exploration/prospecting proposal. Leasing of unleased phosphate resources has not been requested. Any future leasing is a separate discretionary decision by BLM and would need to be evaluated in a separate analysis.

The federal mineral leases owned by P4 already give them exclusive rights to explore the leaseholds. The prospecting permit and exploration license applications filed by P4 with the BLM are discretionary actions to be considered. Although P4 holds lease rights, they must still obtain approval of their exploration plan from BLM. This document will serve as BLM's review and analysis to consider approving P4's exploration plan and whether or not to issue the exploration license and prospecting permit.

1.4 Land Use Plan Conformance Statement and Other Regulations

The Proposed Action is located within the areas designated as open for solid leasable mineral exploration in the BLM 2012 Pocatello Approved Resource Management Plan (RMP) (ME-2.5; BLM, 2012a). This land use plan and applicable regulations have been reviewed and a determination made that the proposed prospecting and exploration drilling project is consistent with the current 2012 land use plan; specifically, ME-1 "develop mineral resources (oil and gas, geothermal, solid minerals) consistent with other resource use and function", and ME-2 "develop mineral resources (oil and gas, geothermal, solid minerals) consistent with other resources and uses as part of an ecologically healthy ecosystem", as well as other management goals, objectives, and actions. The proposed prospecting and exploration drilling project is consistent with other federal, state, and local laws and regulations.

The BLM manages the public lands, including the federal mineral estate, to enhance the quality of life for present and future generations of Americans, under a mandate of multiple

use and land use planning as described in the Federal Land Policy and Management Act. The Mining and Minerals Policy Act directs BLM to encourage development of domestic mineral resources in an orderly manner. The Mineral Leasing Act guides the leasing, bonding, operations, and reclamation associated with federal solid leasable resources, such as phosphate.

Various laws granted land patents to private individuals but reserved the mineral rights to the federal government. Some of the subject land surface became privately owned from a patent granted in 1940 under authority of the Homestead Act of 1862. In accordance with the Act of December 29, 1916, the federal government reserved the phosphate mineral estate from this patent together with the “right to prospect for, mine, and remove” phosphate minerals existing on the tract. In this situation, the federal government, as well as the surface owner, must comply with the provisions of the land patent and relevant laws.

In the case of split estate, mineral rights are considered the dominant estate, meaning they take precedence to a greater extent over other rights associated with the property, including those associated with owning the surface. The surface owner has the right to use and develop the lands subject to reservations in the title, such as the reservation of the phosphate minerals to the federal government as set forth by the Homestead Acts, as intended by Congress. This includes developing water sources and infrastructure associated with the current use of the lands for grazing and raising forage crops. The mineral owner must show due regard for the interests of the surface estate owner and occupy only those portions of the surface that are reasonably necessary to explore the mineral estate. If P4’s application to explore the mineral estate is approved, P4 must comply with relevant reclamation and environmental requirements and, in accordance with the Acts, reimburse the surface owner for damages to crops and other improvements.

This EA was prepared in compliance with the NEPA, the Council on Environmental Quality and the US Department of the Interior’s implementing NEPA regulations and guidance, and the BLM’s NEPA Handbook, H-1790-1 (BLM, 2008).

1.5 Decisions to Be Made

Based on the information provided in this EA, the BLM will determine whether to issue the exploration license and prospecting permit and whether to approve or modify the respective exploration plans for the leases, the license, and the permit, and what conditions of approval may apply. Activities would also be subject to terms and conditions of any exploration license and/or prospecting permit that need to be issued in conjunction with approval of drilling activities. Access to the proposed drilling area would be coordinated with the surface owner.

1.6 Scoping/Public Involvement

On October 2, 2012, a field visit to the Project Area was held that was attended by BLM interdisciplinary team members, agency representatives (Idaho Department of Lands and Idaho Department of Fish and Game), local ranchers, P4, and Brown and Caldwell (the contractor for P4). On October 15, 2012, the BLM sent 56 scoping letters to agencies, businesses, organizations, individuals, city and county officials, and identified surface owners. A legal notice was published in the Caribou County Sun from October 25 through November 7, 2012. The public scoping period was October 15 through November 19, 2012.

Three letters commenting on the proposed project were received during the public comment period. Copies of these comment letters and how the comments were addressed in the EA are included in the project file.

The BLM, Pocatello Field Office, meets with the staff of the Shoshone-Bannock Tribes on an annual basis to discuss new and ongoing projects in the Field Office. Staff-to-staff discussions with the Shoshone-Bannock Tribes regarding this project occurred on February 9, 2012 and February 20, 2013. The scoping letter was also mailed to the Shoshone-Bannock Tribes on October 15, 2012.

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Chapter 2

2.0 Description of Alternatives

2.1 Alternative 1 – Proposed Action

Historical exploration holes have identified a geologic resource that has been determined to extend into the Project Area. P4 proposes to explore the federally-owned (BLM-managed) portions of the ore body in the Caldwell Canyon and Trail Creek properties. Exploration is proposed for 2013 and 2014 in the Caldwell Canyon property (and potentially through 2016) and between 2015 and 2021 in the Trail Creek property (and potentially through 2025). P4 would drill into the deposit to gather additional information on the ore body, identify faulted areas, and better define the depth and quality of the phosphate resource. P4 has requested: (1) exploration on land currently leased from the BLM (approval required), (2) exploration on KLPAs adjacent to land under existing lease (exploration license required), and (3) exploration on land not under lease or in a KLPA (prospecting permit required).

If exploration of BLM-managed portions of the deposit is authorized, any decision to mine phosphate within the lease tracts or lease phosphate in unleased areas would be considered in the future after an application is submitted, and is not part of the Proposed Action. Additional leasing or authorizing mining activity are discretionary actions by BLM that would need to be evaluated with additional environmental analysis and consideration by the agency. Because of this, and because the results of the proposed mineral exploration are uncertain, future leasing or mining is not considered to be a “connected action” under NEPA related to consideration of the current applications for a prospecting permit, an exploration license, and exploration on current leases requested by P4 and evaluated in this environmental assessment. Future leasing or mining would only be considered if an application is later submitted, and is outside the scope of this assessment.

2.1.1 Mineralization Exploration Plan and Methods

2.1.1.1 Exploration and Drilling Sampling

Multi-year exploration plans for the Caldwell Canyon and Trail Creek properties were submitted to the BLM in April 2012. The following methods would be used for mineral exploration of both of these properties. Access to the Project Area would be secured through agreements with surface owners and relevant neighbors. Disturbance and new access roads would also be coordinated with surface owners.

Exploration drilling of the Caldwell Canyon and Trail Creek properties would be achieved through the use of conventional diamond core drilling and RC drilling methods and equipment. Drilling would be performed to obtain geological, geotechnical, and geochemical data for the purposes of ore characterization and geological modeling.

When core drilling, in order to minimize exploration costs and increase drilling rates, common practice would be to use a tri-cone rock bit for the initial non-ore portion of the core hole followed by actual core drilling through the ore section itself. Nominal drill hole spacing for both methods would be approximately 400 feet along strike and 200 feet along dip. Where possible, to reduce costs and environmental impact, multiple holes at differing

angle orientations would be drilled from a common drill pad. Cored drill holes would provide whole rock core samples recovered from a sample barrel and stored immediately in specially designed core sample boxes. Filled core boxes would be removed periodically from the drill site to the mine office for logging and actual sampling of the ore bearing intervals. These intervals would be determined from the lithologic and geophysical gamma logs obtained after completion of drill holes. The Gamma logger is a downhole instrument probe that detects natural gamma radiation emitted from the phosphate ore beds. Each phosphate bed has a generally repeatable radiation signature making this tool particularly valuable for drill holes that on occasion experience incomplete samples or poor drilled core recovery. All geologic information, including lithologic and gamma logs, would be submitted to the BLM.

Both Core and RC drilling would utilize fresh water to aid in the recovery of drilling samples. Sumps for the collection of drill cuttings, drilling mud, and wastewater would be constructed at each site with the sump size dependent upon the number of holes drilled from each drill pad, drilling method used, and the depth of each hole. RC drilling methods would provide rock chips to be utilized for sampling. The drill cuttings and drill fluids would be confined to the drill holes and contained in sumps and piles adjacent to the drill holes during the short drilling period. Upon completion of drilling, the majority of the drill cuttings would be returned to the drill holes with the remainder buried in the sumps and the sumps would be filled and obliterated (Section 2.1.1.5).

One or more drill rigs would be used to complete the proposed exploration and prospecting drilling activities. Support equipment for each drilling method would include a dozer and/or backhoe, water truck, and a support truck used for support tools, spare parts, and transportation of drill crews to and from the drill site. Drill rigs and support vehicles would be wheeled and/or track-mounted depending on equipment availability. Tire and track mounted drill rigs would be utilized for drilling the proposed core and RC drill holes.

During the summer and fall when exploration activities are expected to occur, it is anticipated that heavy equipment traffic on the county road would be very limited. The peak period of heavy equipment traffic would occur at the beginning and end of the project, likely July and October, when the equipment would be mobilized to and demobilized from the project. The type of equipment traveling on counties roads at these times is expected to be a transport carrying the drill and support equipment (e.g. dozer, water truck, and track-mounted backhoe), rubber-tired backhoe, and possibly a grader.

In order to maintain drill hole stability, drilling fluids could utilize highly diluted concentrations of lubricating foam, bentonite mud, and/or polymers (such as hydrotreated light petroleum distillate) mixed with water as additives. Drilling foams would include small concentrations of ethanol and isopropanol or 2-butoxyethanol, which are not identified as major environmental contaminants and are biodegradable. For each drill hole, approximately 0.5 gallons of lubricating foam and 1 gallon of bentonite mud and polymer solution would be used per 3,000 to 4,000 gallons of water.

Potential drilling support water sources for the Caldwell Canyon property have been identified and include: a spring on the north side of the property; a spring on the south side of the property; Slug Creek adjacent to the Slug Creek Road and Trail Creek Road; and Caldwell Creek. In appropriate sites, P4 has and may work with neighboring landowners and the local Natural Resources Conservation Service (NRCS) office to develop existing

springs that could provide additional utility for livestock. Potential water sources for the Trail Creek property include: Trail Creek; Slug Creek accessed by private property; Slug Creek by Slug Creek Road and Trail Creek Road; and a potential new well. Permits for temporary water appropriations would be obtained through the Idaho Department of Water Resources (IDWR) prior to usage. Approximately 4,000 gallons of water per day would be required for the proposed activities.

2.1.1.2 Road and Drill Pad Construction

Access roads for the proposed exploration drilling activities would utilize existing access roads where possible in an effort to minimize new disturbances. New, temporary access roads would be constructed, where needed, to facilitate movement of drilling equipment to the proposed drill pads. Construction of new access roads would occur either during the previous fall or 1 to 2 weeks prior to the scheduled arrival of drilling equipment and following performance of pre-construction wildlife and plant surveys. Access roads for the proposed exploration drilling activities would be constructed or reopened, utilizing a D-7, or similar sized dozer, or possibly a 16G motor grader. New roads would include a combination of cut and fill so as to eliminate the need and importation of fill material. Where possible, access to drill pads, and the reopening of existing roads, would be performed by minimizing the removal of existing ground cover. Additional equipment needed for construction of drill pads and sumps would include an excavator and rubber-tired back-hoe. All equipment would be operated by a contractor under P4 supervision (either directly or through one of its agents). Roads and drill pads would be constructed utilizing native on-site materials with gravel used as required for improvement and/or stabilization. Dimensions of existing and proposed roads and estimated ground disturbance from construction are provided in Section 2.1.2.

Improvement of existing roads would typically involve removal of miscellaneous debris, including fallen and leaning trees. Improvement of roads would be limited and would generally only be required in areas where rutting and rocks hamper access. Road maintenance would be performed as needed and would occur 1 to 2 weeks prior to drilling operations and following pre-construction wildlife surveys. Maintenance activities would include road repair of rutted areas or other hazardous conditions that could jeopardize personnel or equipment. Installation of water bars to reduce erosion and general grading to improve road surface condition would occur as needed.

2.1.1.3 Construction Materials

The following materials would be used during the exploration drilling program: diesel fuel; lubricants including motor, gear, and hydraulic oil; drilling fluids including foam and bentonite; concrete; and grout. For an average depth drill hole, approximately 0.5 gallons of lubricating foam and 1 gallon of bentonite mud and/or polymer solution would be used per 3,000 to 4,000 gallons of make-up water. All drilling supplies would be stored on the drilling equipment or at a designated temporary storage area, with the exception of diesel fuel and lubricants which would be periodically delivered to mobile equipment and not stored on site. A Spill Prevention, Control, and Countermeasure Plan would be prepared and followed for the proposed project.

All solid wastes generated by the proposed exploration project, including trash and drill materials, would be disposed of in accordance with applicable state and federal regulations.

2.1.1.4 Drilling Schedule and Rate

Drilling is expected to occur during the summer and fall months and would be dependent upon weather conditions and wildlife and other agency restrictions. It may take up to 11 years to gather the needed exploration data. Typical operating periods would be from late June/early July to early October. To allow flexibility for an accelerated schedule, more than one drill rig could operate simultaneously during drilling operations. It is possible that drilling sites would need to be shut down periodically due to weather conditions or seasonal or habitat closures for wildlife. Public access to existing roads on BLM and Idaho Department of Lands (IDL) managed lands would remain unchanged during drilling operations. P4 would maintain the access across private lands in accordance with the wishes of the surface owner, which currently does not encourage or allow unrestricted public access.

RC drilling is expected to proceed at a rate of 180 to 250 feet per day and diamond core drilling at a rate of 60 to 80 feet per day. Drilling operations would occur during single 12-hour day shifts or two 12-hour shifts, depending on crew availability. Depending upon the shift type, and assuming no unforeseen delays (mechanical or weather), it would take approximately 2.5 to 3 days (based on a double shift) or 5 to 6 days (based on a single shift) to complete the drilling of a core hole and approximately 1 day (based on a double shift) or 1.5 days (based on a single shift) to complete the drilling of one RC hole.

Caldwell Canyon

Drilling in the Caldwell Canyon property is proposed to begin in the summer of 2013 and would be conducted for up to a 4-year period through 2016. Based on the April 2012 Caldwell Canyon Exploration Plan, a total of 57 vertical and angle drill holes on 47 drill pads are proposed between 2013 and 2014, with drilling planned for approximately 22 holes on 16 drill pads in 2013 and 35 drill holes on 31 pads in 2014. Depths of drill hole would range from 100 to 450 feet, with 300 feet representing the average. The number of holes drilled per year could vary from this estimate slightly, depending on costs, weather conditions, and other potential restrictions.

Depending on the geologic information obtained from the proposed drilling, it is possible that P4 would request additional exploration drilling above that described in the 2012 Exploration Plan. In anticipation of additional requests and to allow for flexibility in the exploration plans, the BLM, for purposes of this assessment, has made an assumption in this analysis that up to double the amount of drill holes proposed in the 2012 Exploration Plan could be drilled if unexpected geologic structures are encountered. This would equate to an additional 57 drill holes and 47 drill pads for up to 114 total drill holes and 94 total drill pads on the Caldwell Canyon property, which could take up to an additional 2 years to complete than proposed in the Exploration Plan, through 2016. It is anticipated that most of the holes would occur about 200 feet from a proposed drill hole; however, their exact location cannot be determined at this time. It is unlikely that proposed new holes would be placed closer than 100 feet of a planned or existing drill hole. Similarly, for this analysis it is conservatively assumed as a maximum case that double the amount of access road construction could also occur on the Caldwell Canyon property. To address the uncertainty

of the exact location of additional drill holes and roads, as a best practice, pre-construction surveys for sensitive plants and wildlife would be conducted in these areas (Section 2.3.2 and 2.3.3). Reclamation of previously disturbed areas would occur where possible prior to additional exploration disturbance.

Trail Creek

Drilling in the Trail Creek property is proposed to begin in 2015 and would be conducted for up to an 11-year period (2015 through 2025). Based on the April 2012 Trail Creek Exploration Plan, a total of 122 vertical and angle drill holes on 98 drill pads are proposed between 2015 and 2021, with drilling planned for approximately 21 holes on 20 drill pads in 2015, 21 holes on 17 drill pads in 2016, 17 holes on 17 drill pads in 2017, 14 holes on 12 drill pads in 2018, 23 holes on 12 drill pads in 2019, 11 holes on 8 drill pads in 2020, and 15 holes on 12 drill pads in 2021. Depths of drill holes would range from 150 to 500 feet, with 325 feet representing the average. The number of holes drilled per year could vary from this estimate depending on weather conditions, other potential restrictions, and evolving business needs.

As described for Caldwell Canyon above, based on geologic results obtained from proposed drilling and in anticipation of additional drilling requests, the BLM has made an assumption in this analysis that up to double the number of drill holes proposed in the 2012 Exploration Plan could be drilled on the Trail Creek property if unexpected geologic structures are encountered. This would equate to an additional 122 drill holes and 98 drill pads for up to 244 total drill holes and 196 total drill pads evaluated in this environmental assessment. If these additional drill holes are proposed, exploration would likely occur for 4 years longer than proposed in the Exploration Plan, through 2025. It is also assumed for this analysis that double the amount of access road construction would also occur. It is anticipated, because of the complex geology of Trail Creek, that most of the holes would occur about 100 feet from a proposed drill hole; however, their exact location cannot be determined at this time. Similarly for this analysis it is conservatively assumed as a maximum case that double the amount of access road construction on the Trail Creek property could also occur. As described for Caldwell Canyon, pre-construction surveys for sensitive plants and wildlife would be conducted prior to drilling and reclamation of disturbed areas would occur where possible prior to additional exploration disturbance.

2.1.1.5 Reclamation

Reclamation of all proposed new disturbed areas (access roads, drill pads and holes, and sumps) would occur annually upon completion of exploration drilling. Roads and drill pads would be reclaimed (obliterated), the area would be recontoured to natural conditions and seeded, and drill holes would be abandoned in accordance with State of Idaho regulations. Idaho Standards of Rangeland Health (BLM, 1997) would be used to determine success of reclamation (BLM, 2012a, Goal ME-2.2.1). Topsoil would be stockpiled and salvaged for reclamation where possible.

Reclamation would be completed either concurrent with exploration drilling or within 1 to 2 weeks after completion of all drilling within a given year. Timing of reclamation would be dependent upon equipment, operator availability, and weather. A brief delay between drilling and reclamation may be necessary to allow the site to dry out sufficiently to allow work without causing additional disturbance. If it is determined that additional holes would

need to be drilled at a given location in future years (over that proposed in the 2012 exploration plans), certain roads and pads might remain open on rare occasion, with the BLM's permission, and would not be reclaimed within the year constructed. These roads would be temporarily closed with berms, slashpiles, or logs outside of the drilling season and would be reclaimed once drilling of additional holes is complete.

Roads, pads, and drill hole sites would be reclaimed using the same or similar equipment as during construction. The method for such work would include but not be limited to back-dragging the wood and brush slash generated during construction of the drill site or road and the redistribution of soils generated during construction. Drill roads and pads would be seeded with a surface-owner-approved seed mix. Drill holes would be plugged and appropriately abandoned using bentonite and/or concrete in wet holes and drill cuttings and concrete in dry holes. Where available, slash would be dragged back over the area to provide wildlife habitat and a more natural appearance. Junctions with BLM and state roads would be blocked with rocks or slash to prevent traffic from using the reclaimed roads. See Section 2.3 for additional reclamation detail.

2.1.2 Ground Disturbance

The following section describes the extent and location of ground disturbance expected from the proposed exploration of the Caldwell Canyon and Trail Creek properties. Ground disturbance would consist of surface disturbance resulting from construction of temporary drill pads and roads. Disturbance acres presented in this section are based on the maximum anticipated disturbance that could occur if up to double the amount of drill holes proposed in the 2012 Exploration Plan were drilled and double the amount of new access roads were constructed (Section 2.1.2.1 and 2.1.2.2). It has been estimated that each potential drill site would require a maximum footprint of up to approximately 1,600 square feet (40 x 40 feet; 0.04 acres) to be cleared to ensure an efficient, safe work area. Disturbance acres presented are based using this maximum anticipated disturbance to account for variances in types and sizes of equipment that could be used.

All drilling sites would be constructed with a sump; average dimensions would be 2.5 feet wide, 14 feet long, and 6 to 10 feet deep; however, the size and specific location of the sumps would be determined in the field in order to minimize environmental and stability risks by utilizing the existing landscape and topography. The sumps are typically constructed within the drill pad disturbance area and, therefore, disturbance for these features are not described separately. Existing exploration roads within the Project Area are nominally 12 feet wide. These roads would not be widened, but would be maintained, where necessary. Additional existing access roads outside of the Project Area would be used to access the two properties, as described in Sections 1.2.1 and 1.2.2. These roads would not be improved substantially but would be maintained as needed. The proposed temporary new access roads would be constructed to a width of 20 feet to account for cut and fill slopes and to provide a conservative estimate of disturbance. Requirements for road design, construction, and maintenance outlined in the BLM Road Standards (Manual Section 9113) would be followed.

In total, over the two properties, the exploration plans proposed the drilling of 179 holes on a combined total of 145 drill pads within federal, state, and privately owned lands. Assuming that the amount of drilling proposed in the plans could double, as described in

Section 2.1.1.4, drilling could occur on a total of 358 vertical and angle holes on a combined total of 290 drill pads. The total ground disturbance area for the doubled proposed drilling activities, including new road construction, would approximate 59.6 acres. All areas with new surface disturbance would be reclaimed (Section 2.1.1.5).

It is possible that some drill pad locations would need to be adjusted during the drill program as site conditions and subsurface geology necessitate. The adjustments would likely be minor and only require moving drill pads short distances. Minor adjustments to drill hole locations would not affect the alignment and total length of drill access roads that would be constructed during the exploration drilling program.

2.1.2.1 Caldwell Canyon

Figure 2 shows the proposed locations of access roads and drill pads for the Caldwell Canyon property from the 2012 Caldwell Canyon Exploration Plan and provides the aerial extent of the anticipated ground disturbance required to complete the exploration as proposed in the plan. Considering that the need for and locations of potential additional drill holes, drill pads, and access roads are not known, there has been no attempt to depict their locations on the figure. However, it is anticipated that most of the holes would occur about 200 feet and no closer than 100 feet from a proposed drill hole. Further, it is assumed for the analysis that the additional holes and roads would occur on the same land ownership and vegetation types as those currently proposed.

With the exception of the established access roads to the project area, road grades less than 10 percent would likely be prepared or upgraded to support equipment during wet or muddy conditions. Existing exploration roads within the Caldwell Canyon property total 8.9 miles in length, and approximate 13.0 acres of existing disturbance, with 17.5 percent occurring on BLM-administered public land, and 82.5 percent occurring on private lands. The total length of new access roads constructed in this property (proposed and potential additional) would total 5.2 miles, and would disturb up to 12.8 acres. Based on the location of the roads proposed in the exploration plan, and assuming that any additional temporary roads would occupy the same proportion of public and private land, approximately 31 percent of temporary roads would occur on public land and 69 percent on private lands.

The total area of disturbance estimated for the up to 94 drill pads (proposed and potential additional), including sumps and drill holes, would be approximately 3.3 acres over the 2-year exploration period. Table 3 provides a breakdown of estimated ground disturbance by land ownership.

Table 3. Estimated Ground Disturbance – Caldwell Canyon Property¹

Disturbance	Total Disturbance (acres)	Disturbance Acres Public Land ²	Disturbance Acres Private Land ²
<i>Existing Disturbed Areas</i>			
Existing Access Roads	13.0 (8.9 miles)	2.3 (1.6 miles)	10.7 (7.3 miles)
<i>Proposed New Disturbance</i>			
Proposed Access Roads	12.8 (5.2 miles)	4.0 (1.6 miles)	8.8 (3.6 miles)
Proposed Drill Pads ³ (2013)	0.6	0.1	0.5
Proposed Drill Pads ³ (2014)	1.1	0.3	0.9
Proposed Drill Pads ³ (2015)	0.8	0.2	0.6
Proposed Drill Pads ³ (2016)	0.8	0.2	0.6
Total New Disturbance	16.2	4.8	11.4

¹Includes ground disturbance proposed in the 2012 Caldwell Canyon Exploration Plan plus that projected from additional anticipated drilling proposals; total acres reported are double that proposed in the 2012 plan (with the exception of existing access roads which would remain the same). Numbers rounded to the nearest decimal.

²Assumes that additional roads and drill pads over that proposed in the exploration plan would occupy the same proportion of public and private land.

³Includes disturbance footprint of drill holes and sumps.

Table 3 depicts the maximum acres of ground disturbance needed to complete the proposed and potential additional exploration drilling activities (acres reported for new ground disturbance are double that proposed in the 2012 exploration plan). Note that these numbers are estimates and would likely vary slightly based on minor field adjustments during the life of the proposed drilling activities. This table also includes the disturbance from existing access roads.

2.1.2.2 Trail Creek

Figure 3 shows the proposed locations of access roads and drill pads for the Trail Creek property from the 2012 Trail Creek Exploration Plan and provides the aerial extent of the ground disturbance required to complete the exploration as proposed in the plan. Considering that the need for and locations of potential additional drill holes, drill pads, and access roads are not known, there has been no attempt to depict their locations on the figure. However, it is anticipated that most of the holes would occur up to 100 feet from an existing drill hole. Further, it is assumed for the analysis that the additional holes and roads would occur on the same land ownership and vegetation types as those currently proposed.

With the exception of the established access roads to the project area, road grades less than 10 percent would likely be prepared or upgraded to support equipment during wet or

muddy conditions. Existing exploration roads within the Trail Creek property total 16.9 miles, and approximate 41.1 acres of existing disturbance, with 69.8 percent occurring on state lands and 30.2 percent occurring on private lands. The total length of new access roads constructed in this property (proposed and potential additional) would total 14.8 miles and would disturb approximately 36.2 acres. Based on the location of the roads proposed in the exploration plan, and assuming any additional temporary roads would occupy the same proportion of state and private land, approximately 42 percent would occur on state lands and 58 percent would occur on private lands.

The total area of disturbance estimated for the up to 196 drill pads (proposed and potential additional), including the sumps and drill holes, would be approximately 7 acres over the seven-year exploration period. Table 4 provides a breakdown of estimated ground disturbance by land ownership.

Table 4. Estimated Ground Disturbance – Trail Creek Property¹

Disturbance	Total Disturbance (acres)	Disturbance Acres State Land ²	Disturbance Acres Private Land ²
<i>Existing Disturbed Areas</i>			
Existing Access Roads	41.1 (16.9 miles)	28.6 (11.8 miles)	12.4 (5.1 miles)
<i>Proposed New Disturbance</i>			
Proposed Access Roads	36.2 (14.8 miles)	15.2 (6.2miles)	21.0 (8.6 miles)
Proposed Drill Pads ³ (2015)	0.7	0.4	0.4
Proposed Drill Pads ³ (2016)	0.8	0.4	0.4
Proposed Drill Pads ³ (2017)	0.8	0.4	0.4
Proposed Drill Pads ³ (2018)	0.6	0.3	0.3
Proposed Drill Pads ³ (2019)	0.6	0.3	0.3
Proposed Drill Pads ³ (2020)	0.5	0.2	0.2
Proposed Drill Pads ³ (2021)	0.6	0.3	0.3
Proposed Drill Pads ³ (2022)	0.6	0.3	0.3
Proposed Drill Pads ³ (2023)	0.6	0.3	0.3
Proposed Drill Pads ³ (2024)	0.6	0.3	0.3
Proposed Drill Pads ³ (2025)	0.6	0.3	0.3
Total New Disturbance	43.4	18.7	24.7

¹Includes ground disturbance proposed in the 2012 Trail Creek Exploration Plan plus that projected from additional anticipated drilling proposals; total acres reported are double that proposed in the 2012 plan (with the exception of existing access roads which would remain the same). Numbers rounded to the nearest decimal.

²Assumes that additional roads and drill pads over that proposed in the exploration plan would occupy the same proportion of public and private land.

³Includes disturbance footprint of drill holes and sumps.

Table 4 depicts the maximum acres of ground disturbance needed to complete the proposed and potential additional exploration drilling activities (acres reported for new ground disturbance are double that proposed in the 2012 exploration plan). There are no federal surface area ownerships within the Trail Creek Property. Note that these numbers are estimates and would likely vary slightly based on minor field adjustments during the life of the proposed drilling activities. This table also includes the disturbance from existing access roads.

2.1.3 Proposed Action Summary for Caldwell Canyon and Trail Creek Properties

The following list summarizes the Proposed Action for the Caldwell Canyon and Trail Creek exploration drilling proposals.

- P4 would conduct exploration drilling on the Caldwell Canyon and Trail Creek properties where the surface lands and mineral leases are federally owned and managed consistent with any BLM approval(s). Geologic information would also be obtained from federal leases underlying private and state surface lands to define the extent and value of the phosphate resource.
- Existing access roads would be utilized where available and upgraded consistent with any BLM and state approvals. Additional access roads, drill pads, and holes would be constructed consistent with any BLM and state approvals (Figures 2 and 3).
- Environmental protection measures and best management practices, as described in Section 2.3, would be followed to minimize impacts to the natural environment.
- Reclamation of roads, drill pads, and drill hole sites would be completed according to surface owner's requirements and state regulations.

Prior to the start of the drilling activities, the following would need to be obtained.

- A Prospecting Permit (IDI-37319, Caldwell Canyon property) would need to be issued for unleased lands outside of the KPLA.
- An exploration License would need to be issued for unleased lands within KPLAs IDI-37307 (Trail Creek Property) and IDI-37306 (Caldwell Canyon property).
- An approval from the BLM would need to be obtained for Drilling on Trail Creek Federal Phosphate Leases (IDI-013719, IDI-014081, IDI-013720, and IDI-37307) and drilling on Caldwell Canyon Federal Phosphate Leases (IDI-02, IDI-014080, IDI-013738, IDI-37319, and IDI-37306).
- The Operator would need to notify IDL and acquire a state land use permit prior to any disturbance and would need to provide adequate bonding for said disturbance. The Operator would need to follow all relevant state regulations.

2.2 Alternative 2 - No Action

Under the No Action Alternative, the proposed exploratory drilling on the existing federal leases would be postponed or deferred indefinitely and exploration and prospecting drilling activities on the remaining BLM-managed portion of the Caldwell Canyon and Trail Creek properties would not be conducted.

2.3 Environmental Protection Measures and Best Management Practices

The following environmental protection measures (EPMs) and best management practices (BMPs) are proposed by P4 for Alternative 1 to minimize the potential effects of the proposed prospecting and exploration activities on the natural environment.

2.3.1 Cultural Resources

If any unidentified cultural resources are discovered during proposed activities, operations in the immediate area of the discovery would be halted. The discovery would be reported to the BLM, and the BLM or its authorized representatives would be allowed to document and evaluate the discovery and, if appropriate, would be allowed time for the determination and implementation of actions necessary to prevent or mitigate the loss of important cultural values in consultation with the Idaho State Historic Preservation Office.

Pre-construction cultural resource clearances would be conducted in the Caldwell Canyon property if additional proposed road or drill pad locations occur in areas not previously surveyed.

Archaeological sites recommended as eligible for listing on the National Register of Historic Places (NRHP) would be avoided by micrositing locations of roads and drill pads.

2.3.2 Vegetation (Noxious Weeds, Wetlands, and Sensitive Plants)

Preconstruction surveys of areas proposed in the 2012 exploration plans for construction of drill pads and roads would be required to identify the presence or absence of threatened, endangered, and sensitive plants (wetland and noxious weed surveys have already been completed in these areas). Preconstruction surveys of future areas proposed for construction of drill pads and roads (those not identified in the 2012 exploration plans) would be required to identify the presence or absence of threatened, endangered, and sensitive plants, wetlands, and noxious weeds. If threatened, endangered, and sensitive plants are located, drill pad and road locations would be microsited to avoid impacting the plants.

Drill pads, wells, and roads would be sited to avoid wetland and riparian areas where feasible. Where disturbance to wetlands and other waters of the U.S. cannot be avoided, appropriate permits and authorizations would be obtained from the U.S. Army Corps of Engineers (USACE) and IDWR, as needed.

Noxious weeds would be controlled within new disturbance areas or redisturbed areas, such as access roads and drill sites. Special attention would be given to roadways and areas where vehicles and other equipment would be parked, as well as proposed disturbances near existing locations of noxious weeds. Vehicles would be adequately cleaned to prevent spread of noxious weeds prior to entering the proposed drilling exploration area. P4 and BLM inspectors would visually monitor the growth of noxious weeds. If noxious weeds are identified or suspected on public lands, P4 would apply agency authorized herbicides, such as Milestone (8.25 ounce/acre), Telar XP (1.5 ounce/acre), and Spret (surfactant; as needed), to prevent their growth and spread or use other approved herbicides or lawful means, including manual control. P4 would coordinate with the IDL and private land owners regarding application of herbicides if noxious weeds are identified on state or non-P4 privately-owned lands.

2.3.3 Fish and Wildlife

2.3.3.1 Seasonal Restrictions

The Seasonal Wildlife Restrictions and Procedures for Processing Requests for Exceptions on Public Lands in Idaho (BLM, 2010c), the Seasonal Restrictions for Wildlife/Raptor Activities/Habitat from the Pocatello RMP (BLM, 2012a), the Idaho Sage-Grouse Advisory Committee Conservation Plan for the Greater Sage-Grouse in Idaho (ISAC, 2006), the East Idaho Uplands Sage-grouse Local Working Group Sage-grouse Conservation Plan (EIU, 2011), and the Greater Sage-Grouse Interim Management Policies and Procedures (BLM, 2011a) would be followed, as directed by the BLM, including for special status species.

2.3.3.2 Greater Sage-Grouse

The following applicable measures would be implemented to minimize impacts to sage-grouse and suitable habitat, consistent with the Pocatello RMP (BLM, 2012a), the Conservation Plan for the Greater Sage-Grouse in Idaho (ISAC, 2006), the East Idaho Uplands Sage-grouse Local Working Group Sage-grouse Conservation Plan (EIU, 2011), and the Greater Sage-Grouse Interim Management Policies and Procedures (BLM, 2011a):

- Seasonal and time of use restrictions, include avoiding inspections, maintenance work, related human and construction activities, and other activities associated with exploration between 6 p.m. and 9 a.m. within 1 kilometer (0.6 miles) of active leks during the lekking season (note, although the local working group plan calls for restrictions between March 25 and May 15 [season for higher elevations], the project would apply the longer restrictions contained in the Pocatello RMP [BLM, 2012a], extending these restrictions to begin on March 1 and last through May 31) (restriction also applies to Columbian sharp-tailed grouse);
- Road alignments would be optimized to decrease disturbance;
- If road construction/clearing activities need to occur prior to May 31, then preconstruction surveys for sage-grouse leks would be required. If leks within 0.6 miles of proposed areas of disturbance are recorded as occupied, then above seasonal and time of use restrictions would apply;
- Ensure that new roads avoid or skirt areas of key or stronghold habitat (including restoration areas intended to become key/stronghold in the future) to the extent feasible (ISAC, 2006, pp. 4-43). Whether avoidance is feasible will be determined at the discretion and judgment of the BLM;
- Existing access roads would be used where feasible and overland travel would be minimized;
- Manage existing roads and trails to minimize disturbance to occupied leks or other important seasonal habitats. Employ seasonal closures, permanent closures, rerouting of existing roads/trails, or other measures, as deemed locally appropriate (ISAC, 2006, pp. 4-43);
- During activities associated with the exploration, ensure that adequate measures are implemented to control invasive and noxious weeds;
- A seed mix of native grasses, forbs, and sagebrush would be developed specifically for sage-grouse habitat and would be used for reclamation of disturbed sage-grouse habitat areas (Section 2.3.11). The mix would be approved by the IDL and BLM.

In accordance with the Sage-grouse National Technical Team Report (Sage-grouse NTT, 2011), riparian areas and wet meadows within preliminary general sage-grouse habitat would be conserved to the extent possible. Further, general sage-grouse habitat temporarily disturbed would be reclaimed. Since the Project Area does not contain any preliminary priority sage-grouse habitat, the conservation measures associated with non-energy leasable minerals identified by the Sage-grouse National Technical Team would not apply (Sage-grouse NTT, 2011).

The Pocatello RMP (BLM, 2012a) requires application of a 2-mile buffer from occupied leks year-round for permanent surface occupancy to protect nesting and brood-rearing habitat. The proposed temporary drill wells and access roads do not represent permanent surface occupancy (e.g. major transmission power lines, communication towers, and temporary meteorological towers); therefore, this restriction does not apply to the Proposed Action.

2.3.3.3 Migratory Birds

Drill pad construction would generally occur between late June/early July and early October, which overlaps the nesting period of many migratory birds. Where possible, road construction would occur in the fall after the nesting season to avoid potential impacts to nesting birds. However, this action would be discretionary, based on specific conditions, so that soil erosion would not result. To avoid impacts to nesting migratory birds from vegetation removal and construction noise disturbance during the nesting season, the following EPMs would be applied for exploration activities occurring in the spring and summer prior to August 31. The BLM may grant exceptions to these conditions, based on site-specific information.

- A survey of the proposed drill pad locations and access roads (as defined in the approved exploration drill plan and for any additional proposed disturbance areas) would be conducted by a BLM-approved biologist during the nesting season to identify if there are any migratory bird nests within the proposed impacted areas. If no migratory bird nests are found within the proposed impacted areas, then construction activities could proceed during the breeding/nesting period.
- If migratory bird nests are found within the proposed impacted areas, the location of the proposed drill pad or road would be adjusted in order to minimize the impacts to the nest(s). Adjustments to the road alignment or pad locations would be made to the extent practicable as determined by the authorized officer. BLM would require application of additional measures for given timeframes that may include:
 - Minimizing the number of equipment trips in the vicinity of a nesting area.
 - Working during daylight hours only.
 - Maintaining a nesting buffer distance for disturbance activities of at least 200 feet from non-raptor migratory bird nest(s). These distances could be lessened if safety or other site-specific conditions warrant and the BLM feels the reduced buffer distance would not affect nesting activities; however, the buffer distance should be no less than 100 feet.
- Application of the following seasonal and spatial restrictions would be required if active raptor nests are identified in the project area (BLM, 2012a; note that there are no specific restrictions for migratory birds other than raptors):
 - Bald eagle: 0.5-mile buffer, February 1 through August 15;
 - Golden eagle: 0.5-mile buffer, February 1 through August 15;
 - Red-tailed hawk: 0.5-mile buffer, March 15 through August 15;
 - Ferruginous hawk: 0.5-mile buffer, March 15 through August 15;
 - Swainson's hawk: 0.5-mile buffer, March 1 through August 15;
 - Peregrine falcon: 0.5-mile buffer, March 1 through August 31;

- Prairie falcon: 0.5-mile buffer, April 1 through August 31;
- Kestrel: 0.25-mile buffer, April 1 through August 15;
- Goshawk: 0.5-mile buffer, April 1 through August 15;
- Cooper’s hawk: 0.5-mile buffer, April 1 through August 15;
- Sharp-shinned hawk: 0.5-mile buffer, April 1 through August 15;
- Northern harrier: 0.5-mile buffer, April 1 through August 15;
- Great-horned owl: 0.25-mile buffer, December 1 through August 1;
- Long-eared owl: 0.25-mile buffer, March 1 through August 31;
- Short-eared owl: 0.25-mile buffer, March 1 through August 31.
- Application of the following seasonal and spatial restrictions would be required if raptor winter roosts are identified in the project area (BLM, 2012a):
 - Bald eagle: 0.5-mile buffer, November 15 through April 15.

2.3.3.4 Big Game

The following seasonal restrictions would apply to construction and other activities within seasonal big game habitat, unless a temporary, short-term exception is granted by the BLM field office manager (BLM, 2010c). Dates may be adjusted as needed based on local conditions:

- Restrict activities within big game winter ranges from November 15 through April 30.
- Restrict activities near known elk calving and deer fawning areas from May 1-June 30.

2.3.3.5 Fish

Drilling water for the Project Area would be supplied from nearby springs (Slug Creek, Caldwell Creek, and/or Trail Creek) and trucked to the drilling sites. The pump intake would be screened to avoid intake of fish and debris. Drilling water would be pumped intermittently and would represent a very small fraction of the flow volume at any one time.

The following restrictions would apply to ground disturbing exploration activities near streams:

- Activities would be restricted year round within 150 feet of either side of perennial fish-bearing streams;
- Activities would be restricted year round within 100 feet of either side of perennial non-fish-bearing streams;
- Activities would be restricted year round within 50 feet of either side of an ephemeral stream (BLM, 2012a).

2.3.3.6 General Wildlife Habitat

Efforts should be made to avoid and minimize clearing and/or removal of mature upland shrubs, trees, and snags that provide important habitat to wildlife (such as high value forage species, shelter, and nesting areas for migratory birds, small mammals, and big game).

To reduce threats to wildlife, the minimum number of sumps necessary to achieve the project purpose should be constructed. Sumps should have one end constructed with a ramp, not to exceed a 35-degree slope to allow for escape of animals or people that may somehow enter the sump. When they are no longer needed, they should be backfilled and properly reclaimed.

2.3.4 Isolation and Control of Toxic or Deleterious Materials

Potential contaminants from the exploration drilling include: diesel, oil, grease, lubricants, and solvents. To facilitate immediate response to any spill of toxic or deleterious materials on site, a spill containment kit would be stored on site. A Spill Prevention, Control, and Countermeasure Plan would also be prepared and followed. Berms would be placed around each drill site to prevent runoff.

Spills of a reportable quantity would be reported by P4 staff and/or contractors to the drilling manager and other appropriate authorities, as outlined in the Spill Prevention, Control, and Countermeasure Plan. If necessary, soil remediation would be conducted and would include removal of contaminated soils to an approved bioremediation facility, and soil sample(s) would be taken to verify the success of the site remediation. In addition, the construction contractor would be required to follow any other local, state, or federal regulations related to using, handling, storing, transporting, and disposing of hazardous materials.

All drilling supplies would be stored on the drilling equipment or at a designated temporary storage area, with the exception of diesel fuel and lubricants, which would be periodically delivered to mobile equipment and not stored on site. As a routine practice at the end of drilling operations each day, all containers of drilling supplies would be closed, covered, and/or put away and securely stored to prevent potential exposure to wildlife or livestock.

All trash would be removed from the site and disposed of in a proper garbage receptacle. The Proposed Action would not generate or dispose of any hazardous waste as defined by Comprehensive Environmental, Compensation, and Liability Act of 1980, as amended, 42 United States Code 9601 et seq.

2.3.5 Surface Water, Stormwater Management, and Soil Erosion

All surface water runoff would be managed under a Stormwater Pollution Prevention Plan (SWPPP), which is regulated by the Environmental Protection Agency in Idaho. Surface water runoff from either the exploration drilling process or precipitation would be managed using the guidelines described in the BMPs for Mining in Idaho (IDL, 1992), such as silt fencing, straw wattles, waterbars, and rolling dips. These BMPs would be used on new construction areas and field fit based on topography, landscape, and the proximity to surface water as deemed necessary.

All drilling sites would be constructed with a sump to control drill cuttings and fluids. Drilling fluids would contain sediments from the drill cuttings as well as highly diluted concentrations of lubricating foam, bentonite mud, and/or polymer additives used by the drilling contractor. The lubricating foam would be biodegradable, and polymers, if required for drilling, would be used in highly diluted quantities with minimal toxicity.

Drillers, helpers, and P4 contractors and employees would be required to monitor sumps and report issues. If sumps approach their capacity as a result of freezing water and excessive runoff, either additional sumps would be prepared or the drill would be shutdown.

The following BMPs are designated to help minimize erosion and sediment transport (refer to the specific purpose of each BMP in Sections I through V of the 1992 IDL BMPs).

- I.2 Erosion Control Blanket: temporary treatment for soil stabilization consisting of commercially made matting used for erosion control and slope stabilization. Made of jute or straw and plastic netting. May be used on and adjacent to roadways and drill pads.
- I.3 Mulch-Straw: temporary treatment for soil stabilization lasting 1 to 2 years. The straw would deteriorate without detrimental effects on plant growth or plant establishment. May be used on and adjacent to roadways and drill pads. If straw is used, it would need to conform to other BMPs pertaining to noxious weed mitigation, appropriate seed mix, etc.
- I.4 Mulch-Wood Chips: temporary treatment for soil stabilization consisting of a temporary mulch of small-sized wood chips made from the trunks and branches of trees. May be used on and adjacent to roadways and drill pads.
- I.11 Biotechnical Stabilization (using live layers of brush imbedded in the ground): method of controlling or preventing surficial erosion and minimizing the potential for mass failure of slopes. May be utilized on especially steep-cut slopes adjacent to roadways.
- II.1 Topsoiling: BMP for seeding and revegetation consisting of placement of topsoil over a prepared subsoil for the purpose of enhancing revegetation conditions. Topsoil would be stockpiled adjacent to a drill pad or other suitable location and utilized when road construction occurs.
- II.3 General Planting and Seeding Specifications: BMPs applicable to revegetating disturbed lands and would be utilized, as appropriate, in consultation with BLM and the current surface owner.
- II.4 Broadcast Seeding: BMP consisting of scattering seed over the surface of the soil. This seeding method is most useful on small sites, for repairing damage, or for very large, low-angle rock areas and would be utilized as appropriate.
- III.1 Diversion Ditch/Dike: a runoff interceptor built to divert surface water away from un-vegetated areas on the adjacent vegetated ground. May be utilized when grades are in excess of 2 percent or where larger drainage flows may be anticipated.
- III.2 Interceptor Trench: a trench built along the contour of a slope to store and/or divert surface runoff. May be utilized to carry surface runoff from slopes at 3:1 or less.
- III.4 Siltation Berm: impermeable barrier placed around a disturbed site to capture and contain surface runoff so the sediment can be filtered prior to discharging the water. May be utilized on the downslope side of disturbed ground.
- III.5 Waterbars: reduce erosion by diverting runoff away from the temporary road surface. Would be utilized as appropriate on all temporary roads.

- III.10 Rolling Dips: BMP with the same intent as waterbars, designed to divert surface runoff from road surfaces. Use would be dictated by the slope grade of the temporary road. Upgrade approach varies: 85 feet for 6 to 8 percent, 75 feet for 4 to 6 percent, and 65 feet for 0 to 4 percent slopes. Downgrade distances are 15 feet, 25 feet, and 35 feet respectively.
- III.11 Road Sloping: temporary roads would be out-sloped by 1 to 2 percent from the cut slope. On steep slopes, this BMP would not be utilized due to safety concerns related to vehicular travel. Instead, roads would be in-sloped.
- III.12 Roadway Surface Water Deflectors: BMP consisting of a runoff interceptor built of treated wood and conveyor belt. May be utilized on grades in excess of 6 percent.
- V.1 Straw Bale Barriers: used as a temporary berm, diversion, or barrier to help contain sediment on-site by catching and filtering runoff. May be used across small swales, in ditches, and at the toe of bare slopes where there may be a temporary, large volume of sediment-laden runoff.
- V.2 Sediment Traps: may be temporary or permanent structures intended to catch and store sediment-laden surface runoff. May be utilized at the outflow of culverts, waterbars, and rolling dips.
- V.3 Vegetated Buffer Strip: vegetated ground can serve as a permanent or temporary trap to catch and hold sediment from runoff water flowing across it. May be utilized at construction locations wherever increased protection from stormwater and snow melt are required.
- V.4 Silt Fence/Filter Fence: low fence made of filter fabric, wire, and steel posts used to filter sediment out of runoff water before it is discharged. May be utilized where there is a potential for sediment laden runoff caused by human-made surface disturbance to be discharged.
- V.5 Brush Sediment Barrier: barrier constructed of brush or brush and filter fabric that serves as a sediment trap if runoff water is diverted through it. Brush sediment traps can be an effective permanent or temporary erosion control structure. May be utilized below any substantial surface disturbance.
- V.6 Slash Filter Windrow: designed to catch and trap sediment coming off un-vegetated ground. May be utilized to catch and retain sediment along road fill slopes adjacent to bare ground in steep terrain.

Many of the stormwater BMPs would be installed at the time the disturbance is created, including berms, waterbars, and silt fences, etc. Oftentimes, waterbars would be added at the end of the season to protect against runoff and associated erosion that may occur the following winter/spring and after access to the drill pads is no longer required. Stormwater BMPs could also be installed during reclamation to aid in soil stabilization, depending upon ground conditions and need.

2.3.6 Groundwater

Drill holes would be abandoned according to State of Idaho Regulations “Well Construction Standards Rules” (Idaho Administrative Procedures Act 37.03.09, Rule 25.16 and 45.03; see Section 2.3.12; State of Idaho Department of Administration, 2009) to minimize risk to groundwater. These rules state that “a properly decommissioned well will not: produce or

accept fluids; serve as a conduit for the movement of contaminants inside or outside the well casing; or allow the movement of surface or ground water into unsaturated zones, into another aquifer, or between aquifers.” Proper abandonment would prevent water migration from surface to groundwater.

2.3.7 Fire

P4 and its contractors would take all reasonable precautions to prevent, control, or suppress fire at the site. Vehicles would be equipped with fire extinguishers and carry shovels at all times. Additionally, any welding necessary on-site would take place on the drill pad that has been cleared of vegetation. As the drilling process requires water, 700 to 1,500 gallons of water would be available at a drill site at any particular time. This water would also be available to extinguish fires.

2.3.8 Air Pollution

Air quality in the Project Area is generally excellent. The part of southeastern Idaho encompassing the Project Area is considered an attainment area (it meets or has pollutant levels below the National Ambient Air Quality Standards; IDEQ, 2013c). Air quality concerns or impacts are not anticipated from the proposed exploration drilling activities. Potential air contaminants may include dust off of the roads and drilling pads and exhaust from the vehicles and drilling rigs. If excessive dust is created at any given time during operations, P4 would initiate dust abatement measures including watering of proposed access roads to minimize dust creation.

2.3.9 Subsidence

All drill holes would be plugged according to State of Idaho regulations “Well Construction Standards Rules” (IDAPA 37.03.09; State of Idaho Department of Administration, 2009). There are no underground mining operations in the proposed exploration drilling areas; therefore, ground subsidence is not a concern for this project and does not need to be mitigated.

2.3.10 Hazards to Public Safety

When heavy equipment is scheduled to enter or leave the site, P4 would post appropriate signage or place flaggers near the project access points to alert the public to the presence of heavy equipment on the road or entering the project. P4 would also arrange for a pick-up truck traveling with flashing hazard lights to travel in advance of the transports to alert the public to the presence of the equipment on the road.

Any impacted surface owners would be notified prior to the commencement of exploration activities. Unauthorized personnel would not be allowed within the active exploration drilling area. All drilling equipment would be shut down, secured, and locked out during off-shift or non-operating times.

2.3.11 Reclamation/Regrading, Reshaping, and Seeding

Proposed new temporary access roads, drill pads, and sumps would be reshaped to conform to the natural topography at the completion of each year’s exploration drilling activities using soil removed during clearing, unless otherwise approved by the BLM and IDL. This work would be designed to minimize erosion and increase the likelihood of

seedling success. Reclamation would be completed either concurrent with exploration drilling or within 1 to 2 weeks after completion of all drilling within a given year (Section 2.1.1.5). Reclamation of previously disturbed areas would occur where possible prior to additional exploration disturbance.

The disturbed areas would be re-seeded with a seed mix approved by the IDL and BLM and determined by BLM as sage-grouse-friendly as outlined in the BMPs Guide for Mining in Idaho (IDL, 1992). The disturbed upland areas in most cases would be seeded at a rate of approximately 40 pounds/acre utilizing standard methods. All seeding and fertilizing would be done in the late fall, if possible. The proposed exploration area occupies the Upper Mountain elevations with respect to precipitation. A possible seed mix appropriate for the upland areas and proposed in the Exploration Plans is provided in Table 5.

Table 5. Potential Seed Mix

Percent/Pound	Name
7.5	Great Basin Wildrye
5.6	Bluebunch Wheatgrass
6.8	Western Wheatgrass
7.5	Mountain Brome
1.1	Rocky Mountain Penstemon
2.6	Alfalfa ¹
1.9	Lewis Blue Flax
0.75	Orchardgrass
0.4	Timothy
4.5	Pubescent Wheatgrass
7.5	Small Burnet
0.2	Kentucky Bluegrass
0.1	Mountain Phlox
0.1	Big Bluegrass
8.0	Sainfoin
0.2	Showy Goldeneye
0.5	Wax Current
8.2	Antelope Bitterbrush
2.4	Woods Rose
0.4	Strawberry Clover
7.6	Quickguard
0.75	Sticky Purple Geranium
25.0	Sagebrush

¹More of another component could be substituted for Alfalfa with approval from the BLM for this seed mix.

Stormwater BMPs would be used where necessary prior to seeding disturbed areas to stabilize areas until the seeding can be effectively completed and seedlings have taken hold. This work would be conducted using a trackhoe and/or dozers, depending upon specific site conditions. Reclamation would need to meet Idaho Standards of Rangeland Health and be approved by the BLM before it is considered complete.

2.3.12 Drill Hole Plugging and Abandonment

All drill holes would be plugged according to State of Idaho regulations “Well Construction Standards Rules” (IDAPA 37.03.09, Rule 25; State of Idaho Department of Administration, 2009). Drill holes would be plugged with bentonite chips or grout or other approved materials (such as drill cuttings, cement grout, or concrete) from the bottom to the surface and then sealed.

As exploration drilling is a method of subsurface discovery, several scenarios of conditions may be encountered and require alternative abandonment methods. According to the Well Construction Standards Rule 10.66.c.i, exploration drill holes are not considered “wells.” However, Rule 45.03 states that exploration drill holes must be decommissioned or abandoned according to well abandonment Rule 25.16.02. All grout and bentonite materials, or other materials authorized under Idaho State law (Rule 25.10), would meet the standards of such as per Rule 10.07.a and c and Rule 10.39.

Depending on ground conditions, water flow, and drill hole depth, one of three or a combination of methods would be used to seal and plug a particular hole. Abandonite, a high solids bentonite (type of inert clay) grout, would be used to abandon deeper holes using the Tremie method. The Tremie method includes grout being placed below the water level through the drill rods, the lower end of which are kept immersed in fresh grout so that the rising grout from the bottom displaces the water without washing out the grout content. Bentonite chips would be used in shallower holes where they can be poured and freefall down the hole. Cement grout forming a 20-foot cap is the third method of drill hole abandonment.

2.3.13 Seasonal Closure

1. Prevention of Unnecessary or Undue Degradation.

Seasonal closure would include a variety of tasks prior to the winter months, including closure of the unreclaimed, newly constructed temporary access roads, removal of equipment and materials from the Project Area, and a final comprehensive BMP inspection and repair if necessary. Unreclaimed temporary roads would be temporarily closed with berms, slashpiles, or logs, and waterbars installed at intervals necessary to stabilize them during the spring runoff. Existing access roads would not be seasonally closed.

2. Measures to Stabilize Excavations and Workings

All drilling holes that have been drilled during the season would be plugged prior to seasonal closure (Section 2.3.12).

3. Measures to Isolate or Control Toxic or Deleterious Materials

During periods of seasonal closure, all toxic or deleterious materials would be removed from the site. This includes oil, grease, lubricants, solvents, bentonite, and cement.

4. Storage and/or Removal of Equipment, Supplies, and Structures

During periods of seasonal closure, all equipment and supplies would be removed from the site. If a temporary structure, such as a portable storage container, is moved to the site for storage of drilling materials, this structure would be removed to an offsite private location at the end of the drill season. No permanent structures are planned.

5. Monitoring Site Conditions During Periods of Non-Operations

A comprehensive annual inspection of all BMPs would be conducted at the close of the drilling season. This inspection would be designed to ensure that the BMPs are functioning and are of adequate maintenance to make it through the winter months and spring runoff. The unreclaimed, newly constructed access roads would then be temporarily closed with berms, slashpiles, or logs as appropriate and installed with stabilizing water bars prior to closing the site for the winter. The winter closure of the site would render it inaccessible, so a follow-up inspection would not take place until after the spring runoff is complete and the site is officially reopened. It is not P4's intent to attempt to access the site during early spring due to the muddy conditions and likelihood of excessive disturbance.

6. Schedule of Anticipated Periods of Temporary Closures

The drilling operations would take place each year commencing in early summer when weather and ground conditions indicate that it is effective and safe to return to the sites. It is anticipated that the typically wetter months of approximately March through May would be a period of temporary closure.

2.3.14 Unexpected Temporary Closure

If an unexpected temporary closure occurs that is anticipated to last more than 6 weeks, the same procedures would be followed as if the site would be closed for the season. This includes the removal of equipment, a final comprehensive inspection of BMPs, and closure of the roads as described above in Item 5.

2.4 Mitigation

The following mitigation measures are recommended by BLM for Alternative 1 to minimize the potential effects of the proposed prospecting and exploration activities on wetlands and sage-grouse.

2.4.1 Wetlands

Drill pads and wells would be sited to avoid wetlands. Roads would be constructed in a manner that would minimize impacts to wetlands. The following is proposed where known impacts to wetlands could result from the Proposed Action.

- The location and alignment of one drill pad and three segments of road in the Caldwell Canyon property would be modified so that wetlands are avoided (Figure 2, call-out boxes).
- Manufactured, temporary crossings would be used to span or partially span the wetlands/ephemeral drainages that would otherwise be crossed with constructed roads in the center (lease I-0-014080) and southeast corner (lease I-0-013738) of the Caldwell Canyon property so that road construction in wetlands would be minimized.

Two possible methods that could be used follow; both would be portable and able to support the weight of the water truck, pipe truck (maximum weight between 8 and 10 tons), and pick-up trucks. The first option would use two sections of 10 to 12 foot-long wooden beams or railroad ties with 2 by 12-foot wooden planks strapped to the top. The two sections would be attached to a section of cribbing supported culvert. This crossing option would be between 20 to 24 feet in length and 12 feet in width.

The second option would use two 3 by 12-foot timbers for supports with 2 by 12-foot planks across the top as a running surface. This crossing option would be 20 feet in length and 12 feet in width and is used for the analysis.

- The alignment of one segment of road in the Trail Creek property would be modified so that wetlands are avoided (Figure 3, call-out box).

2.4.2 Sage-grouse

Barbed-wire fences in the vicinity of the Project Area would be marked to increase fence visibility and reduce the potential for sage-grouse collisions. P4 would work with the BLM to determine the most appropriate fences to mark and the types of markers (reflective vs. non-reflective) and spacing to be used. This mitigation is being recommended to offset the impacts of the Proposed Action on general sage-grouse habitat.

2.5 Compliance Monitoring

The BLM and IDL would inspect the proposed actions during and after drilling activities to ensure compliance with BMPs, environmental protection measures, and other requirements. The results of these inspections would become part of the project record. Appropriate BLM and IDL resource specialists would be responsible for monitoring activities.

2.6 Alternatives Considered But Not Analyzed In Detail

During public scoping, potential alternatives were presented by members of the public. These alternatives were initially considered by the BLM but were eliminated from detailed study. Descriptions of these alternatives and the rationale for why they were eliminated from detailed study are provided below.

2.6.1 Limit Road Use to Pre-Existing Roads with Direction Drilling

It was proposed during public scoping that all operations be limited to work from pre-existing road “prisms,” utilizing directional drilling to access other areas.

Rationale: Pre-existing roads, even with directional drilling, are not sufficient to provide the opportunity to access and thereby adequately analyze the mineral resource using directional drilling methods. Limiting the project to the use of pre-existing roads, therefore, is not a viable or reasonable alternative and would not meet the need of the project; namely, to retrieve core and geologic samples from within the projected mineral deposit enabling P4 to extract detailed geologic data and determine the extent of the mineral deposit. Directional drilling is effective to reduce the number of drill sites, but the angle of intersection with the phosphate beds and the resulting effect on the definition of resources and ultimately reserves is diminished. Drill holes should cut perpendicular to the mineralization to ensure a true estimate of thickness and grade distribution. Inclined drill holes can “run” along beds or crosscut such that they only represent a very small proportion of the true rock/grade profile. This can result in a very poor understanding of the geology and a poorly constrained geologic model, which is ultimately used for mineral resource and reserve definition. Although this type of mineral deposit has large lateral extents, there is a consistently zoned grade profile with respect to phosphate and deleterious elements, so drill hole angles must be minimized. Further, the benefit of

directional drilling is obtained in drill holes that are thousands of feet deep. This allows drill holes to move relatively large lateral distances even though their actual deviations are only a few degrees. Depths of drill holes for the Proposed Action would be a maximum of 500 feet. Using directional drilling for phosphate drilling at depths of less than 600 feet provides very limited potential improvements in surface disturbance. For these reasons, this alternative was eliminated from detailed study.

2.6.2 Limit Exploration Activities on Public Land

It was proposed during public scoping that exploration activities be limited on public land in order to protect important wildlife habitat and other environmental resources. Such an alternative would reduce the amount of exploration drilling than that proposed in the Caldwell Canyon Exploration Plan.

Rationale: There are 240 acres of public land within the 1,629-acre Caldwell Canyon property. No public lands occur within the Trail Creek Property. Approximately 1.6 miles of existing access roads cross public land in this property. These roads would be used for access and would be upgraded, if needed. Up to 1.6 miles of temporary roads and up to 22 drill pads are proposed for construction on public lands within the Caldwell Canyon Property, for up to 5.2 acres total disturbance, thus presenting a relatively small, and short-term impact to wildlife habitat and other environmental resources. Reducing the amount of drilling on public lands would prevent P4 from extracting detailed geologic data and determining the extent of the mineral deposit in the existing lease area IDI-014080 and within the adjacent off-lease areas (IDI-37319 and IDI-37306). Further, the BLM has a legal obligation to allow exploration and development of mineral resources on existing leases.

2.6.3 Obliterate All Non-System Roads

It was proposed during public scoping that road construction and potential impacts to water quality and ecosystem integrity be mitigated by obliterating all non-system roads not used for drilling prior to drilling operations and by obliterating all non-system roads following drilling.

Rationale: Roads proposed for construction as part of the exploration plans would be temporary, and would be reclaimed (obliterated) annually, either concurrent with exploration drilling or within 1 to 2 weeks after completion of all drilling within a given year. An exception would occur on rare occasion, at the discretion of the BLM, where certain roads and pads might remain open for future use. These areas would not be reclaimed within the year constructed, but after they are no longer needed for exploration (Section 2.1.1.5). The 2012 Pocatello RMP (BLM, 2012a) designated all public lands within the planning area as Open, Limited, or Closed for Off-Highway Vehicle use. Public lands within the Project Area were designated as "Limited". Under this designation; cross-country travel is prohibited, and motorized vehicles are limited to existing routes until route designations have been completed through the travel management planning process. There are currently no "system" or "non-system" roads identified by the BLM. Route designation is outside the scope of this document, and will be completed through the travel management planning process.

2.6.4 No Increase of Road Densities above Two Miles per Square Mile

It was proposed during public scoping that roads constructed for exploration be reclaimed concurrently with drilling so there is no increase of road densities above 2 miles per square mile at any one time.

Rationale: The BLM Travel and Transportation Manual classifies roads into three categories: roads, primitive roads, and trails. The BLM has not completed road/trail inventories or associated classifications for this area so it is premature to claim specific road densities for public lands within the project area.

The 2 miles per square mile suggested in this alternative is not an established standard in the BLM travel management planning process. Density thresholds should be established either through a land use plan or travel management plan. The BLM, Pocatello Field Office, has not identified road density thresholds in any planning document, and may not do so when the travel management plan is completed for this area. Reclamation of new, temporary roads proposed under the Proposed Action is addressed in Sections 2.1.1.5 and 2.3.11.

Chapter 3

3.0 Affected Environment and Environmental Consequences

This section summarizes the existing physical, biological, and social environments of the Project Area and the potential changes to those environments that could be result from implementation of the alternatives described in Chapter 2. The information summarized in this chapter was obtained from published information sources, unpublished materials, site-specific surveys, and communication with relevant government agencies and private individuals with knowledge of the area. These include: Idaho State Historical Society Record Search for Project Area (ISHS, 2011); Cultural Resource Survey of Trail Creek Lease Area (Crosland, 1999); Cultural Resource Survey of Caldwell Canyon (Parvey and Juell, 2002); Surveys for Threatened and Endangered Species (Fall of 2010); Assessments for Threatened and Endangered Species and BLM Sensitive Species (Fall of 2011); Wetland Surveys (Fall of 2011); and greater sage-grouse lek surveys (Spring of 2012). The affected environment for individual resources was delineated based on the area of potential direct and indirect environmental impacts from the proposed drilling activities. For some resources such as soils and vegetation, the affected area was determined to be the physical location and immediate vicinity of the areas to be disturbed by the proposed drilling activities. For other resources such as water resources, the affected environment comprised a larger area (i.e., watershed). This chapter is organized by environmental resources to be analyzed and describes the existing conditions associated with these resources. The description of the environmental consequences includes direct and indirect effects; cumulative effects of affected resources are described in Chapter 4. The analysis of impacts of constructing new, temporary drill holes and access roads is based on the maximum anticipated disturbance that could occur if up to double the amount of drill holes proposed in the 2012 Exploration Plan were drilled and double the amount of new access roads were constructed (Section 2.1.2.1 and 2.1.2.2).

3.0.1 Introduction

Climate in southeast Idaho is influenced by major topographic features, including the Pacific coast and local mountain ranges. The average annual precipitation varies widely throughout the resource area and with elevation. Somsen Ranch snow telemetry station, located approximately 13 miles north of the Caldwell Canyon property, receives an average total annual precipitation of 26.6 inches based on a 1981 to 2011 period of record (NRCS, 2011).

The Project Area is located within the Slug Creek sub-basin, which is a tributary of the Blackfoot River and the Snake River. Primary activities in the sub-basin include agriculture, livestock grazing, and phosphate mining. The Project Area lies within the Overthrust Mountains ecological section with a southern xeric shrub land and steppe habitat.

3.1 Resources Considered in the Impact Analysis

To comply with NEPA, the BLM is required to consider a wide range of resources that may be impacted. Table 6 identifies the elements that must be addressed in all environmental analyses, as well as other resources deemed appropriate for evaluation by the BLM. For the resources listed in Table 6, which are either “not present” or “present not affected,” a

rationale is provided as to why the resource would not be impacted with implementation of the Proposed Action. For the resources that are “present affected” by the Proposed Action, an analysis in narrative form is provided in Sections 3.2 through 3.8.

Table 6. Resources Considered in the Impact Analysis

Resource	Resource Presence and Potential for Effect	Rationale
Access	Present Not Affected	The Proposed Action would not result in changes in public access to the area over existing conditions. Unreclaimed temporary roads constructed for the project would be closed outside of the drilling season, prior to reclamation. There currently are limitations to access to public land within the Project Area due to the presence of private land or the lack of roads and trails. P4 would maintain the access across private lands in accordance with the wishes of the surface owner, which currently does not encourage or allow unrestricted public access.
Air Quality	Present Not Affected	The Project Area is in an attainment area (IDEQ, 2013c). Air Quality Index Values at the Soda Springs air quality monitoring station for dust (PM 10) and exhaust (PM 2.5) were in the highest category (good) over 96 and 85 percent of the time in 2011 (Homefacts, 2013). Short-term, temporary emissions of dust and vehicle exhaust would be emitted during operations. Dust suppression measures would be implemented to minimize dust emission. The implementation of the Proposed Action would not result in the production of vehicle or equipment emission or particulate matter above Idaho and National Ambient Air Quality Standards.
Areas of Critical Environmental Concern	Not Present	The proposed Project Area is not located within or near an Area of Critical Environmental Concern (BLM, 2010c, Figure 2-26).
Cultural Resources	Present Not Affected	While known cultural resources are present within the Project Area, none would be affected by the Proposed Action. Standard BLM EPMS and a history of the area are provided in Section 3.2.

Resource	Resource Presence and Potential for Effect	Rationale
Economic and Social Values	Present Not Affected	The Proposed Action is consistent with the prevalent economic and social values characteristic of this area. The Proposed Action would not generate significant socioeconomic changes. The temporary influx of workers is expected to be small and could provide a temporary income to the local establishments for services provided but would be short term and minimal.
Environmental Justice	Not Present	The minority population in Caribou County is less than 5 percent of the total population and approximately 8 percent of the population is below poverty level (United States Census Bureau, 2010). There are no minority or low-income populations residing in or adjacent to the proposed Project Area. No concerns or disproportionate effects to a minority or low-income population or tribal government are anticipated.
Existing and Potential Land Uses	Present Not Affected	The Proposed Action would not affect the current and likely future use of the Project Area as a source for solid leasable minerals (BLM, 2010c, 2012).
Fisheries	Present Not Affected	Slug, and Dry Valley, and Trail Creeks have a fishery. Caldwell Creek is an intermittent stream that is not known to contain a fishery. Proposed drilling and road construction would not occur within Slug, Dry Valley, or Trail Creeks and would therefore not affect fisheries. Given the distance of fish-bearing streams to the Project Area, the application of stream buffers, and erosion-control BMPs, the Proposed Action would not affect fisheries within or near the Project Area (Section 3.5). Although water could be withdrawn from Slug Creek, Trail Creek, or Caldwell Creek in support of drilling operations, pump intakes would be screened to avoid fish entrapment, and minor, temporary changes to surface flows are not anticipated to impact fisheries.
Floodplains	Not Present	There are no floodplains that occur in the Project Area (FEMA, 2011).

Resource	Resource Presence and Potential for Effect	Rationale
Forest Resources	Present Affected	Impacts are disclosed under Vegetation Environmental Consequences.
Invasive, Non-Native Species	Present Affected	Impacts are disclosed under Vegetation Environmental Consequences.
Mineral Resources	Present Not Affected	Up to 114 vertical and angle drill holes in the Caldwell Canyon property and 244 in the Trail Creek property are proposed to identify the potential mineral resources within the Project Area. Impacts to the phosphate reserves within the Project Area from the advancement of the drill holes into the shale member are considered negligible.
Migratory Birds	Present Affected	Impacts are disclosed under Environmental Consequences (Sections 3.5 and 3.6).
Native American Religious Concerns	Not Present	There are no known sites or resources associated with ceremonial practices in the proposed Project Area.
Paleontological Resources	Present Not Affected	Paleontological resources which may be present in the Project Area would consist almost entirely of marine invertebrates that are generally abundant and widespread in their distribution in this area. However, they are not unique to the Project Area and potential impacts from exploration activities are anticipated to be negligible.
Soil Resources	Present Affected	Impacts are disclosed under Environmental Consequences (Section 3.3.2).
Special Designations	Not Present	No areas with special designations occur in the Project Area. The Blackfoot Wildlife Management Area is approximately 3.2 miles from the Caldwell Canyon property and 5.1 miles from the Trail Creek property at its closest; this management area would not be impacted.

Resource	Resource Presence and Potential for Effect	Rationale
Threatened, Endangered, and Sensitive Plants	Present Not Affected	Habitat for TES Plants is present in the Project Area and could be disturbed (Section 3.6).
Threatened, Endangered, and Sensitive Animals	Present Affected	Impacts are disclosed under Environmental Consequences (Section 3.6).
Threatened, Endangered, and Sensitive Fish	Present Not Affected	Rationale discussed in the Section 3.6.
Range Resources (Livestock Grazing)	Present Affected	Impacts are disclosed under Environmental Consequences (Section 3.8).
Recreational Use	Present Not Affected	There are no developed recreational facilities or campgrounds in the Project Area (Recreation.gov, 2010). Use of the Project Area and vicinity for hunting may occur in the fall. Since public access of the Project Area would not change over existing conditions, recreation opportunities would not be impacted (see Access above).
Tribal Treaty Rights and Interests	Present Affected	Tribal coordination conducted February 9 th 2012 and February 20, 2013 with the Shoshone Bannock Tribes (Sections 3.2 and 5.0).
Vegetation	Present Affected	Impacts are disclosed under Environmental Consequences (Section 3.4).

Resource	Resource Presence and Potential for Effect	Rationale
Visual Resources	Present Affected	<p>Impacts are disclosed under Environmental Consequences (Section 3.9.2).</p> <p>Drill roads/holes would be viewed by a limited number of people and would not be visible from sensitive viewpoints; therefore they would be visually subordinate in the characteristic landscape. Proposed exploration drilling activities are temporary and the Proposed Action would occur on BLM, State of Idaho and private land. VRM class designations would not change as a result of the proposed exploration activities.</p>
Wastes, Hazardous and Solid	Present Not Affected	<p>The equipment and materials needed for the proposed exploration activities have low potential for accidental spills of regulated or hazardous materials or waste substance release. These materials include diesel fuel, lubricants, and drilling fluids (Section 2.1.1.2). P4 would maintain all the appropriate Material Safety Data Sheets for all chemicals, compounds, and substances to be used during the proposed drilling activities, would have a spill containment kit on site, and would prepare and follow a Spill Prevention, Control and Countermeasure Plan (Section 2.3.4). Berms would be placed around each drill site to aid in runoff control. Direct and indirect impacts to the environment from the release of hazardous or solid materials or wastes are not expected.</p>
Water Quality (Surface and Ground)	Present Affected	<p>Impacts are disclosed under Environmental Consequences (Section 3.7.2). Only temporary, minor effects on surface waters would result from water withdrawals and would be covered under temporary water use permits. All proposed activities would be greater than 500 feet from perennial water bodies. Impacts to ground water from potential contaminants of concern and drilling fluids are not anticipated.</p>

Resource	Resource Presence and Potential for Effect	Rationale
Wetland and Riparian Zones	Present Affected	Impacts to minor amounts of wetland and riparian habitats. Impacts are disclosed under Environmental Consequences (Section 3.5).
Wild and Scenic Rivers	Not Present	There are no designated Wild and Scenic Rivers within or adjacent to the Project Area or that would be affected by the proposed drilling activities (BLM, 2010a).
Wild Horses and Burro Herd Management Areas	Not Present	No wild horses or burros occur within the Project Area (BLM, 2010d).
Wilderness	Not Present	There are no designated Wilderness Areas within or adjacent to the Project Area. The closest Wilderness Area is the Cedar Mountain Wilderness Area located southwest of Salt Lake City, Utah (BLM, 2010b).
Wildlife Resources	Present Affected	Impacts are disclosed under Environmental Consequences (Section 3.5).

3.2 Cultural Resources and Tribal Treaty Rights

3.2.1 Affected Environment

Cultural resources are defined in this document as buildings, sites, districts, structures, and objects related to history, architecture, archaeology, culture, or science. Significant cultural resources are those that are listed in or are considered eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the National Historic Preservation Act of 1966, as amended, requires federal agencies to take into account any action that may adversely affect any structure or object that is, or can be included in the NRHP. These regulations, codified at 36 Code of Federal Regulations 800, provide a basis for which to determine if a site is eligible. Beyond that, the regulations define how those properties or sites are to be dealt with by federal agencies or other involved parties. These regulations must be considered for historic properties or sites of historic importance, as well as for archaeological sites. To determine the presence of cultural resources in the Project Area, a background records search was performed by the Idaho State Historical Society on August 30, 2011 for a 1/2-mile area surrounding the Project Area (Record Search #11379).

Results of the records search indicated three previously recorded archaeological sites within the Trail Creek property. One of these is described as a historic debris scatter, and is recommended as ineligible for inclusion on the NRHP. The other two sites identified in the records search were historic roads: Old Canyon Road and Mill Fork/Trail Road. The Old Canyon Road was the only site recommended as eligible for inclusion on the NRHP. The records search identified two surveys in the area. One was a survey of the entire Trail Creek lease area conducted in 1999 in which the three previously mentioned archaeological sites were identified (Crosland, 1999). Another was a survey of a portion of the Caldwell Canyon lease area conducted in 2002 (Parvey and Juell, 2002). This survey did not identify any cultural resources, but did mention a previously recorded archaeological site identified by Butler in 1975 (Butler, 1975). This site is described as a single chert flake. Butler (1975) recommended further investigation at this site to determine eligibility for the NRHP, but no specific location information was given. From the description, Parvey and Juell (2002) assumed the site was located in the Caldwell Canyon property near the intersection of proposed temporary access roads.

In 2011, a survey of the Caldwell Canyon property was conducted (Mason, 2012). The survey resulted in no cultural resources being identified. The assumed location of Butler's (1975) site was inspected, but no cultural resources were observed. The assumed location of this site is not within the area of Proposed Action.

In general, the geographic region is expected to have limited evidence of both historic and prehistoric occupation. The harsh climate and high, rugged landscape is not conducive to settlement. Natural resources such as wood, chert, precious minerals, and water are scarce in many areas of the region. Farming is very limited in the area. Ranching and grazing are the primary agricultural uses in the region.

3.2.1.1 Cultural Setting

The prehistory in southeastern Idaho spans approximately the past 11,000 years and can be divided into three major time periods: Paleoindian (11,000 to 7,000 before present), Archaic (7,000 to 300 BP), and Protohistoric (300 BP through historic contact). Historic

records of the area begin in the early 1800s when European fur trappers and explorers first visited the region.

3.2.1.1.1 Paleoindian

Human occupation in southeastern Idaho is generally accepted to have begun approximately 11,000 years ago with the earliest evidence coming from sites and tools associated with the Clovis, Folsom, and Plano traditions. Generally people living within this time period were highly mobile, travelling large distances throughout the year (Goodyear, 1979; Letourneau, 1992).

3.2.1.1.2 Archaic

The transition from Paleoindian to Archaic cultural traditions correlates with a climatic shift to warmer drier conditions occurring approximately 7,000 years ago. Subsistence during the Archaic period was more diversified and based on plant gathering and small-game hunting. The artifact assemblage from this time period consists of knives, scrapers, and a diverse set of projectile points as well as milling implements.

Ceramics have been found at archaeological sites dating from the later portion of the Archaic Period (1,300-300 BP). The Shoshone and Bannock groups are documented to have had a presence in Southeastern Idaho since at least 700 BP with artifacts being recovered from the Wahzuma site attributed to these groups. The Shoshone Bannock Tribes state that their ancestors have lived in Southeastern Idaho for an extensive period of time.

3.2.1.1.3 Protohistoric

During the Protohistoric Period, groups including the Shoshone and Bannock, which lived in and traveled through the area, relied on horses for transportation. These groups hunted bison, elk, deer, and mountain sheep, as well as gathered fruits and other food items along the Bear River (Murphy and Murphy, 1986). During the early contact with European-Americans, conflicts eventually gave rise to the reservation system. On October 14, 1863, mixed bands of the Shoshone signed a treaty with the United States Government at Soda Springs, Idaho, which was never ratified (Kappler, 1941). Another treaty, signed by the Western Shoshone in 1863, set aside large tracts of land in Idaho, Nevada, Oregon, Utah, and Wyoming for Indian use (Manning and Deaver, 1992). In 1867 and 1868, the Fort Hall and Wind River Valley Reservations were established and all other lands in Idaho and Wyoming were relinquished by the Shoshone (Clements and Forbush, 1970). The Bannock were assigned to the Fort Hall Reservation in 1869 (Manning and Deaver, 1992).

The Fort Bridger Treaty of 1868 between the United States and the Shoshone and Bannock Tribes reserves the Tribes' right to hunt, fish, gather, and exercise other traditional uses and practices on unoccupied federal lands. In addition to these rights, the Shoshone and Bannock Tribes have the right to graze Tribal livestock and cut timber for Tribal use on those lands of the original Fort Hall Reservation that were ceded to the federal government under the Agreement of February 5, 1898 (ratified by the Act of June 6, 1900). Even though the native groups have relinquished legal ownership of the lands outside the reservations, they continue to actively use the lands and resources to the extent possible, retain traditions and connections with the lands, and maintain connections with sacred sites. These sacred sites include burials, rock art, monumental rock features, natural features,

rock structures or rings, sweat lodges, timber and brush structures, eagle traps, and prayer and offering localities. Much of the landscape itself figures prominently in the identity and traditions of the native groups and sacred places are not necessarily defined by archaeological remains.

3.2.1.1.4 Historic

In the early 1800s, fur trappers and explorers of European descent began travelling through the region. By the mid-1800s, travelers and settlers moved through the region on the Oregon Trail or the California Trail which passed near Soda Springs. Mormon settlers established communities in the Salt Lake Valley in the late 1800s. Soda Springs became the county seat of Caribou County in 1919 and prior to that, was the county seat of Oneida County. Mining became the focus of industry in the area in the late 1800s with gold and later sulfur. The development of mining encouraged additional settlements to form in the area.

3.2.2 Environmental Consequences

3.2.2.1 Alternative 1 Direct and Indirect Impacts

Based on the archaeological survey and records search conducted for this project, no archaeological sites were identified within the Caldwell Canyon property. One archaeological site identified by Butler (1975) is presumed to be located outside the proposed Project Area and was not relocated during the archaeological survey of Caldwell Canyon. Therefore, no direct or indirect impacts to cultural resources are expected from the proposed exploration of the Caldwell Canyon property.

One archaeological site recommended as eligible for listing on the NRHP, Old Canyon Road, overlaps a small corner of the Trail Creek property. However, this road is outside the area of impact for the proposed exploration. All other sites identified are not recommended as eligible for listing on the NRHP and are also outside the area of impact for the proposed exploration. Therefore, no direct or indirect impacts to cultural resources are expected from the proposed exploration of the Trail Creek property.

Tribal treaty rights and interests within the Project Area are limited to hunting, gathering, and fishing rights. These rights would be affected by the Proposed Action; however the effect would be minor. Drill pads and temporary roads would only impact a small percentage of the overall Project Area (<3 percent) and drilling activity would occur in phases so that only small areas would be impacted at any given time. The impact would be limited to minor disturbance to vegetation and wildlife (Sections 3.4 through 3.6). Water quality and fisheries would not be impacted by the Proposed Action (Sections 3.7 and 3.5); therefore fishing rights would not be affected. Any disturbed areas would be reclaimed concurrent with drilling or at the completion of each year's exploration drilling activities, minimizing long-term impacts on the tribal treaty rights and interests. Finally, no impacts to cultural resources or archaeological sites would occur due to the Proposed Action.

3.2.2.2 Environmental Protection Measures and Best Management Practices

Standard EMPs and BMPs regarding the discovery of unidentified cultural resources during exploration would apply, as described in Section 2.3.1.

To address the additional drill holes and roads that could potentially be constructed over that described in the exploration plans, pre-construction cultural resource clearances of areas within the Caldwell Canyon property not previously surveyed would be required. In the event that an archaeological site is identified, an EPM would be implemented to avoid archaeological sites recommended as eligible for listing on the NRHP. Application of this measure would ensure that the Old Canyon Road and any other eligible sites potentially present in the disturbance area would not be impacted.

3.2.2.3 Mitigation

Application of mitigation for wetlands, as described in Section 2.4, would result in an additional 0.02 acres of disturbance in the Trail Creek property and a decrease in 0.3 acres of disturbance in the Caldwell Canyon property than without mitigation. Impacts described above to cultural resources without this mitigation would not change with application of mitigation. Preconstruction cultural clearances would be completed and standard EMPs and BMPs regarding the discovery of unidentified cultural resource during exploration would apply, as described in Section 2.3.1.

3.2.2.4 Alternative 2 Direct and Indirect Impacts

Alternative 2 would consist of not approving the plan of operations. Under Alternative 2, the proposed exploratory drilling on the existing federal lease would be postponed or deferred indefinitely, and exploration or prospecting drilling activities on the remaining BLM-managed portion of the Caldwell Canyon property would not be conducted. Alternative 2 would not cause direct or indirect impacts to cultural resources.

3.3 Soil Resources

3.3.1 Affected Environment

Soil types have not been classified specifically for the Project Area. A draft map of the soils for Caribou County (NRCS, 2011) was reviewed to estimate the soil types in the Project Area. The NRCS soil profiling was incomplete and subject to change, but was the best information available for use in this analysis. According to classification of soils in the general vicinity of the Project Area, major soil types expected in the Project Area are as follows:

- Woolsted Silt Loam, 1 to 12 percent slopes
- Enochville-Furniss Complex, 0 to 2 percent slopes
- Outlet-Foxcreek complex, 0 to 2 percent slopes

The soils were formed in loess and silty to mixed alluvium and in moderately fine and medium textured alluvium or lacustrine sediments. The soils in the area range from well to poorly drained and exhibit medium runoff with slow or moderately slow permeability. Erosion rates are a direct function of the amount of groundcover present. General descriptions of the major soil types are provided below.

Woolsted Silt Loam, 1 to 12 percent slopes are at elevations of 6,004 to 6,808 feet. They are located on alluvial fans and mountain slopes. Mean annual precipitation is 18 to 22 inches with a mean annual air temperature of 33 to 37 degrees Fahrenheit (°F). Frost-free period is 30 to 65 days.

Enochville-Furniss complex, 0 to 2 percent slopes are at elevations of 5,800 to 7,500 feet. They are located on bottomlands and low stream terraces. Mean annual precipitation is 16 to 20 inches with a mean annual air temperature of 39 to 45°F. Frost-free period is 40 to 75 days.

Outlet-Foxcreek Complex, 0 to 2 percent slopes are at elevations of 5,500 to 7,000 feet. They are located on level lake or stream terraces of bottomlands. Mean annual precipitation is 12 to 19 inches with a mean annual air temperature of 34 to 44°F. Frost-free period is 20 to 80 days.

3.3.2 Environmental Consequences

Types of impacts to soils anticipated from the proposed exploration include direct surface disturbance from construction activities and indirect erosion from use and maintenance of roads. Indirect impacts may also include soil compaction, reductions in infiltration and percolation, surface ponding, and loss of water-holding capacity of soils. Since soil types have not been classified for the Project Area proper, impacts by soil type are not disclosed.

Indirect effects to soils from constructing new roads can sometimes occur from the potential for increased off-road vehicle use. However, because access to public land in the Project Area is limited due to the presence of private land or the lack of roads and trails, and since newly constructed roads would be obliterated and reclaimed once the operation is complete, effects from off-road vehicle use are not expected.

The Mead Peak member of the phosphoria formation contains soils that contain selenium. Newly constructed roads and drill pads may expose portions of the Mead Peak member of the phosphoria formation and result in short-term exposure of selenium bearing soils or rock. Of the up to 59.6 acres of proposed disturbance in the Project Area, approximately 1.1 acres (1.7 percent of disturbed areas) would occur in potentially selenium-bearing soils. Typical road cut depth is expected to reach 1 foot in depth, with deeper cuts occurring on steeper exposures. Alluvial cover of the Mead Peak member of the phosphoria formation ranges from 2 to 10 feet (personal communication with Dave Carpenter, Monsanto). In addition, the upper zones of the formation are expected to contain lesser concentrations of selenium due to natural weathering and leaching of selenium. EPMs and BMPs described in Section 2.3 and Section 3.3.2.3 would minimize the potential for soil erosion and transportation of selenium-bearing soils.

3.3.2.1 Alternative 1 Direct and Indirect Impacts

Caldwell Canyon

Surface soil disturbances totaling approximately 16.2 acres would result from construction and use of the proposed temporary access roads and drill pads (Table 3), with approximately 30 percent occurring on federal lands and 70 percent occurring on private lands. Approximately 5.2 miles of 20-foot-wide roads would be built, disturbing approximately 12.8 acres. Approximately 8.9 miles of access roads with widths varying between 10 and 12 feet currently account for about 13 acres of disturbance within the Project Area. Approximately 0.5 acres (3.0 percent of soil disturbance in the Caldwell Canyon property) of road construction would occur in potential selenium-bearing soils. Soil disturbances would be temporary and would be reclaimed once proposed exploration drilling is complete. The existing access roads would not be upgraded, but maintenance

(repairing ruts, installing water bars, etc.) would be performed as needed, and would result in some disturbance to the previously disturbed 13 acres. Each of the proposed drill pads would require a footprint of approximately 1,600 sq feet (40 x 40 feet), disturbing approximately 0.04 acres. Proposed surface disturbance and road use would result in potential road erosion for a period of 2 to 4 years; however, since disturbed areas would be reclaimed, no long-term adverse impacts are anticipated. The disturbed soil would be stockpiled during pad construction, and where feasible, during road construction.

Trail Creek

Surface soil disturbances totaling approximately 43.4 acres would result from construction and use of the proposed temporary access roads and drill pads (Table 4), with approximately 43 percent occurring on state lands and 57 percent occurring on private lands. Approximately 14.8 miles of 20-foot-wide road would be built, disturbing approximately 36.2 acres. Approximately 16.9 miles of access roads with widths varying between 10 and 12 feet currently account for about 41.1 acres of disturbance within the Project Area. Approximately 0.5 acres (1.2 percent of soil disturbance in the Trail Creek property) of road construction would occur in potentially selenium-bearing soils. Soil disturbances would be temporary and would be reclaimed once proposed exploration drilling is complete. The existing access roads would not be upgraded, but maintenance (repairing ruts, installing water bars, etc.) would be performed as needed, and would result in some disturbance to the previously disturbed 41.1 acres. Each of the proposed drill pads would require a footprint of approximately 1,600 sq feet (40 x 40 feet), disturbing approximately 0.04 acres. Proposed surface disturbance and road use would result in potential road erosion for a period of 7 to 11 years; however, since disturbed areas would be reclaimed, no long-term adverse impacts are anticipated. The disturbed soil would be stockpiled during pad construction, and where feasible, during road construction.

3.3.2.2 Environmental Protection Measures and Best Management Practices

EPMs and BMPs proposed in Section 2.3 would be applied that would reduce the potential for and duration of soil erosion in the Project Area.

New roads, drill pads, and sumps would be reshaped to conform to the natural topography at the completion of the drilling project. This work would be designed to minimize erosion and increase the likelihood of seedling success. After reshaping is complete, the disturbed areas would be seeded and fertilized to establish groundcover and stabilize soils. Stormwater BMPs would be utilized where necessary to stabilize areas until the seedlings have taken hold (see Section 2.3.5).

Any soils displaced into road or pad berms during construction would be pushed off to the side of these disturbed areas and used during the reclamation process. At the conclusion of the drilling season, the constructed access roads would be bermed and blocked off to traffic to reduce the potential for soil disturbance and erosion outside of the operating season. Further, waterbars would be constructed to decrease erosion from roads.

3.3.2.3 Mitigation

Application of mitigation for wetlands, which would require the siting of drill pads and wells to avoid wetlands, the siting of new roads to minimize crossings of wetlands, and the use of temporary, manufactured crossings over wetlands in the Caldwell Canyon property

(Section 2.4), would result in an approximate increase in 0.02 acres of soil disturbance in the Trail Creek property and a decrease in 0.3 acres of soil disturbance in the Caldwell Canyon property than without application of mitigation. This mitigation measure could also change the type of soil directly impacted, reducing impacts to wetland soils in the Project Area by 0.2 acres. EPMs and BMPs described in Section 3.3.2.2 and Section 2.3.5 would reduce the potential for soil erosion associated with the additional soil disturbance associated with the revised road alignments. The increase in soil disturbance would be temporary and have negligible impacts.

3.3.2.4 Alternative 2 Direct and Indirect Impacts

Alternative 2 would consist of not approving the exploration and prospecting activities and not issuing an exploration license and prospecting permit. Therefore, the proposed drill holes and associated access roads would not be constructed, and the soils in the Project Area would remain in their existing condition. Any current levels of soil erosion occurring as a result of existing roads would likely continue, as under Alternative 1. Alternative 2 would not result in new soil disturbance or erosion.

3.4 Vegetation Resources

3.4.1 Affected Environment

Vegetation is lumped into four broad categories for this analysis: mountain shrub, forested, riparian (including wetlands), and agriculture. In addition, this section addresses non-native plants (noxious weeds and other invasive plant species).

3.4.1.1 Caldwell Canyon

The Caldwell Canyon property is within the mountain shrub zone, located between 6,350 feet and 7,370 feet in elevation (BLM, 2010b pp. 3-22). The vegetative community in the property primarily consists of a sagebrush/bitterbrush rangeland community dominated by shrubs with an herbaceous understory. Wetland vegetation is found in several locations in the property and riparian vegetation occurs along Caldwell Creek. Aspen stands occur in various locations of the Project Area. Table 7 portrays the acres of vegetation by community type and sub-community type.

Table 7. Vegetation Community Types in the Caldwell Canyon Property¹

Vegetation Community	Sub-Community ²	Total Acres ²	Acres BLM Land	Acres Private Land
Mountain Shrub	Big Sagebrush	1,061.7	141.3	920.3
	Grassland	29.8	0.0	29.8
	Low Sagebrush	87.7	0.2	87.6
	Warm Mesic Shrubs	15.6	15.6	0.0
<i>Total</i>	--	<i>1,194.8</i>	<i>157.1</i>	<i>1,037.7</i>
Forest	Aspen	364.7	85.1	279.6
	Mixed Needleleaf, Broadleaf Forest	55.6	9.4	46.2
<i>Total</i>	--	<i>420.3</i>	<i>94.5</i>	<i>325.8</i>
Riparian ³	Shrub Dominated Riparian	7.5	4.1	3.3
	Wetlands	9.1	0.0	9.1
<i>Total</i>	--	<i>16.6</i>	<i>4.1</i>	<i>12.4</i>
Agricultural	Agricultural Land	4.6	0.0	4.6
<i>Total</i>	--	<i>4.6</i>	<i>0.0</i>	<i>4.6</i>
<i>Total Acres all Communities</i>		<i>1,635</i>	<i>255.7</i>	<i>1,380.5</i>

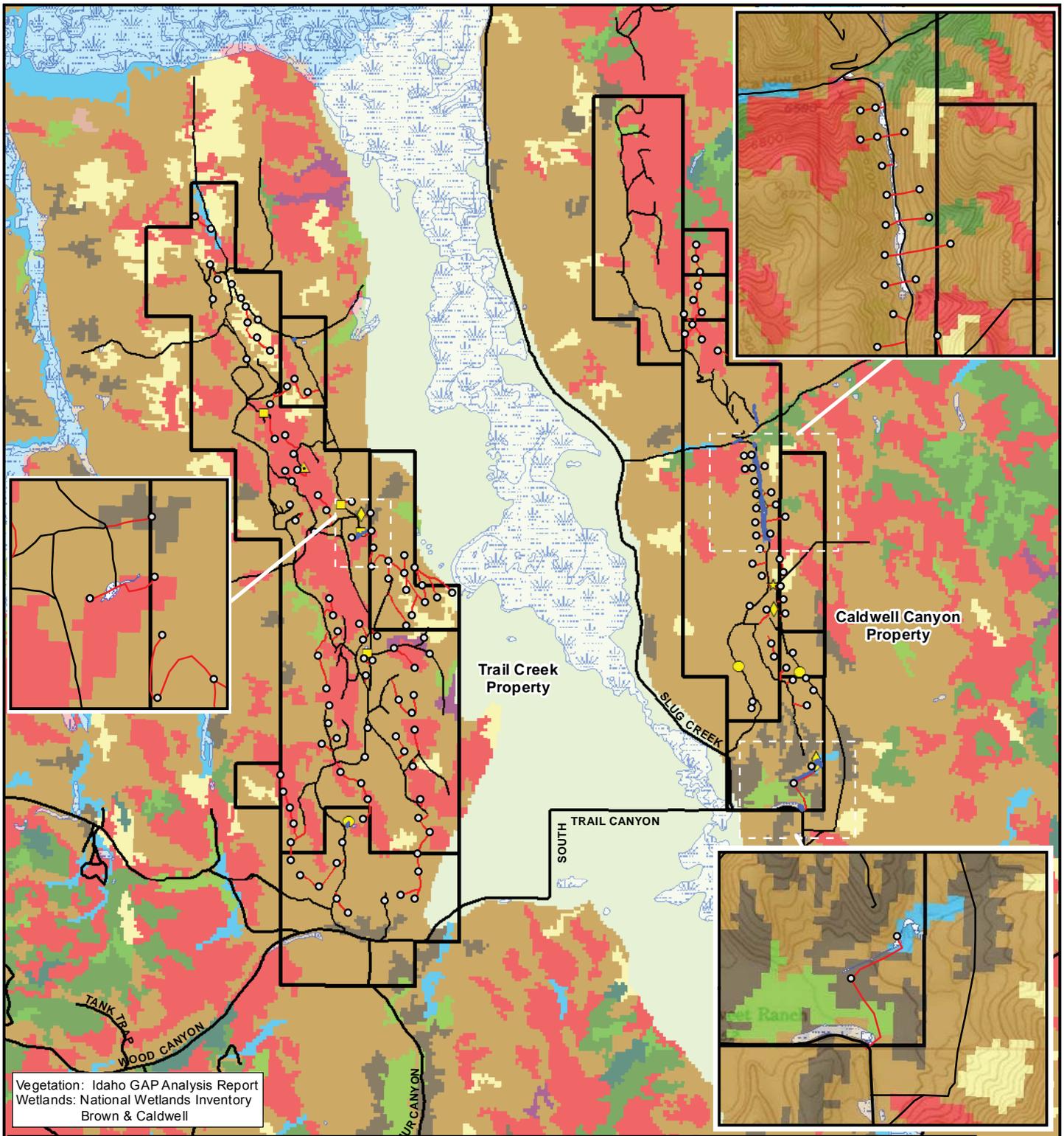
¹Data source: 1999 Idaho Gap Analysis, National Wetland Inventory, and Project 2011 wetland inventory.

²Data Sub-community and acreages taken from 1999 Idaho Gap Analysis Project. Acreages are estimates.

³Big sagebrush consists of Basin and mountain Big sagebrush and Mountain big sagebrush; Grasslands consist of foothills grassland and perennial grassland; low sagebrush consists of low sagebrush and mountain low sagebrush. Forested communities consist of aspen and mixed needleleaf and broadleaf forest (forest dominated by aspen and Douglas-fir). Riparian consists of shrub dominated riparian areas and wetlands.

Mountain Shrub

Field surveys and review of Idaho Gap analysis data (Landscape Dynamics Lab, 1999) indicated that the Caldwell Canyon property is vegetated predominantly with a mixed sagebrush shrub and grass/forb plant community (Figure 4). Typical shrub species include big sagebrush (*Artemisia tridentata*), black sagebrush (*Artemisia nova*), silver sagebrush (*Artemisia cana*), antelope bitterbrush (*Purshia tridentata*), mountain snowberry (*Symphoricarpos oreophilus*), Wood's rose (*Rosa woodsii*), Oregon grape (*Mahonia repens*), snowbrush ceanothus (*Ceanothus velutinus*), rocky mountain juniper (*Juniperus scopulorum*), and green rabbitbrush (*Chrysothamnus viscidiflorus*).



Vegetation: Idaho GAP Analysis Report
 Wetlands: National Wetlands Inventory
 Brown & Caldwell

Legend

- | | | | | |
|----------------------|------------------|-------------------|------------------|------------------------------------|
| ○ Drilling Location | — Existing Road | Vegetation | Wetland/Riparian | Maple |
| Noxious Weeds | — Proposed Road | Agricultural Land | Conifers | Mixed Needleleaf, Broadleaf |
| ▲ Bull Thistle | ▭ Lease Boundary | Aspen | Exposed Rock | Mixed Subalpine Forest |
| ▲ Canada Thistle | ▨ NWI Wetlands | Sagebrushes | Grasses/Meadows | Montane Parkland, Subalpine Meadow |
| ◆ Houndstongue | | Bitterbrush | Low Sages | Silver Sage |
| ● Musk Thistle | | | | Warm Mesic Shrubs |
| ★ Toadflax | | | | |



Date: 5/30/2013

P4 Production

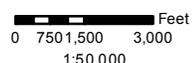


Figure 4
 Vegetation and Noxious Weeds
 Caldwell Canyon/Trail Creek EA

The grass/forb understory includes native and introduced plant species, typically yarrow (*Achillea millefolium*), horseweed (*Conyza canadensis*), lupine (*Lupinus spp.*), penstemon (*Penstemon spp.*), Kentucky bluegrass, Columbia needlegrass (*Achnatherum nelsonii*), Thurber's needlegrass (*Achnatherum thurberianum*), dandelion (*Taraxacum officinale*), smooth brome, cheatgrass, milkvetch (*Astragalus spp.*), bluebunch wheatgrass (*Pseudoroegneria spicata*), western wheatgrass (*Pascopyrum smithii*), sulfur buckwheat (*Eriogonum umbellatum*), horsemint (*Agastache urticifolia*), elk sedge (*Carex geyeri*), Idaho fescue (*Festuca idahoensis*), mountain brome (*Bromus marginatus*), woolly mulesears (*Wyethia amplexicaulis*), small-leaf pussytoes (*Antennaria parvifolia*), and basin wildrye (*Elymus cinereus*).

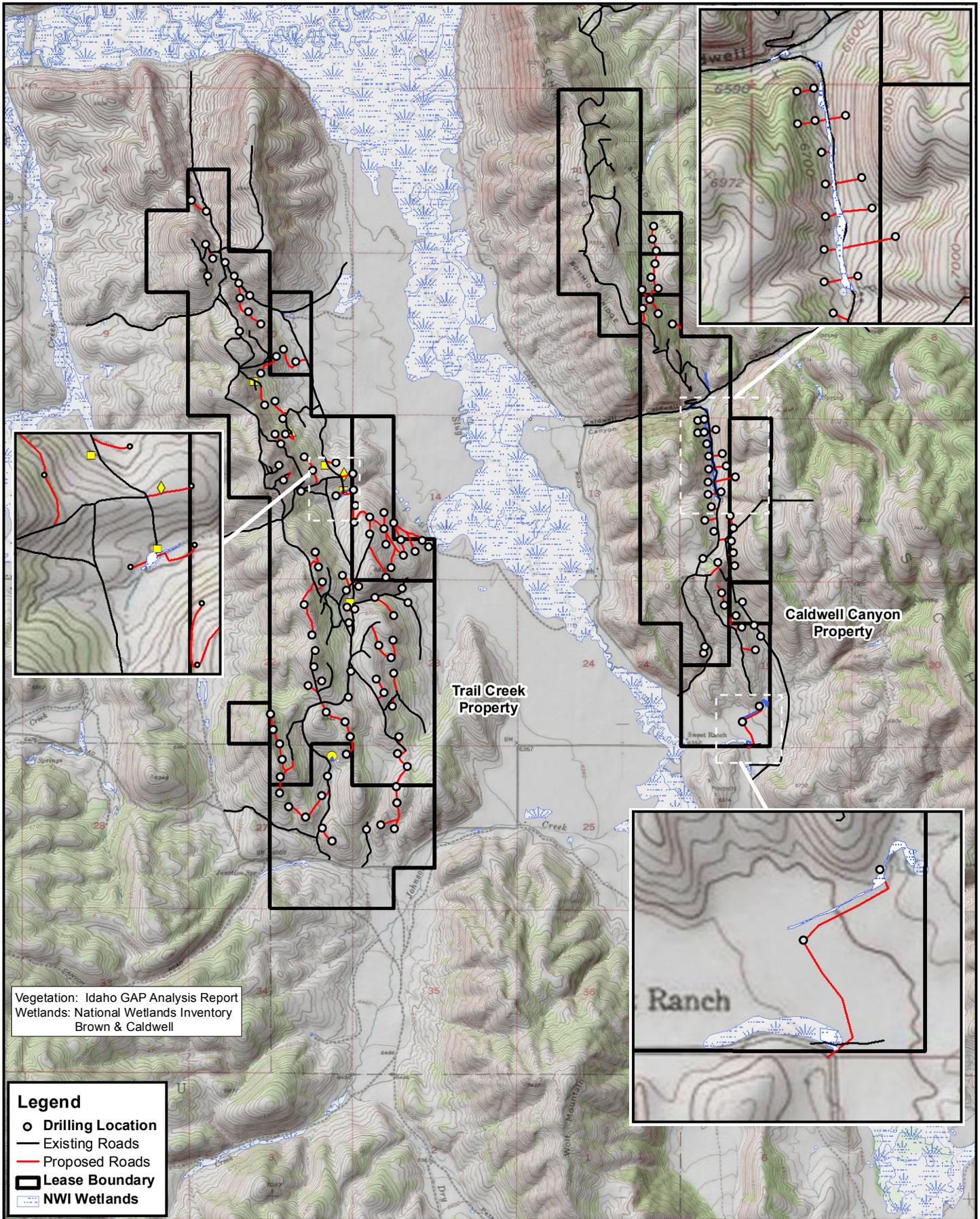
Forest

Aspen (*Populus tremuloides*) forests occur on hill-slopes throughout the Caldwell Canyon property and Douglas-fir (*Pseudotsuga menziesii*) occurs in the northern portion of the Project Area (Figure 4). Mountain maple (*Acer glabrum*), chokecherry (*Prunus virginiana*), and serviceberry (*Amelanchier alnifolia*) are typical of the shrub understory in and adjacent to forested areas. Most of the aspen forests are stocked with small to medium sized trees, though some larger trees approaching 12 inches in diameter at breast height were observed. Larger Douglas-fir trees occur in the northern portion of the property.

Riparian

Palustrine emergent wetlands occur in several locations within the Caldwell Canyon property (Figures 4 and 5). These wetlands occur in two drainages, one in the very south end of the Caldwell Canyon property near South Trail Road and one in a valley bottom on the south side of Caldwell Canyon, which drains to Caldwell Canyon. Typical wetland vegetation in these wetlands includes meadow foxtail (*Alopecurus arundinaceus*), alpine timothy (*Phleum alpinum*), threadleaf sedge (*Carex praticola*), Nebraska sedge (*Carex nebrascensis*), creeping bentgrass, foxtail barley (*Hordeum jubatum*), tufted hairgrass (*Deschampsia cespitosa*), poverty rush (*Juncus tenuis*), toad rush (*Juncus bufonius*), and wire rush (*Juncus balticus*). Approximately 9.1 acres of wetlands were identified in the Caldwell Canyon property based on site surveys and review of National Wetland Inventory data. Jurisdictional determinations of the wetlands delineated in 2011 have not yet been made.

A Palustrine scrub shrub wetland borders both sides of Caldwell Creek and also occurs in a small area at a seep at the beginning of the wetland swale south of Caldwell Canyon. Typical wetland vegetation along Caldwell Creek and at the seep includes Geyer's willow (*Salix geyeri*), Nebraska sedge, water sedge (*Carex aquatilis*), creeping bentgrass and Kentucky bluegrass.



Date: 5/30/2013

P4 Production

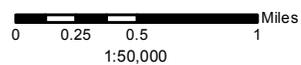


Figure 5
Wetlands
Caldwell Canyon/Trail Creek EA

Agriculture

A negligible amount of agricultural land occurs on private property within the Caldwell Canyon property, consisting of row crops, irrigated pasture, or hay fields.

Non-Native plants

Invasive plant species, especially cheatgrass (*Bromus tectorum*) and many non-native thistles can be problematic in mountain shrub environments. Invasive plant species were noted in multiple locations within the Caldwell Canyon property. Though the infestations are not extensive, noxious weed species were observed in a few locations in the Caldwell Canyon property during field surveys (Figure 4). Noxious weed species observed include: musk thistle (*Carduus nutans*), houndstongue (*Cynoglossum officinale*), and yellow toadflax (*Linaria vulgaris*). Additionally, the Caldwell Canyon property is used for cattle and sheep grazing, which influences the plant community. Introduced pasture grasses and forbs are common throughout the property and include Kentucky bluegrass (*Poa pratensis*), common timothy (*Phleum pratense*), meadow fescue (*Schedonorus pratensis*), creeping bentgrass (*Agrostis stolonifera*), smooth brome (*Bromopsis inermis*), sheep sorrel (*Rumex acetosella*), and mullein (*Verbascum thapsus*). P4 has been monitoring and treating the property for noxious weeds for the past 15 years.

3.4.1.2 Trail Creek

The Trail Creek property is characterized as sagebrush steppe habitat and is within the mountain shrub zone. It is located between 6,340 feet and 7,130 in elevation (BLM, 2010b). The vegetative community in the property is a mosaic of a sagebrush rangeland community dominated by sagebrush with a grass and herbaceous understory and aspen/aspen conifer mix with a shrub and herbaceous understory. Table 8 portrays the acres of vegetation by community type and sub-community type.

Table 8. Vegetation Community Types in the Trail Creek Property¹

Vegetation Community	Sub-Community ²	Total Acres ²	Acres State Land	Acres Private Land
Mountain Shrub	Big Sagebrush	1,635.4	756.2	878.4
	Grassland	29.8	15.4	14.4
	Low Sagebrush	60.0	13.2	46.7
	Warm Mesic Shrubs	139.1	60.0	79.0
<i>Total</i>	--	<i>1,864.30</i>	<i>844.8</i>	<i>1018.5</i>
Forest	Aspen	530.7	357.5	173.0
<i>Total</i>	--	<i>530.7</i>	<i>357.5</i>	<i>173.0</i>
Riparian ³	Shrub Dominated Riparian	11.0	0.0	11.0
	Wetlands	4.3	0.9	3.4
<i>Total</i>	--	<i>15.3</i>	<i>0.9</i>	<i>14.4</i>
Agricultural	Agricultural Land	62.5	0.0	62.5
<i>Total</i>	--	<i>62.5</i>	<i>0.0</i>	<i>62.5</i>
<i>Total Acres all Communities</i>		<i>2,473</i>	<i>1203</i>	<i>1269</i>

¹Data source: 1999 Idaho Gap Analysis, National Wetland Inventory, and Project 2011 wetland inventory.

²Data Sub-community and acreages taken from 1999 Idaho Gap Analysis Project. Acreages are estimates.

³Big sagebrush consists of Basin and Wyoming big sagebrush and Mountain big sagebrush; Grasslands consist of foothills grassland, perennial grassland, and subalpine meadow; low sagebrush consists of low sagebrush and mountain low sagebrush. Forested communities consists of aspen, with Douglas-fir intermixed. Riparian consists of shrub dominated riparian areas and wetlands.

Mountain Shrubs

Field surveys and review of Idaho Gap analysis data (Landscape Dynamics Lab, 1999) indicated that the Trail Creek property is vegetated predominantly with a mixed sagebrush shrub and grass/forb plant community with intermittent stands of aspen (Figure 4). Typical shrub species include big sagebrush, antelope bitterbrush, Douglas' rabbitbrush (*Chrysothamnus viscidiflorus*), snowberry (*Symphoricarpos albus*), Oregon grape, serviceberry (*Amelanchier alnifolia*) and snowbrush ceanothus. The grass/forb understory includes both native and introduced plant species, typically yarrow, lupine, buckwheat (*Eriogonum spp.*), penstemon, Kentucky bluegrass, bulbous bluegrass, dandelion, smooth brome, cheatgrass, milkvetch, woolly mulesears, and basin wildrye.

Forests

Bands of aspen forest occur primarily on the upper parts of north- and east-facing slopes throughout the Trail Creek property (Figure 4). Many of the aspen stands have thick

understories of aspen regrowth and mature shrub species. Species commonly found within the forest included trembling aspen, Douglas-fir, serviceberry, Oregon grape, snowbrush ceonothus, chokecherry, horsemint, smooth brome, and timothy (*Phleum pratense*).

Several areas within the shrub and aspen communities contain old road alignments or historically disturbed areas that were dominated by seeded and naturally recruited grass species. The dominant species observed was intermediate wheatgrass (*Thinopyrum intermedium*) with smooth brome, timothy, orchard grass (*Dactylis glomerata*), blue bunch wheatgrass (*pseudoroegneria spicata*), and horsemint intermixed.

Riparian

Areas south of South Trail Road in the Trail Creek property near Junction Springs contain riparian habitat (Figures 4 and 5). Based on field surveys, riparian vegetation along Junction Springs includes various willows (*Salix spp.*) and various grasses, sedges, and forbs. Riparian habitat in the Project Area north of South Trail Road was restricted to stock ponds and associated seeps or intermittent drainages associated with those stock ponds. All but one lacked any shrub component which had four to five willow clumps surrounding the seep feeding the stock pond. Emergent vegetation associated with the stock ponds included various grass, sedge, and forb species. The Pocatello RMP indicates characteristic vegetation of scrub-shrub riparian vegetation includes Geyer's willow, Booth's willow (*Salix boothii*), plane-leaf willow (*Salix planifolia*), coyote willow (*Salix exigua*), yellow willow (*Salix lutea*), whiplash willow (*Salix lucida*), red-osier dogwood, water birch (*Betula occidentalis*), mountain alder (*Alnus incana*), and Douglas hawthorne (*Crataegus douglasii*) (BLM, 2010 pp. 3-28). Characteristic emergent herbaceous vegetation within riparian areas includes beaked sedge (*Carex utriculata*), water sedge (*Carex aquatilis*), Nebraska sedge, soft-leaved sedge (*Carex disperma*), hardstem bulrush (*Schoenoplectus acutus*), common spikerush (*Eleocharis palustris*), common cattail (*Typha latifolia*), reedgrass (*Calamagrostis spp.*), reed canarygrass (*Phalaris arundinacea*), and tufted hairgrass (*Deschampsia cespitosa*) (ibid). Approximately 4.3 acres of wetlands were identified in the Trail Creek property based on site surveys and review of National Wetland Inventory data. Jurisdictional determinations of the wetlands delineated in 2011 have not yet been made.

Agriculture

A small amount of agricultural land occurs on private lands within the Trail Creek property, consisting of row crops, irrigated pasture, and/or hay fields.

Non-Native Plants

Invasive plant species, especially cheatgrass and many non-native thistles, can be problematic in sagebrush steppe environments. The Trail Creek property does not appear to currently have substantial amounts of invasive plant cover, though small pockets of cheatgrass were observed along several of the road alignments and historic burn locations during field surveys. Though the infestations are not extensive, noxious weed species were observed in several locations through the Trail Creek property during field surveys (Figure 4). Noxious weed species observed include: Canada thistle (*Cirsium arvense*), musk thistle, hounds tongue, and bull thistle. Additionally, the Trail Creek property is used for sheep grazing which influences the plant community. Introduced pasture grasses are present throughout the property and include Kentucky bluegrass, bulbous bluegrass (*Poa bulbosa*),

and smooth brome. P4 has been monitoring and treating the property for noxious weeds for the past 15 years.

3.4.2 Environmental Consequences

3.4.2.1 Alternative 1 Direct and Indirect Impacts

Caldwell Canyon

The proposed drill pads and access roads would occur in all vegetation communities with the exception of agricultural. Acres of estimated disturbance by community type are depicted in Table 9. The total disturbance of vegetation would approximate up to 16.7 acres, which represents approximately 1 percent of the Caldwell Canyon property. The mountain shrub community would be impacted more than the other communities, with the big sagebrush community receiving the most disturbance (Table 9). The total disturbance to mountain shrub community would be less than 1 percent of the Caldwell Canyon property. Loss of herbaceous vegetation would be temporary; grasses and forbs would reestablish in disturbed uplands and wetlands within 1 to 2 years after reclamation. Although shrub seedlings could emerge within 5 years in some locations, reestablishment time of sagebrush, bitterbrush, and other shrubs in sagebrush communities to pre-project size could vary from 20 to 100 years, or more (Stevens and Monsen, 2004; Baker, 2006). Therefore, loss of vegetation in the mountain shrub community would represent a long-term change in the vegetation community for up to 13.6 acres in the Caldwell Canyon property. Drill roads and pads within forested areas would result in linear clearings within these areas. Young aspen and conifers would likely begin to colonize disturbed areas quickly after reclamation is complete; however, until they reach maturity, a long-term change in forest seral stage on up to 2.4 acres in these areas would result. Overall, the proposed project would result in a minor amount of vegetation removal and change in vegetation communities in the Caldwell Canyon property.

Table 9. Vegetation Community Types Disturbed in the Caldwell Canyon Property¹

Vegetation Community	Sub-Community ²	Acres ²	Acres BLM Land	Acres Private Land
Mountain Shrub ³	Big Sagebrush	11.8	2.8	9
	Grassland	0.4	0	0.4
	Low Sagebrush	0.8	0	0.8
	Warm Mesic Shrubs	0.6	0	0.6
<i>Total</i>	--	13.6	2.8	10.8
Forested ³	Aspen	2	1.8	0.2
	Mixed Needleleaf, Broadleaf Forest	0.4	0.2	0.2
<i>Total</i>	--	2.4	2	0.4
Riparian ³	Shrub Dominated Riparian	0.3	0	0.4
	Wetlands	0.4	0	0.4
<i>Total</i>	--	0.7	0	0.8
Agricultural	Agricultural Land	0	0	0
<i>Total</i>	--	0	0	0
<i>Total Acres all Communities</i>		16.7	4.8	12

¹Data source: 1999 Idaho Gap Analysis, National Wetland Inventory, and Project 2011 wetland inventory.

²Data Sub-community and acreages taken from 1999 Idaho Gap Analysis Project. Acreages are estimates, rounded to the nearest tenth decimal.

³Big sagebrush consists of Basin and mountain Big sagebrush and Mountain big sagebrush; Grasslands consist of foothills grassland and perennial grassland; low sagebrush consists of low sagebrush and mountain low sagebrush. Forested communities consist of aspen and mixed needleleaf and broadleaf forest (Douglas-fir). Riparian consists of shrub dominated riparian areas and wetlands.

Of the wetlands that would be disturbed from the proposed project, up to 0.4 acres would be as a result of construction of temporary access roads (proposed [Figure 5] and potential future). It is likely that access road construction and reclamation would be exempt from Section 404 Clean Water Act permitting requirements (33 CFR Part 323.4; USACE, 2012). However, P4 would follow the BMPs prescribed by the USACE for this exemption. Up to 0.02 acres of remaining disturbance to wetlands would occur from the temporary construction of drill pads (proposed [Figure 5] and potential future). Disturbance of jurisdictional wetlands from construction and reclamation of drill pads would not be exempt from Section 404 Clean Water Act permitting requirements. Therefore, if these wetlands are jurisdictional, coordination with the USACE regarding permitting would be required prior to disturbance. If additional disturbance to wetlands is proposed in the future, coordination

would occur with the USACE as needed regarding permitting (Section 2.3.2). All disturbed riparian areas would be reclaimed upon completion of exploration activities. There would be no permanent loss of wetlands or waters of the U.S. under Alternative 1. Note that mitigation is proposed in Section 2.4.1 that, if applied, would result in avoidance of impacts to wetlands (Section 3.4.2.3).

Proposed disturbances are located in proximity to existing noxious weed locations. Construction of proposed access roads and drill pads would disturb soils and present an opportunity for noxious weeds and other invasive species to become established and for existing noxious and invasive weeds to spread if not managed properly. The potential for the establishment and spread of noxious weeds and other invasive species would be reduced with the application of recommended EPMS and BMPs, such as reseeding disturbed soils with non-invasive plant species and monitoring and controlling for noxious weeds (Sections 2.3.2 and 3.4.2.2). Further, with permission from BLM, P4 would apply herbicides to prevent the growth of noxious weeds in the proposed drilling exploration area with special attention given to roadways and areas where vehicles and other equipment would be parked. If noxious weeds are identified or suspected, P4 would contact the county weed superintendent.

Trail Creek

The proposed drill pads and access roads would occur in all vegetation communities with the exception of agricultural. Acres of estimated disturbance by community type are depicted in Table 10. The total disturbance of vegetation would approximate up to 43.0 acres, which represents approximately 1.7 percent of the Trail Creek property. The mountain shrub community would be impacted more than the other communities, with the big sagebrush community receiving the most disturbance (Table 10). The total disturbance to mountain shrub community would approximate 1.2 percent of the Trail Creek Property. Loss of herbaceous vegetation would be temporary; grasses and forbs would reestablish in disturbed uplands and wetlands within 1 to 2 years after reclamation. Although shrub seedlings could emerge within 5 years in some locations, reestablishment of mature sagebrush, bitterbrush and other shrubs to pre-project size could take from 20 to 100 years, or more for sagebrush communities (Stevens and Monsen, 2004; Baker, 2006). Therefore, loss of vegetation in the mountain shrub community would represent a long-term change to up to 32.4 acres in this vegetation community in the Trail Creek property. Drill roads and pads within forested areas would result in linear clearings within these areas. Young aspen and other vegetation would likely begin to colonize disturbed areas quickly after reclamation is complete; however, until the aspen reach maturity, a long-term change in forest seral stage in these areas would result on up to 9.8 acres. Overall, the proposed project would result in a minor amount of vegetation removal and change in vegetation communities in the Trail Creek property.

Table 10. Vegetation Community Types Disturbed in the Trail Creek Property¹

Vegetation Community	Sub-Community ²	Acres ²	Acres State Land	Acres Private Land
Mountain Shrub ³	Big Sagebrush	29.2	9.7	19.5
	Grassland	0.2	0.2	0
	Low Sagebrush	0.2	0.2	0
	Warm Mesic Shrubs	2.8	2	0.8
<i>Total</i>	--	<i>32.4</i>	<i>12.1</i>	<i>20.3</i>
Forested ³	Aspen	9.8	7	2.8
<i>Total</i>	--	<i>9.8</i>	<i>7</i>	<i>2.8</i>
Riparian ³	Shrub Dominated Riparian	0.3	0	0.2
	Wetlands	0.1	0.1	0
<i>Total</i>	--	<i>0.4</i>	<i>0.2</i>	<i>0.2</i>
Agricultural	Agricultural Land	0.4	0	0.4
<i>Total</i>	--	<i>0.4</i>	<i>0</i>	<i>0.4</i>
<i>Total Acres all Communities</i>		<i>43.0</i>	<i>18.8</i>	<i>22.6</i>

¹Data source: 1999 Idaho Gap Analysis, National Wetland Inventory, and Project 2011 wetland inventory.

²Sub-community and acreages taken from 1999 Idaho Gap Analysis Project. Acreages are estimates, rounded to the nearest tenth decimal.

³Big sagebrush consists of Basin and mountain Big sagebrush and Mountain big sagebrush; Grasslands consist of foothills grassland and perennial grassland; low sagebrush consists of low sagebrush and mountain low sagebrush. Forested communities consist of aspen and mixed needleleaf and broadleaf forest (Douglas-fir). Riparian consists of shrub dominated riparian areas and wetlands.

Of the wetlands that would be disturbed from the proposed project, up to 0.1 acres would be as a result of construction of temporary access roads (proposed [Figure 5] and potential future). It is likely that access road construction and reclamation would be exempt from Section 404 Clean Water Act permitting requirements (33 CFR Part 323.4; USACE, 2012). However, P4 would follow the BMPs prescribed by the USACE for this exemption. Disturbance of jurisdictional waters from construction and reclamation of drill pads would not be exempt from Section 404 Clean Water Act permitting requirements. However, no drill pads are currently proposed in wetlands. If additional disturbance to wetlands is proposed in the future, coordination would occur with the USACE as needed regarding permitting (Section 2.3.2). All disturbed wetlands would be reclaimed upon completion of exploration activities. There would be no permanent loss of wetlands or waters of the U.S. under Alternative 1. Note that mitigation is proposed in Section 2.4 that, if applied, would result in avoidance of impacts to wetlands (Section 3.4.2.3).

Construction of proposed access roads and drill pads would disturb soils and present an opportunity for noxious weeds and other invasive species to become established and for existing noxious weeds and invasive species to spread, as described for Caldwell Canyon. The potential for the establishment and spread of noxious weeds and other invasive species would be reduced with the application of recommended EPMs and BMPs (Sections 2.3.2 and 3.4.2.2).

3.4.2.2 Environmental Protection Measures and Best Management Practices

EPMs and BMPs proposed in Section 2.3 would be applied that minimize the direct and indirect impacts of the Proposed Action on vegetation resources. These are summarized here and detailed in Section 2.3.

- Disturbed areas would be revegetated to establish ground cover and stabilize soils. Stormwater BMPs would be utilized where necessary to stabilize areas until the seeding efforts have been successful.
- Preconstruction surveys would be conducted for threatened, endangered, and sensitive plants for areas proposed in the 2012 exploration plans and preconstruction surveys of future areas proposed for construction of drill pads and roads (those not identified in the 2012 exploration plans) would be conducted to identify the presence or absence of threatened, endangered, and sensitive plants, wetlands, and noxious weeds. If threatened, endangered, and sensitive plants are located, drill pad and road locations would be microsited to avoid impacting the plants. If wetlands are identified, roads and drill pads would be sited to avoid these areas where feasible.
- Reshaping disturbed areas to conform to the natural topography and using soil removed during clearing would minimize erosion and increase the likelihood of seedling success.
- Re-seeding disturbed upland areas with a mix approved by the IDL and BLM as outlined in the BMPs Guide for Mining in Idaho (IDL, 1992) at a rate of approximately 40 pounds/acre utilizing standard methods would increase the likelihood of seeding success and minimize the duration of vegetation loss. All seeding and fertilizing would be done in the late fall, if possible.
- Following riparian buffer restrictions as outlined in the Pocatello RMP (BLM, 2012a), and crossing wetlands perpendicularly and minimizing disturbances at wetland crossings would minimize adverse impacts from wetland crossings to soils, water quality, and riparian vegetation. Re-seeding disturbed wetland areas with a BLM-approved seed mix would reduce the period of impact to wetland vegetation communities and promote establishment of riparian vegetation.
- Monitoring for and control of noxious weed invasions would be performed during the implementation period. P4 would apply agency authorized herbicides as needed. Additionally, P4 has committed to washing equipment to remove soil and potential plant seeds prior to entering the Project Area. These actions would minimize the importation, establishment, and spread of undesirable plant species to the Project Area.

- The use of fertilizers would be limited to areas where soil nutrients are deemed inadequate for successful revegetation. This would address potential adverse impacts of inappropriate use of fertilizer on plants.
- In addition to EPMs described above, P4 would cooperate and communicate with the private surface owners regarding reclamation activities and grazing management in an effort to allow for successful revegetation. If the private surface owners pasture their livestock outside of recently revegetated areas, it would increase the chance of success of revegetation efforts and potentially reduce the duration of short-term impacts on vegetation.

3.4.2.3 Mitigation

Application of mitigation for wetlands, which would require the siting of drill pads and holes to avoid wetlands, siting of new roads to minimize crossings of wetlands, the use of temporary, manufactured crossings over wetlands in the Caldwell Canyon property, and realignment of proposed roads in both properties (Section 2.4.1), would result in an increase in 0.02 acres of vegetation disturbance in the Trail Creek property and a decrease in 0.3 acres of vegetation in the Caldwell Canyon property than without application of mitigation. Modification of the road alignment in the Trail Creek property would result in 33.2 acres of impacts to mountain shrub communities, 0 acres in wetlands, and 9.2 acres in aspen woodlands, representing a reduction in impacts to wetland and aspen communities and an increase to mountain shrubland communities than without application of mitigation (Section 3.4.2.1). Modification of three road alignments in the Caldwell Canyon property and use of temporary bridges over ephemeral drainages and wetlands would result in 2.1 acres of impacts to mountain shrub communities, 0.2 acres in wetlands, and 0.1 acres in shrub-dominated riparian communities, representing a decrease in impacts to wetland and shrub-dominated riparian communities and an increase to mountain shrub communities than without application of mitigation. Due to the width of portions of the ephemeral drainage/wetlands in the center of the Caldwell Canyon property, not all of the impacts to wetlands could be avoided with the use of temporary crossings; however, the acreage of impacts from road construction would be reduced if mitigation was applied. Proposed mitigation would result in avoidance of impacts to wetlands from construction of drill pads in both properties.

3.4.2.4 Alternative 2 Direct and Indirect Impacts

Alternative 2 would consist of not approving the exploration and prospecting activities and not issuing an exploration license and prospecting permit. Therefore, the proposed drill holes and associated access roads would not be constructed, and vegetation in the Project Area would not be disturbed or removed. Alternative 2 would not cause direct or indirect impacts to vegetation.

3.5 Wildlife and Fish Resources

3.5.1 Affected Environment

The Idaho Comprehensive Wildlife Conservation Strategy (IDFG, 2005) indicates that the Project Areas lie within the Overthrust Mountains ecological section with southern xeric shrub land and steppe habitat and upland deciduous forest. These types of habitats can be

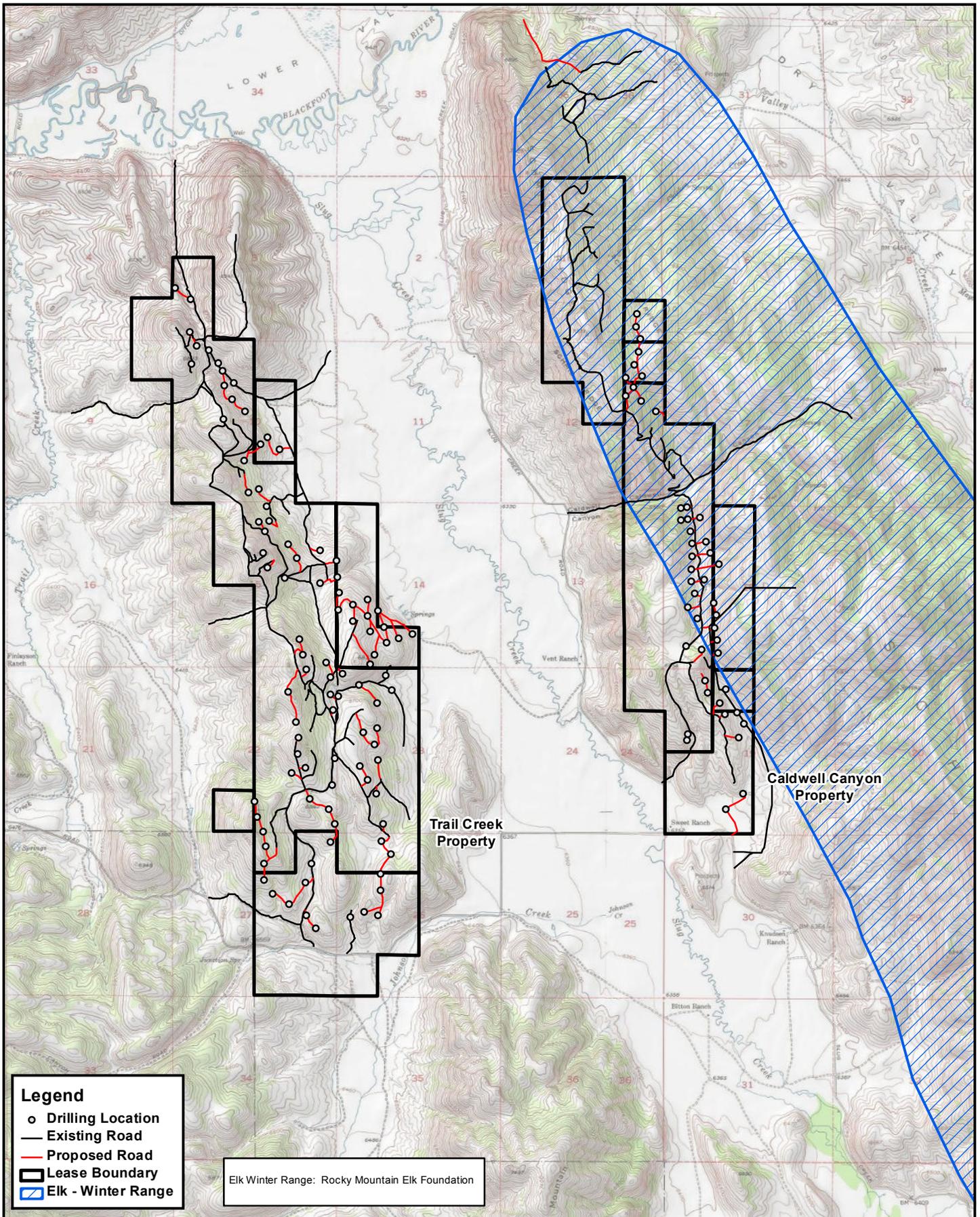
used by a variety of wildlife species including mule deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), moose (*Alces alces*), ruffed grouse (*Bonasa umbellus*), redtail hawks (*Buteo jamaicensis*), Swainson hawks (*Buteo swainsoni*), and kestrels (*Falco sparverius*). Blue (*Dendragapus obscurus*) and ruffed grouse may also occur in the Project Area (BLM, 2010 pp. 3-31). The Project Area provides suitable habitat for a variety of migratory birds which likely utilize the area during migration and breeding periods. Wildlife associated with the mountain shrub vegetation type can include: blue grouse, cottontail rabbit (*Sylvilagus audubonii*), sharp-tailed grouse (*Tympanuchus phasianellus*), gray partridge (*Perdix perdix*), mule deer, elk, and greater sage-grouse (*Centrocercus urophasianus*) (BLM, 2010 pp. 3-31). Wildlife associated with the Aspen/Aspen Conifer Mix/Dry Conifer habitat type includes: black bear (*Ursus americanus*), blue grouse, moose, mountain lion (*Felis concolor*), mule deer, elk, and ruffed grouse. Aspen stands provide potential nest sites for cavity-nesting non-game birds and large, old mature trees provide habitat components for birds, bats and other species (ibid). The greater sage-grouse and other special status species are addressed in Section 3.6.

The Caldwell Canyon and Trail Creek properties are located within the Blackfoot sub-basin. Perennial streams near the Project Area include Slug Creek (west of the Caldwell Canyon Property and East of the Trail Creek property), Dry Valley Creek (east of the Caldwell Canyon property), and Trail Creek (west of the Trail Creek property). Caldwell Creek, an intermittent tributary to Slug Creek, flows through the Caldwell Canyon property; it is not known to contain a fishery. Intermittent streams flow through both properties. The fish community in Slug Creek has been surveyed, and sculpin (*Cottus spp.*), speckled dace (*Rhinichthys osculus*), longnose dace (*Rhinichthys cataractae*), brook trout (*Salvelinus fontinalis*), and redbreast shiner (*Richardsonius balteatus*) have been recorded near the Project Area (IDFG, 2011). The fish community in Dry Valley Creek has also been surveyed and Yellowstone Cutthroat (*Oncorhynchus clarki bouvieri*) has been documented (ibid), as further discussed in Section 3.6.

3.5.1.1 Caldwell Canyon

The Caldwell Canyon property is located in elk winter range (BLM, 2010b; Figure 6). Approximately 1,025 acres of winter range overlap the property, with an additional 7,070 acres adjacent to the eastern portion of the property. Mule deer have been documented in the property, but deer winter range is not present. Proximity to water is an important habitat factor for big game in the spring, summer, and fall (BLM, 2010 pp. 3-32). The riparian areas along Caldwell Creek and the stock ponds that occur in the wetland drainage to the south of Caldwell Creek make it likely that the Caldwell Canyon property may be utilized by big game during much of the year. Aspen areas, which occur throughout the property and in proximity to Caldwell Canyon, and the stock ponds can be used during fawning and could serve as a water source for big game.

Biological field surveys of the Caldwell Canyon property were conducted in October 2011 to characterize and identify wildlife and wildlife habitat in the area. The surveyor walked the proposed road alignments and inspected the proposed drill pads for wildlife and their sign, as well as habitat conditions. Several migratory birds were observed (Table 11), though due to the time of year, migratory bird presence in the Caldwell Canyon property was expectedly low. Additional migratory bird and nest surveys would be completed prior to any ground disturbing activities described in the Proposed Action (Section 2.3.3).



Date: 5/30/2013

P4 Production

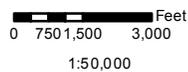


Figure 6
Elk Winter Range
Caldwell Canyon/Trail Creek EA

Table 11. Potential Wildlife Species and/or Sign Observed in the Caldwell Canyon Property

Species	Habitat Description at Observation	Comments and Notes
<i>Birds</i>		
Northern Goshawk	Aspen and Mountain Shrub	1999 observation from Idaho Department of Fish and Game database. Not observed during 2011 field surveys.
American Robin	Aspen, Mountain Shrub	Individuals observed
Brewer's Sparrow	Mountain Shrub	Individuals observed
Greater Sage-Grouse	Mountain Shrub	Scat noted on hill south of Caldwell Canyon (Section 3.6)
<i>Mammals</i>		
Ground Squirrels	Mountain Shrub	Burrows throughout Project Area
Coyote	Mountain Shrub	Probable scat
Badger	Mountain Shrub	Multiple burrows observed
Elk	Mountain Shrub, Aspen	Scat and carcass
Mule Deer	Mountain Shrub, Aspen	Scat
Moose	Mountain Shrub	Scat

3.5.1.2 Trail Creek

The Trail Creek property is not located within big game winter range. Elk and mule deer have been documented in the property. Proximity to water is an important habitat factor for big game in the spring, summer, and fall (BLM, 2010b pp. 3-32). The riparian areas along Trail Creek, Slug Creek, and Junction Springs are therefore likely to be utilized by big game during much of the year and may provide a movement corridor to late summer/fall habitats at higher elevations west of the Project Area. Aspen areas can be used during fawning, which occur throughout the Trail Creek property on north and east facing slopes. There are several small stock ponds downgradient of aspen areas in the Trail Creek property, which could serve as a water source if fawning were to occur here.

Biological field surveys of the Trail Creek property were conducted in October 2011. The purpose of the surveys was to characterize existing conditions for wildlife habitat and to review the proposed drill pads for the presence of bird nests. The surveyor walked the proposed road alignments and inspected the proposed drill pads for wildlife, including migratory birds, and their sign. Potential and documented species, their habitats, and summary notes are presented in Table 12. Though no bird nests were observed within the areas of the proposed road or drill pad alignments, surveys were completed too late in the season to observe active nesting and identify all potential birds in the area. Multiple inactive stick nests were observed within aspen trees throughout the Trail Creek property, with a couple of the nests within close proximity of the proposed drill roads and drill pads. Due to the late season of the surveys, additional migratory bird and nest surveys would be completed prior to any ground disturbing activities described in the Proposed Action (Section 2.3.3.3).

Table 12. Potential Wildlife Species and/or Sign Observed in the Trail Creek Property

Species	Habitat Description at Observation	Comments and Notes
<i>Birds</i>		
Chipping Sparrow	Sagebrush	--
Black-billed Magpie	Sagebrush and Aspen	Few stick nests observed in aspen groves.
Western Meadow Lark	Sagebrush and Meadows	--
American Robin	Aspen	Several individuals were recorded throughout the Trail Creek property.
Sage Sparrow	Sagebrush	--
Lark Sparrow	Sagebrush	--
Brown-Headed Cowbird	Sagebrush	--
Downy Woodpecker	Aspen	Single individual was recorded in aspen in the middle of the Trail Creek property.
Brewer's Sparrow	Sagebrush	--
Greater Sage-Grouse	Sagebrush	Few potential gathering sites identified on ridge tops near low sage areas, no sign of current or historic activity.
Ruffed Grouse (Gray Phase)	Aspen	Group of grouse individuals flushed from aspen edge at a distance from observers.
American Kestrel	Sagebrush	--
Common Poorwill	Sagebrush	--
American Crow	Aspen	Several individuals were recorded throughout the Trail Creek property.
Northern Flicker	Aspen	Two individuals were recorded in separate aspen grove.
Yellow-Rumped Warbler	Hillside Meadow	--
Mountain Bluebird	Aspen and Hillside Meadow	--
Dark-Eyed Junco	Aspen	Few individuals recorded in small patch of service berry.

Species	Habitat Description at Observation	Comments and Notes
Mourning Dove	Aspen	--
Killdeer	Stock Ponds	--
<i>Mammals</i>		
Uintah Ground Squirrel	Sagebrush	Burrows suspected in Trail Creek property.
Badger	Sagebrush	Multiple burrows observed.
Mule deer	Sagebrush and Aspen	One individual recorded in aspen, scat and tracks observed throughout the Trail Creek property.
Elk	Sagebrush and Aspen	Two spike bulls were recorded in the southern portion of the Trail Creek property.
Porcupine	Aspen	--
Black-Tailed Jackrabbit	Sagebrush	--
Snowshoe Hare	Sagebrush/Aspen	Single individual recorded in shrub-aspen transition.
Striped Skunk	Sagebrush/Aspen	Single individual recorded on ridge top rock outcrop, retreated down into aspen grove.

The fish community in Trail Creek (located west of the property) has been surveyed, and results indicated the presence of Yellowstone cutthroat trout (IDFG, 2011). This species is addressed in Section 3.6.

3.5.2 Environmental Consequences

Impacts common to all wildlife would result from ground disturbing activities that would lead to a total loss of up to 59.6 acres of wildlife habitat in the Project Area (see Section 3.4.2, Vegetation). Loss of habitat would be short-term (less than 5 years after completion of exploration) for grasses and forbs, and long-term (more than 5 years after completion of exploration) for shrubs and trees (Stevens and Monsen, 2004; Baker, 2006). Tables 9 and 10 display the approximate acres of vegetation communities removed from construction of roads and drill pads. Temporary impacts to wildlife would also be associated with construction activities and would include increased noise and human activity, presence of construction equipment, and trampling of vegetation. How these actions and sources of disturbance would affect general fish and wildlife is described below. Impacts to threatened, endangered, and sensitive fish and wildlife are addressed in Section 3.6.

Construction would result in a direct loss of foraging and/or cover habitat for upland game birds and non-game animals, as well as the loss of habitat for big game. Road and drill pad construction and exploration drilling would introduce temporary impacts including wildlife avoidance of and displacement from the Project Area due to vehicle and equipment noise

and visual disruptions. Exploration activities would occur in small areas at any given time, thus disruptions to wildlife would be small in scale and short in duration. Use of existing and proposed roads would create a short-term risk of vehicle collision. Roads could also act as barriers to some wildlife movements resulting in altered home ranges, loss of foraging habitat, and a potential for decreased reproductive success.

Indirect impacts to wildlife habitat could include the introduction of weeds, potential for fire (from vehicles and equipment), and fragmentation of habitat. Potential direct and indirect impacts to wildlife would be avoided or minimized through utilization of environmental measures as described in Section 2.3.

The majority of the proposed roads and drill holes would occur in the mountain shrub community, which is used by a variety of wildlife including, but not limited to, big game, raptors and other migratory birds, and small mammals. Wildlife in these and other habitats in the Project Area could be temporarily disturbed by exploration activities and could be displaced to habitats within the Project Area outside of the disturbance footprint or to habitats outside the Project Area during the implementation period. Due to the short duration of proposed disturbances in any given area, it is anticipated that displaced wildlife would return to the Project Area once exploration activities are completed. Removal of habitat and drilling activities in the Project Area could potentially remove habitat for or disturb nesting raptors and other passerines, and result in a reduction in forage and prey. Impacts to nesting migratory birds would be minimized with the implementation of EPMS and BMPs, as described in Section 2.3.3. Disturbances to mountain shrub and forested habitats would result in a long-term change to the vegetation structure and composition within those portions of the disturbance footprint that are currently vegetated with trees and/or shrubs. After reclamation activities are successful, disturbed areas would become suitable again for wildlife. Population-level effects are not expected under Alternative 1 due to the small disturbance footprint (Tables 9 and 10). It is expected that the wildlife would return and utilize the area at levels similar to those prior to the exploration activities.

A portion of the Project Area is within elk winter range; however, the majority of the time period when wintering big game would likely use the Project Area would coincide with P4's annual shutdown period (approximately October through June). In the unlikely event that drilling activities would occur during portions of the typical shutdown period (due to mild temperatures and dry and snow-free conditions), seasonal restrictions would be applied to potentially disruptive construction or other activities near big game winter range that would protect big game from being displaced during this crucial period (see Section 2.3.3). Potential adverse impacts to forage quality through the introduction of noxious weeds would be minimized through the application of EPMS and BMPs measures (see Section 2.3.2).

Project Area activities during the spring and summer months could displace big game to adjacent suitable habitats. Aspen areas can be used during fawning. Although most aspen stands in the Project Area are potential fawning habitat, the aspen habitats most likely to be used by big game occur along and near Caldwell Creek and the ephemeral wetland drainage south of Caldwell Canyon, near water sources, and near the intermittent streams in the Trail Creek property. Construction activities would likely not begin until after the calving and fawning period. Further, seasonal restrictions would apply to potentially disruptive construction or other activities near known big game calving and fawning areas

during the calving and fawning period. Accordingly, Alternative 1 would not impact calving or fawning activities.

Drilling fluid sumps have the potential to trap wildlife, especially small animals. Though the fluids are of insignificant toxicity, wildlife could become stuck in the sumps while they remain open. Proposed EPMs will be applied to decrease this risk (Sections 2.3 and 3.5.2.2). Sumps would prevent drill fluids and cuttings from entering drainages which would reduce possible impacts to aquatic habitats.

Construction of proposed roads and drill pads would be restricted within 150 feet of perennial fish-bearing streams, 100 feet of perennial non-fish-bearing streams, and 50 feet of ephemeral channels in accordance with the Inland Native Fish Strategy (USFS, 1995) and Pocatello RMP (BLM, 2012a; Section 2.3.3), thus minimizing the potential for impacts to aquatic habitat. Further, there are no perennial streams within 500 feet of proposed activities, and no long-term impacts to water quality of perennial streams are anticipated (Section 3.7.2.1). There would be multiple road crossings of wetlands and an ephemeral channel on the south side of Caldwell Canyon (Figure 5; most in the center of the property and one in the southeast corner of the property). This would pose the risk of potential impacts to habitat for amphibians through the input of sediment into the wetland drainage from the road. Proposed EPMs and BMPs would be applied that would minimize the potential for sediment from entering aquatic habitats.

Water withdrawals from Slug Creek, Trail Creek, or Caldwell Creek (Section 3.7.2.1) would have temporary, minor effects on surface flows, which would occur intermittently during drilling. Water withdrawals are not expected to substantively impact wildlife dependent on riparian areas or fish present in Slug Creek, Trail Creek, or Caldwell Creek. Further, proposed EPMs would be applied that would prevent the entrapment of fish in water intake pumps (Section 2.3.3). Additionally, the use of drilling fluid of insignificant toxicity would further avoid potential fish impacts.

The potential for sediment to reach Caldwell Creek, Slug Creek, Trail Creek, or Dry Valley Creek and affect fish habitat would be minimal under Alternative 1 due to the distance of these streams to project activities and the application of measures to reduce the potential for erosion and sedimentation. Sediment impacts would be minimized or avoided during the operating period through implementation of a SWPPP and other erosion control measures (Section 2.3.5). Further, revegetation of disturbed areas and reclamation of roads and pads upon completion of exploration would reduce the pathways for potential sediment to reach waterways over the long-term. Exploration activities would occur approximately 470 feet from Caldwell Creek and greater than 500 feet from Slug Creek, Dry Valley Creek, and Trail Creek. Impacts to water quality (Section 3.7), fish habitat, and fisheries in these creeks are not anticipated.

3.5.2.1 Alternative 1 Direct and Indirect Impacts

Caldwell Canyon

Alternative 1 would result in the loss of up to 16.7 acres of wildlife habitat in the Caldwell Canyon property, with up to 13.6 acres in mountain shrub, 2.4 acres in forested and 0.7 acres in riparian habitats (Table 9). Impacts would be short-term in areas dominated by grass and forbs and long-term in areas dominated by shrubs and trees. The impacts to

grasses and forbs are not expected to result in loss of species diversity. Due to the layout of the proposed roads and drill pads, impacts would result in narrow linear areas with habitat loss and modification.

The proposed project would result in the loss of up to 11.2 acres of habitat in elk winter range. This represents a minor portion of the Caldwell Canyon property; thus impacts on forage availability are anticipated to be negligible. Disturbance would result from the construction of drill pads and approximately 5.2 miles of new roads. In addition, up to 10 miles of existing roads would be used within elk winter range. Since exploration typically would not occur during the winter, use of these roads would not pose a risk to wintering elk. Further, new roads would be bermed or otherwise closed outside of the exploration operating period, so use of these roads during the elk wintering period is not anticipated. If operation did occur during the wintering period, seasonal restrictions would be applied in big game winter range (Section 2.3.3.4), thus avoidance of roads by elk and associated increases in energy expenditure are not anticipated.

Trail Creek

Alternative 1 would result in the loss of up to 43.0 acres of wildlife habitat in the Trail Creek property, with up to 32.4 acres in mountain shrub, 9.8 acres in forested and 0.4 acres in riparian habitats (Table 10). Up to 0.4 additional acres of privately-owned agricultural land could be impacted. Impacts to wildlife habitat would be short-term in areas dominated by grass and forbs and long-term in areas dominated by shrubs and trees. Due to the layout of the proposed roads and drill pads, impacts would result in narrow linear areas with habitat loss and modification.

3.5.2.2 Environmental Protection Measures and Best Management Practices

Several EPMs and BMPs proposed in Section 2.3 would be applied that would reduce the potential for impacts of exploration activities on fish and wildlife. These are detailed in Section 2.3 and are summarized here.

- Where practical and based on site-specific conditions, road construction would occur in the fall after the migratory bird nesting season to avoid potential impacts to nesting birds.
- Preconstruction surveys for migratory birds would be conducted to determine the presence of nesting raptors or other birds near the proposed roads and drill holes. If migratory bird nests are found and exploration is proposed within bird nesting periods, seasonal and spatial restrictions would be required near nesting raptors and other birds. These restrictions would reduce the potential disruption of nesting and rearing activities of migratory birds.
- Preconstruction surveys would be conducted for wetlands and noxious weeds for future areas proposed for construction of drill pads and roads (those not identified in the 2012 exploration plans). If wetlands are identified, roads and drill pads would be sited to avoid these areas where feasible, reducing the potential for impacts to aquatic wildlife and habitat. Where noxious weeds are located, they would be controlled, reducing degradation of wildlife habitat.
- Efforts would be made to avoid and minimize clearing and/or removal of mature upland shrubs, trees, and snags that provide important habitat to wildlife (such as

high value forage species, shelter, and nesting areas for migratory birds, small mammals, and big game).

- Unreclaimed, newly constructed access roads would be temporarily closed for the winter season after drilling activities. This could serve to reduce the vulnerability of big game to hunters in the latter part of the hunting season, if public access to these roads were available. Big game would still be vulnerable during bow season; however, access to these roads would be limited due to entry through private land.
- Exploration activities would be avoided during big game wintering periods to avoid impacts to wintering elk. Exploration activities would only occur during big game wintering periods if a temporary, short-term exception is authorized by the BLM as described in Section 2.3.3 (BLM, 2010c). This would only occur under rare situations during mild winters.
- If calving or fawning areas are identified in the Project Area, exploration activities would be seasonally avoided in these critical areas to minimize impacts to deer and elk.
- The potential risk of wildlife entrapment in sumps would be minimized through the construction of ramps in sumps and the backfilling and reclamation of sumps when no longer needed.
- Screening pump intakes would prevent entrapment of fish during water withdrawals in streams.
- Restricting exploration activities within 150 feet of fish-bearing perennial streams, 100 feet of non fish-bearing perennial streams, and 50 feet of ephemeral streams would minimize the potential for impacts to aquatic habitat.
- Management of exploration activities under a SWPPP and application of BMPs for mining in Idaho would minimize the potential for sediment to enter aquatic habitat.
- Construction of sumps would prevent drill fluids and cuttings from entering aquatic habitats.

3.5.2.3 Mitigation

Application of mitigation for wetlands, which would require the siting of drill pads and holes to avoid wetlands, siting of new roads to minimize crossings of wetlands, the use of temporary, manufactured crossings over wetlands in the Caldwell Canyon property, and realignment of proposed roads in both properties (Section 2.4.1), would result in an increase in 0.02 acres of disturbance to wildlife habitat in the Trail Creek property and a decrease in 0.3 acres of disturbance to wildlife habitat in the Caldwell Canyon property than without application of mitigation. Modification of the road alignment in the Trail Creek property would result in 33.2 acres of impacts to mountain shrub communities, 0 acres in wetlands, and 9.2 acres in aspen woodlands, representing a reduction in impacts to wetland and aspen communities and an increase to mountain shrubland communities than without application of mitigation (Section 3.4.2.1). Modification of three road alignments in the Caldwell Canyon property and use of temporary bridges over ephemeral drainages and wetlands would result in approximately 2.1 acres of impacts to mountain shrub communities, 0.2 acres in wetlands, and 0.1 acres in shrub-dominated riparian communities, representing a decrease in impacts to wetland and shrub-dominated riparian communities and an increase to mountain shrub communities than without application of

mitigation. Proposed mitigation would result in minimization of impacts to riparian areas and associated benefits to aquatic wildlife species.

There would be no change in impacts to elk winter range with application of wetland mitigation; the proposed project would result in the loss of up to 11.2 acres of habitat in elk winter range with or without application of wetland mitigation.

3.5.2.4 Alternative 2 Direct and Indirect Impacts

Alternative 2 would consist of not approving the exploration and prospecting activities and not issuing an exploration license and prospecting permit. Therefore, the proposed drill holes and associated access roads would not be constructed, and fish and wildlife in the Project Area would not be disturbed over existing conditions and fish and wildlife habitat would not be removed or altered. Alternative 2 would not cause direct or indirect impacts to wildlife and fish.

3.6 Threatened, Endangered, and Sensitive Species

3.6.1 Affected Environment

The assessment of threatened, endangered, and BLM sensitive (TES) species is based on the field surveys that occurred at the Caldwell Canyon and Trail Creek properties in October 2011 and a review of pertinent literature and aerial photographs of the Project Area. The scope of potentially applicable threatened and endangered species is based on the United States Fish and Wildlife Service (USFWS) species list for Caribou County, Idaho (USFWS, 2011) and the scope of potentially applicable BLM sensitive species is based on the BLM Sensitive Species List (BLM, 2003). The USFWS list for Caribou County was screened for applicable species based on habitat requirements of the species and habitat conditions within the Project Area. The same general screening approach was used for the BLM sensitive species applicable to the Pocatello Field Office.

Four Type 1 species (listed under the Endangered Species Act or are proposed or candidates for listing) are known to occur in the Project Area or potentially occur in Caribou County: Canada lynx (threatened; *Lynx canadensis*), sage-grouse (*Centrocercus urophasianus*; candidate), North American wolverine (proposed; *Gulo gulo*), and whitebark pine (candidate; *Pinus albicaulis*). These species are addressed in this document. The yellow-billed cuckoo (*Coccyzus americanus*), Utah valvata snail (*Valvata utahensis*), and Bliss Rapids Snail (*Taylorconcha serpenticola*) are listed on the BLM species list as Type 1 for the Pocatello Field Office. However, the USFWS list indicates that these species do not occur in Caribou County and the Project Area lacks available habitat for these three species, therefore, these species would not be affected and are not included in the analysis.

The bald eagle (*Haliaeetus leucocephalus*) and gray wolf (*Canis lupus*) are listed as Type 1 species on the BLM Sensitive Species List (BLM, 2003) for the Pocatello Field Office. However, since the creation of this list, these species have been removed from the Endangered Species Act list of protected species. The bald eagle is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. These two species are now managed as Type 2 sensitive species by the BLM. The bald eagle is addressed further in this section. Due to the small project footprint, lack of species

presence in the project area, and large home range for this species, the gray wolf is not further addressed.

There are six fish species on the BLM Sensitive Species List that are not addressed in this document because they do not occur in the Blackfoot sub-basin (Hydrologic Unit Code 17040207) in which the Project Area is located, and would not be directly or indirectly affected by the Proposed Action. The six species include Bonneville cutthroat trout (*Oncorhynchus clarki utah*) Bear Lake cutthroat trout (*Oncorhynchus clarki* ssp.), Bear Lake whitefish (*Prosopium abyssiicola*), Bonneville whitefish (*Prosopium spilonotus*), Bonneville cisco (*Prosopium gemmiferum*), and Bear Lake sculpin (*Cottus extensis*), and are not considered further in the analysis.

Field surveys and habitat assessments for TES species were conducted in October 2011 in both of the properties in the Project Area. During surveys, the surveyor walked the proposed road alignments and inspected the proposed drill pads for sign or observations of TES species. Two TES species, greater sage-grouse and Brewer's sparrow (*Amphispiza belli*; BLM sensitive), were observed in the Project Area. Both of these species are associated with sagebrush habitats. The sage-grouse observation was of scat on the south side of Caldwell Canyon. The Brewer's sparrow observation was of individual birds. The Brewer's sparrow is listed by the BLM as a Type 3 sensitive species (BLM, 2003). Due to the phenology of plants and life history and behavior of wildlife, the surveys were conducted too late in the season to be able to detect presence of some of the TES species. Therefore, if habitat for additional TES species was observed in the Project Area, these species are addressed in this analysis.

3.6.1.1 Federally Listed, Candidate, and Proposed Species

Canada Lynx

The Canada lynx is listed as a threatened species by the USFWS. The lynx are specialized predators of snowshoe hare surviving in areas that have cold winters with deep fluffy snow (USFWS, 2008a). Lynx require large boreal forests that are associated with high quality snowshoe hare habitat. The Project Area is outside of the Northern Rockies Lynx Planning Area, is not designated as occupied habitat, and is not in or near a lynx linkage zone (USFS, 2007). USFWS agreed in 2001 that lynx habitat on the Caribou National Forest, which is close to the Project Area, was too patchy to support lynx (USFS, 2003, pp. 3-210). Although forest habitat is patchy in the Project Area, it provides prey species and connectivity to sub-alpine forests in the region. Further, lynx have large home ranges and conduct exploratory movements outside their home ranges. Therefore, it is possible that lynx could incidentally cross the project area during their movements.

Use of the Project Area vicinity by Canada lynx has been documented through two observations obtained from Idaho Department of Fish and Game (IDFG) data records (IDFG, 2011). Tracks were observed in 1970 less than 1 mile from the Trail Creek property at what is now the Soda Springs archery range. The other recorded observation was of a female with two kittens in 2005 near the Mill Canyon headwaters approximately 2 miles northeast of the Caldwell Canyon property.

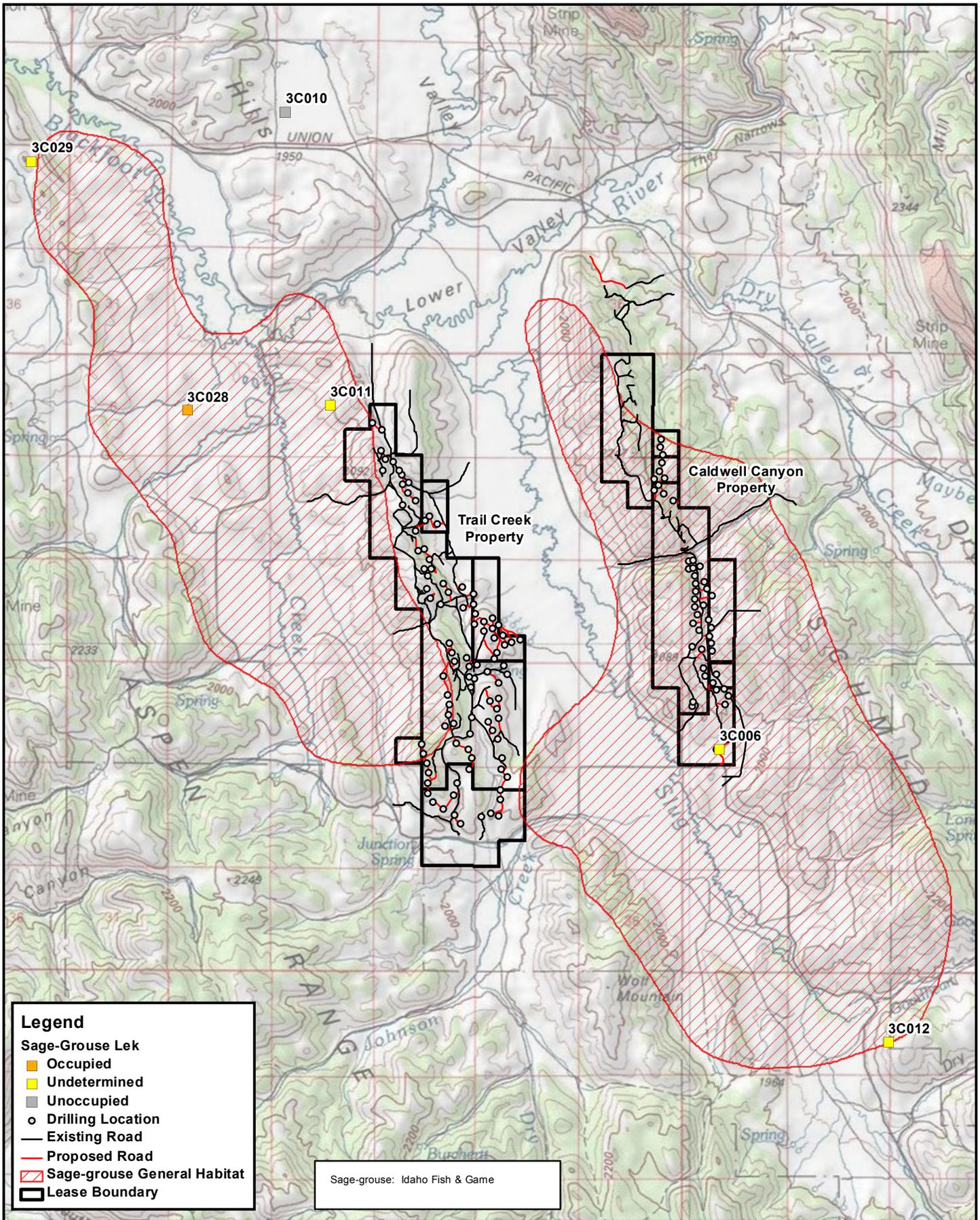
Greater Sage-Grouse

The greater sage-grouse is a candidate species that was designated by the USFWS as warranted-but-precluded for listing by other higher priorities (75 Fed. Reg. 14009; USFWS, 2010a). Due to this designation, the sage-grouse and mitigation for potential sage grouse impacts is given additional consideration in this document.

Sage-grouse are entirely dependent upon healthy sagebrush communities for all stages of their life cycle, with extensive areas of this habitat type required year-round. Sage-grouse have a high fidelity to their seasonal habitats (breeding, brood-rearing, and wintering habitats), and females commonly return to the same areas to nest each year. Sage-grouse use of the Project Area and vicinity has been documented through one observation of scat during biological surveys (Table 11), individual bird observations (GYC, 2012; project vicinity), and nearby leks.

The BLM has developed data and maps of sage-grouse habitat in Idaho through a collaborative effort with the Idaho Department of Fish and Game. Sage-grouse habitat is divided into preliminary priority habitat and preliminary general habitat (BLM, 2011a). The BLM defines preliminary priority habitat as areas “that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-Grouse populations.” Preliminary priority habitat areas include “breeding, late brood-rearing, and winter concentration areas” (BLM, 2011a). Preliminary general habitat includes “areas of occupied seasonal or year-round habitat outside of priority habitat” (BLM, 2011a). Preliminary general habitat areas have been identified by state fish and wildlife agencies in coordination with respective BLM offices (Sage-grouse NTT, 2011). Data and maps of preliminary and general sage-grouse habitat are science-based and reflect the best available data (BLM, 2011). They are classified in such a manner so as to provide for sustainable populations, and may be updated as new information becomes available (BLM, 2011a).

The Project Area falls within habitat designated as preliminary general sage-grouse habitat by the BLM (BLM, 2012b) and could support nesting populations (BLM, 2010b Figure 3-7). The Project Area does not contain habitat currently designated as preliminary priority sage-grouse habitat by the BLM (BLM, 2012b). The closest priority sage-grouse habitat is 19 miles to the west of the Caldwell Canyon property and 17 miles to the west of the Trail Creek Property. None of the preliminary general habitat in the Project Area is between or directly adjacent to any preliminary priority habitat (BLM, 2012b). Approximately 1,470 acres of preliminary general sage-grouse habitat occurs in the Caldwell Canyon property and 435 acres in the Trail Creek property (Figure 7). This represents 90 percent and 18 percent of the total properties, respectively. Sage-grouse general habitat in the Caldwell Canyon property is comprised of approximately 80 percent mountain shrub communities, 19 percent forest communities, and 1 percent riparian areas; the forest communities are not suitable for use by sage-grouse. General habitat in the Trail Creek property is comprised of approximately 77 percent mountain shrub communities, 20 percent forest communities, and 3 percent agriculture; the forest communities and agriculture are not suitable for use by sage-grouse.



Date: 5/30/2013

P4 Production

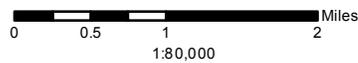


Figure 7
Sage-Grouse Habitat
Caldwell Canyon/Trail Creek EA



Approximately 2.2 miles (3.2 acres) and 0.8 miles (0.8 acres) of existing roads occur in sage-grouse general habitat in the Caldwell Canyon and Trail Creek properties, respectively.

Certain portions of both general and priority sage-grouse habitat are classified as “key habitat” by BLM, which is defined as “generally large scale, intact sagebrush steppe areas that provide sage-grouse habitat during some portion of the year” (Makela and Major, 2012). All of the preliminary general sage-grouse habitat within the Project Area has been classified as areas of key habitat (BLM, 2011b). No areas within the property have been currently identified as migratory corridors for sage-grouse (EIU, 2011).

A sage-grouse lek is an area “used by sage-grouse during the mating season where males display to attract receptive females. These sites are characterized by low vegetation with sparse shrubs often surrounded by big sagebrush communities. Strutting grounds or leks are considered to be the center of sage-grouse activities.” (BLM, 2012a). Leks are classified annually by the IDFG as “active”, “inactive”, or “unknown”, depending on lek attendance by male sage-grouse during the breeding season (IDFG, 2012). A lek is considered active if it has been attended by greater than one displaying male during the breeding season. A lek is considered inactive where sufficient data suggests that there was no male attendance throughout a breeding season. When the status of a lek has not been documented as either active or inactive during the course of a breeding season, it is given a status of unknown. Based on the annual status of sage-grouse leks, IDFG also assigns a management status of either “occupied”, “unoccupied”, “undetermined”, or “not verified” to the leks (IDFG, 2012). An occupied lek has been active during at least one breeding season within the past 5 years. An unoccupied lek is one that has not been active during a period of 5 consecutive years. To be designated unoccupied, a lek must be inactive for 5 consecutive breeding seasons. An undetermined lek status is given to any lek that has not been documented active in the last 5 years, but survey information is insufficient to designate the lek as unoccupied. A lek location from an historical document that has been recently visited on the ground with no birds detected is considered unverified.

One sage-grouse lek is located at the southern end of the Caldwell Canyon Property, approximately 110 feet east of a proposed drill pad (Figure 7; 3C006). The management status of this lek is undetermined, and it was inactive from 2010 to 2013. Activity at this lek was last verified in 1999, and it was not visited between 2003 and 2009. No leks are located within the Trail Creek property; however, one lek is within 440 feet of the northern boundary (Figure 7; 3C011). The management status of this lek is undetermined and its status in 2012 was inactive. Activity at this lek was last verified in 2011 (one male); however, the lek was not considered active since attendance by only one male was observed. This lek was consistently visited from 2009 to 2012 and then previously in 2002 where 15 males were observed (IDFG, 2013). Approximately 244 acres of general sage-grouse habitat occurs within 0.6 miles of the sage-grouse lek in the Caldwell Canyon property (3C006) and 52 acres occurs within 0.6 miles of the sage-grouse lek (3C011) adjacent to the northern portion of the Trail Creek property.

Three additional leks are located within 4 miles of the Project Area (Figure 7). One occurs 3.1 miles southeast of the Caldwell Canyon property (3C012) and the other three occur 1.5 miles west, 3 miles north, and 4 miles northwest of the Trail Creek property (3C028, 3C010, and 3C029, respectively). In 2012 and 2013, the lek 1.5 miles west of the Trail Creek

property (3C028) was active and occupied (five and two males, respectively); prior to 2009, this lek had not been visited since 2001, when 6 males were sighted. The lek to the north of the Trail Creek property (3C010) had zero birds during the last 5 consecutive years of surveys (2009-2013), and therefore will be designated unoccupied. This lek was last active in 1984. The lek further to the northwest of the Trail Creek property (3C029) was inactive and undetermined in 2009, 2010, 2012, and 2013; activity at this lek was last verified in 2001, but it was not visited between 2001 and 2009. The lek south of the Caldwell Canyon property (3C012) was inactive and undetermined between 2010 and 2013, with activity last verified in 1999; however, this lek was not visited between 2002 and 2010 (IDFG, 2013). Based on the siting of one male at lek 3C011 in 2011 and on the occupied status of lek 3C028, it is probable that sage-grouse use the Trail Creek property during portions of the year. Likewise, based on the presence of sage-grouse scat in the Caldwell Canyon property and recent activity in the leks to the west of the Trail Creek property, it is expected that sage-grouse use the Caldwell Canyon property during portions of the year.

North American Wolverine

The USFWS proposed to list the contiguous United States distinct population of North American wolverine (wolverine) as a threatened species under the Endangered Species Act on February 4, 2013 (USFWS, 2013). Wolverines occur in a variety of alpine, boreal, and arctic habitats in North America. Wolverines are omnivorous in the summer and carrion scavengers in the winter. Food supply and lack of human occupation are better determinants of habitat than vegetation or topography (USFS, 2003, pp. 3-215). Wolverines require cold snowy conditions where snowpack remains late into the spring months. This requirement means that in lower latitudes where ambient temperatures are warmer, wolverine distribution is restricted to higher elevations (Copeland et al., 2010). Elevation and lack of late season snow persistence may limit the available habitat in the Project Area.

Due to the large home range size of wolverine and habitats used, it is possible that wolverine could move through the Project Area. Two observations have been recorded north of the Project Area. One observation from 2001 was approximately 15 miles north of the Project Area; the other from 1977 was approximately 11 miles to the north (IDFG, 2011). However, given the history of human use of the area, occupation of the area is unlikely. Aspen stands in the Project Area have low levels of downed woody debris and lack of talus slopes; thus denning is unlikely.

Whitebark Pine

Whitebark pine is a candidate species that was warranted to be listed as threatened or endangered but precluded by higher priority actions on July 19, 2011 (USFWS, 2010b). Although this species occurs on the USFWS species list for Caribou County (USFWS, 2011), it does not occur on the BLM Sensitive Species List for the Pocatello Field Office (BLM, 2003). Whitebark pine is a five-needled pine species that occurs in alpine and subalpine elevations typically on thin soils, steep slopes, and windy exposures at an elevation range of 4,265 to 12,140 feet. Although this species potentially occurs in Caribou County, the species and its habitat were not observed during field surveys. Presence of this pine species is not expected because the Project Area is in the montane zone and lacks the required alpine and subalpine environments. Due to lack of habitat in the Project Area, whitebark pine is not considered further in the analysis.

3.6.1.2 BLM Sensitive Species

Tables 13 and 14 summarize the results of screening the BLM species lists and provide an indication of the potential for BLM sensitive wildlife and plant species to be present in the Project Area and impacted from the proposed activities. Type 1 species are not detailed in these tables as they are discussed in Section 3.6.1.1. Type 5 Watch list animal and plant species are not considered BLM sensitive species and are therefore not included in these tables and not analyzed in detail. However, the types of impacts on Watch species would be similar to those described for general fish and wildlife (Section 3.5) and threatened, endangered, and sensitive species.

Table 13. BLM Special Status Fish and Wildlife Potentially Occurring in the Project Area

Species	Habitat Description	Potentially Affected?/Rationale	Documented at or near Project Area ¹
Type 1: Endangered Species Act Listed, Proposed, & Candidate Species			
Canada Lynx	Section 3.6.1.1	Yes – Section 3.6.2.1	Yes ²
Sage-Grouse	Section 3.6.1.1	Yes – Section 3.6.2.1	Yes ^{2,3}
Wolverine	Section 3.6.1.1	Yes – Section 3.6.2.1	Yes ⁴
<i>Idaho BLM Sensitive Species</i>			
Type 2: Range-wide/Globally Imperiled Species			
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Riparian forested areas for nesting and lakeshores and small mammal colonies for hunting.	Yes – The Project Area may provide incidental habitat for migrating or hunting individuals in riparian areas near the Project Area.	Yes ²
Gray Wolf (<i>Canus lupus</i>)	Adaptable species using a wide range of habitats.	No – Relatively small project footprint and no known wolf packs near Project Area.	No
Pygmy Rabbit (<i>Brachylagus idahoensis</i>)	Dense stands of sagebrush growing in deep, loose soil.	Yes – The Project Area is outside of BLM modeled pygmy rabbit core habitat (BLM, 2009). However, sagebrush habitats are present that could potentially provide habitat for this species. Small amounts of sagebrush would be removed during exploration.	No
American White Pelican (<i>Pelecanus erythrorhynchos</i>)	Open water habitats, marshes, lakes, ponds. Nests near open water.	No – Deepwater aquatic habitats and marshes not present at Project Area. Riparian habitat along Caldwell Creek would not support pelicans.	No

Species	Habitat Description	Potentially Affected?/Rationale	Documented at or near Project Area ¹
Boreal Toad (<i>Bufo boreas boreas</i>) - Southeast Idaho Population only	Breed in wetlands, ponds, and other aquatic sites. Uses wide variety of terrestrial habitats during non-breeding season.	Yes – Riparian areas, wetlands and stock ponds in proximity to aspen forests occur within the Project Area and provide potential breeding habitat. Species could occur in uplands, particularly the aspen forests/edges, during the non-breeding season.	No
Northern Leopard Frog (<i>Rana pipiens</i>)	Associated with permanent water sources including a variety of wetland situations, pond margins and slow-moving sections of rivers and streams.	Yes – Spring-fed riparian areas, wetlands and stock ponds exist in the Project Area. Dry mountain shrub areas unlikely to support the species but short-term loss of wetlands and riparian habitats could affect the species. Species was observed in Dry Valley Creek area in 1999 (IDFG, 2011). Caldwell Creek riparian area is the most suitable potential habitat.	Yes ²

Species	Habitat Description	Potentially Affected?/Rationale	Documented at or near Project Area ¹
<p>Yellowstone Cutthroat (<i>Oncorhynchus clarki bouveri</i>)</p>	<p>Well-oxygenated streams with well sorted gravel and minimal fines for spawning habitat. In stream habitat consisting of large woody debris and overhanging banks for cover.</p>	<p>No – Cutthroat trout is not documented in the Caldwell Canyon property; species is documented in Dry Valley Creek (~1.5 miles northeast of property). Species also may occur in Slug Creek. Aerial photographs indicate a clear break between Caldwell Creek and Slug Creek, likely preventing movement of fish between these waterways. Caldwell Creek is a small spring-fed stream that likely dries up intermittently, likely precluding a fishery.</p> <p>Cutthroat trout are located in Trail Creek, west of the Trail Creek property.</p> <p>Adherence to wildlife habitat restrictions in the Pocatello RMP, and application of BMPs, would preclude impacts to water quality and habitat for cutthroat trout.</p>	<p>Yes²</p>
<p>Type 3. Regional/State Imperiled Species</p>			
<p>Townsend's Big-Eared Bat (<i>Plecotus townsendii</i>)</p>	<p>Distribution and abundance highly correlated with cavity forming rock formations and historic mining districts where suitable caves occur.</p>	<p>No – Caves not observed during field surveys and IDFG, 2005, indicates no point locations for the species in or near the Project Area.</p>	<p>No</p>

Species	Habitat Description	Potentially Affected?/Rationale	Documented at or near Project Area ¹
Trumpeter Swan (<i>Cygnus buccinator</i>)	Wetlands, lakes, rivers, and terrestrial habitats adjacent to aquatic sites.	No – Deepwater aquatic habitats and marshes not present in Project Area. Riparian habitat along Caldwell Creek would not support swans.	No
Peregrine Falcon (<i>Falco peregrinus anatum</i>)	Adaptable species that inhabits mountains, river corridors, marshes, lakes, coastlines, and cities. Nests are usually on cliffs, in abandoned nests, or on human-made, cliff-like structures.	No – Exploration activities could cause falcons to avoid using the Project Area for hunting. Avoidance would be temporary, resulting in a negligible impact to the species.	No
Prairie Falcon (<i>Falco mexicanus</i>)	Dry grasslands, prairies, and sagebrush shrublands. Nest on cliffs.	No – Exploration activities could cause falcons to avoid using the Project Area for hunting. Avoidance would be temporary, resulting in a negligible impact to the species.	No
Northern Goshawk (<i>Accipiter gentilis</i>)	Low elevation mixed conifer forest, aspen forest, and riparian areas with medium to large trees and moderate canopy closure.	Yes – Species is associated primarily with dense forest cover which occurs in the northern portion of the Project Area. Goshawk nesting was observed in Project Area near Caldwell Canyon in 1999. Status of this nest is not known.	Yes ²
Ferruginous Hawk (<i>Buteo regalis</i>)	Open grasslands and sagebrush country. Nest in trees or on cliffs.	Yes - Species may pass through the Project Area. However, the Pocatello RMP does not map the Project Area as a Ferruginous Hawk Important Bird Area (BLM, 2010 Figure 3-6). Project Area and vicinity are hilly with mountain shrub and forest patches. Nesting habitat could be removed and temporary disturbance could result from exploration activities.	No

Species	Habitat Description	Potentially Affected?/Rationale	Documented at or near Project Area ¹
Columbian Sharp-Tailed Grouse (<i>Tympanuchus phasianellus columbianus</i>)	Sagebrush endemic. Dense herbaceous cover combined with a mixture of shrubs. Reliant on riparian areas in winter.	Yes – Project Area is predominantly mountain shrub with herbaceous cover, which could support the species. However, the Pocatello RMP does not map the Project Area as containing sufficient breeding and winter habitat to support the species (BLM, 2010 Figure 3-6). Potentially suitable habitat for this species would be removed, and eventually restored. Temporary disturbance to individuals near the area could result from exploration activities.	Yes- single occurrence recorded during 2011 greater sage-grouse surveys near the Trail Creek Property. Two individuals observed during 2012 public tour at Caldwell Canyon.
Black Tern (<i>Chlidonias niger</i>)	Shallow freshwater marshes, margins of ponds, rivers, sloughs.	No – Project Area consists of dry mountain shrub and small stock pond. Dense willows along Caldwell Creek and aspen vegetation near the stock ponds make it unlikely as breeding areas. IDFG, 2005, does not indicate point locations near Project Area.	No
Flammulated Owl (<i>Otus flammeolus</i>)	Montane coniferous forests. Cavity nesters.	Yes – Dry conifer forest in the northern portion of the Caldwell Canyon property is predominantly Douglas-fir, which is suitable nesting habitat. Minimal conifers would be removed, but drilling/construction could have disturbance effects.	No
Calliope Hummingbird (<i>Stellula calliope</i>)	Wide variety of habitats including montane forests, mountain meadows, riparian areas.	Yes – May forage in Project Area in spring and summer. Aspen areas may provide suitable nesting habitat. Habitat could be disturbed or removed.	No

Species	Habitat Description	Potentially Affected?/Rationale	Documented at or near Project Area ¹
Lewis' Woodpecker (<i>Melanerpes lewis</i>)	Burned ponderosa pine forests, riparian forests, aspen groves. Nests in large diameter snags in open forests.	Yes – Aspen and conifer forest patches could support the species during the breeding season. Habitat could be disturbed or removed.	No
Williamson's Sapsucker (<i>Sphyrapicus thyroideus</i>)	Woodland cavity nester	Yes – Aspen and conifer forest patches could support the species during the breeding season. Habitat could be disturbed or removed.	No
Willow Flycatcher (<i>Empidonax traillii</i>)	Riparian species. Nest in shrubs along waterways.	Yes – Dense willow shrub along Caldwell Creek could support the species during the breeding season. Habitat would be retained in riparian areas, but temporary disturbance could result if species in the area.	No
Hammond's Flycatcher (<i>Empidonax hammondii</i>)	Montane forests and other forests	Yes – Aspen and conifer forest patches could support the species during the breeding season. Habitat could be disturbed or removed.	No
Olive-Sided Flycatcher (<i>Contopus borealis</i>)	Montane and northern coniferous forests	Yes – Aspen and conifer forest patches could support the species during the breeding season. Habitat could be disturbed or removed.	No
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	Open woodlands	Yes – Aspen and conifer forest patches could support the species during the breeding season. Habitat could be disturbed or removed.	No
Sage Sparrow (<i>Amphispiza belli</i>)	Sagebrush and other open shrub habitats	Yes – Mountain shrub habitat in the Project Area could support the species. Sagebrush is common in the shrub zone.	No

Species	Habitat Description	Potentially Affected?/Rationale	Documented at or near Project Area ¹
Brewer's Sparrow (<i>Spizella breweri</i>)	Sagebrush obligate, closely associated with big sagebrush (<i>Artemisia tridentata</i>).	Yes – Sagebrush is prevalent in the mountain shrub zone. Habitat could be disturbed or removed and species temporarily disturbed by exploration.	Yes ³
Common Garter Snake (<i>Thamnophis sirtalis</i>)	Open meadows, forests and other terrestrial habitats associated with water.	Yes – Aspen areas, serviceberry shrub and riparian willow along Caldwell Creek provide suitable habitat.	No
Western Toad (<i>Bufo boreas</i>) - (Northern Rocky Mountain Group only)	Breed in wetlands, ponds, and other aquatic sites. Uses wide variety of terrestrial habitats during non-breeding season	Yes – riparian areas, wetlands and stock ponds in proximity to aspen forests exist within the Project Area and provide potential breeding habitat. Species could occur in uplands, particularly the aspen forests/edges, during the non-breeding season. Habitat could be disturbed or removed.	No
Leatherside chub (<i>Gila copei</i>)	Low velocity desert streams with coarse fine substrates and riffle and pool systems in tributaries of the Snake River in southcentral and eastern Idaho (IDFG, 2005)	No – Adherence to wildlife habitat restrictions in the Pocatello RMP, and application of BMPs, would preclude impacts to water quality and habitat for cutthroat trout.	Yes- 2002 documentation in the headwaters of Lanes/Sheep creeks in the Blackfoot River drainage.
Type 4: Peripheral Species in Idaho			
Cliff Chipmunk (<i>Tamias dorsalis</i>)	Lower- and middle-elevation xeric shrub and conifer habitats. Large boulders, exposed bedrock, and cliff faces.	No – Dry mountain shrub predominates in Project Area, but IDFG, 2005, indicates that the species is typically found in south central Idaho. Project Area is not within or near the predicted distribution for the species.	No

Species	Habitat Description	Potentially Affected?/Rationale	Documented at or near Project Area ¹
Uinta Chipmunk (<i>Tamias umbrinus</i>)	Montane conifer forests	Yes – Dry Douglas-fir forests in northern portion of the Caldwell Canyon property provides suitable habitat for the species. IDFG, 2005, indicates Project Area is near predicted distribution of the species. Habitat could be disturbed or removed in the Caldwell Canyon property. Trail Creek does not provide suitable habitat, thus impacts would not occur in this property.	No
Kit Fox (<i>Vulpes velox</i>)	Desert shrub and shrub-steppe habitats, typically flat and sparsely vegetated.	No – Project Area is mountain shrub with sagebrush, but the terrain is hilly, rocky and unlikely to support the species. Higher elevation than the species typically occurs in Idaho. IDFG, 2005, indicates no point locations near Project Area.	No
White-Faced Ibis (<i>Plegadis chihi</i>)	Shallow marshes with dense vegetation.	No – Marshes are not present in the Project Area. Willow shrub riparian area along Caldwell Creek unlikely to support the species.	No
Virginia's Warbler (<i>Vermivora virginiae</i>)	Breeds in deciduous woodlands on steep slopes. Mountain streams in sagebrush and cottonwood/willow habitat.	Yes – Aspen forests on hill slopes could provide suitable breeding habitat. Habitat could be disturbed or removed.	No

¹A “No” in this column does not indicate species absence; surveys were not conducted at the appropriate time of year to document some of these species, particularly migratory birds.

²Known occurrence at or within 5 miles of Project Area according to Idaho Fish and Wildlife Information System Data (2011)

³Individuals or sign observed during October 2011 field surveys

⁴Historic observations and reports (USFS, 2003).

Table 14. BLM Special Status Plant Species¹ Potentially Occurring in the Project Area

Common Name	Scientific Name	Status ²	Vegetation Community Type	Potentially Affected?/Rationale
Whitebark pine	<i>Pinus albicaulis</i>	Candidate	Section 3.6.1.1	No – Section 3.6.1.1
Birchleaf Mountain-Mahogany	<i>Cercocarpus montanus Raf.var. glaber</i>	Type 4	Shrub Steppe, Complex (Mountain Shrub), Juniper, Aspen/Aspen Conifer Mix	Yes – Potential habitat consists of sagebrush slopes, aspens, and conifers. The Project Area is at the upper elevation range for this species; potentially suitable habitat is present and could be disturbed.
Cooper's Rubber Plant	<i>Hymenoxys cooperi var.canescens</i>	Type 4	Shrub Steppe Complex Mid-elevation Shrub /Mountain Shrub (above 6,000 ft)	Yes – Potential habitat consists of sagebrush slopes. The Project Area is at the upper elevation range for this species; potentially suitable habitat is present and could be disturbed (USFS, 2011a).
Foothill Sedge	<i>Carex tumulicola</i>	Type 4	Mid-elevation Shrub/Mountain Shrub, Aspen/Aspen Conifer Mix, and Riparian (100-3,940 ft)	No – Potential habitat consists of open, often grassy slopes and dry meadows, which occur in the Project Area. However, species is unlikely to occur in the Project Area due to elevation and because it mainly occurs west of Cascade Mountains with only disjunct populations known in Eastern Idaho. Species is not known to occur in Caribou County (USFS, 2011b).
Great Basin Desert Buckwheat	<i>Eriogonum desertorum</i>	Type 3	Mid-elevation Shrub (4,920-9,840 ft)	Yes – Potential habitat includes sparse to moderately vegetated areas in association with sagebrush, rabbitbrush, and native bunchgrasses (Morefield, 1996). Potentially suitable habitat is present and could be disturbed.

Common Name	Scientific Name	Status ²	Vegetation Community Type	Potentially Affected?/Rationale
Green Needlegrass	<i>Nassella viridula</i>	Type 4	Mid-elevation Shrub (4,500-7,050 ft)	Yes – Potential habitat consists of grasslands and sagebrush slopes. The Project Area is at the upper elevation range for this species; potentially suitable habitat is present and could be disturbed.
Hoary Willow	<i>Salix candida</i>	Type 4	Riparian/wetland (35-9,185 ft)	No – Potential habitat consist of bogs, fens, marshes, pond edges, and seepage areas with histic soils. Seeps and riparian areas are present, but wetland types are unlikely to support the species. Histic soils not observed during wetland delineation in Project Area. Species is unlikely to occur in the Project Area due to elevation.
Hooker's Buckwheat	<i>Eriogonum hookeri</i>	Type 2	Shrub Steppe Complex Mid-elevation Shrub (6,300 to 7,150 ft)	Yes – Potential habitat includes sparsely vegetated, shale, clay, gravelly knolls, and ridges. Potentially suitable habitat is present and could be disturbed.
Ibapah Springparsley	<i>Cymopterus ibapensis</i>	Type 4	Shrub Steppe Complex	Yes – Potential habitat includes sparsely vegetated, shale, clay, gravelly knolls, and ridges. Potentially suitable habitat is present and could be disturbed.
Red Glasswort	<i>Saliornia rubra</i>	Type 4	Riparian/saline alkali flats wetlands (325-5,250 ft)	No – Potential habitat includes moist, saline or alkaline soil of flats, shores, seepage areas, and ditches. Habitat type not present in the Project Area and elevation too low.

Common Name	Scientific Name	Status ²	Vegetation Community Type	Potentially Affected?/Rationale
Silky Cryptantha	<i>Cryptantha sericea</i>	Type 4	Shrub Steppe Complex Mid-elevation Shrub	Yes – Potential habitat includes sparsely vegetated, shale, clay, gravelly knolls, and ridges. Potentially suitable habitat is present and could be disturbed.
Starveling Milkvetch	<i>Astragalus jejunus</i> var. <i>jejunus</i>	Type 2	Shrub Steppe Complex Mid-elevation Shrub	Yes – Potential habitat includes sparsely vegetated, shale, clay, gravelly knolls, and ridges. Potentially suitable habitat is present and could be disturbed.
Tufted Cryptantha	<i>Cryptantha caespitosa</i>	Type 4	Mid-elevation Shrub (6,200-8,100 ft)	Yes – Potential habitat includes sparsely vegetated, shale, clay, gravelly knolls, and ridges. Potentially suitable habitat is present and could be disturbed.
Uinta Basin Cryptantha	<i>Cryptantha breviflora</i>	Type 3	Mid-elevation Shrub	Yes – Potential habitat includes dry barren ridges/bluffs of shale. Potentially suitable habitat is present and could be disturbed.
Wild Timothy	<i>Muhlenbergia racemosa</i>	Type 4	Riparian/Wetland	Yes – Occurs in areas dominated by birch, willows, and sedges; occurs on both mineral and organic substrates. Potential habitat occurs where willows are present. Potentially suitable habitat is present and could be disturbed.
Windward's Goldenbrush	<i>Ericameria winwardii</i>	Type 3	Barren, white clay-shale slopes (6,235-7,220 ft.)	No – Known from barren whitish outcrops of Twin Creek Limestone, mostly on erosive, clay-shale slopes, ridges, or gullies. This rock formation does not exist in the Project Area and thus the plant is not expected to occur.

¹Based on the 2011 Idaho BLM Special Status Plant Species List (BLM, 2011c)

²Type 1 = Federally listed, proposed and candidate species

Type 2 = range-wide/globally imperiled species – high endangerment

Type 3 = range-wide/globally imperiled species – moderate endangerment

Type 4 = species of concern

3.6.2 Environmental Consequences

This section addresses the environmental consequences of the Proposed Action on federally listed, candidate or proposed species (BLM Type 1) and on other BLM sensitive species (Type 2 through Type 4). Three Type 1 species described in Section 3.6.1.1, Canada lynx, greater sage-grouse, and wolverine are analyzed individually in this section for impacts from the proposed exploration drilling. Type 2 through Type 4 BLM sensitive species are addressed by category based on habitat use.

3.6.2.1 Alternative 1 Direct and Indirect Impacts

Federally Listed, Candidate, and Proposed Species

Canada Lynx

The Canada lynx has been recorded in the Project Area vicinity and may use the Project Area incidentally; the area is not suitable for denning. The lynx is a specialized predator of the snowshoe hare, which have been observed in the Project Area. However, the Project Area does not contain large forested areas preferred by the lynx and snowshoe hare. Potential disturbance impacts of exploratory drilling on the lynx, if they were using the Project Area, would be temporary and negligible.

Greater Sage-grouse

Construction and operation activities in the Project Area would consist primarily of the construction and improvement of roads, construction of drill pads, exploration drilling, and reclamation between late June and early October, outside of the lekking season (Section 2.1). Construction activities in sage-grouse habitat have the potential to disturb sage-grouse and modify their habitat. A 0.6-mile buffer around construction disturbances has been recommended in the East Idaho Uplands Sage-grouse Local Working Group Sage-grouse Conservation Plan, the Idaho Sage-grouse Conservation Plan, and the Pocatello RMP (ISAC, 2006 pp. 4-69; EIA, 2011, BLM, 2012a) and is used as one of the indicators for this analysis. Alternative 1 would result in up to 3.4 acres of surface disturbance/habitat removal of general sage-grouse habitat within 0.6 miles of the lek in the Caldwell Canyon property (3C006). This disturbance would account for less than 1 percent of the general habitat on this property. Disturbance in this area would include new access roads (approximately 1.7 miles) and up to 16 drill pads (based on double the amount of drill pads proposed in the 2012 Exploration Plan). This alternative would result in up to 0.8 acres of surface disturbance of general sage-grouse habitat within 0.6 miles of the lek just west of the northern portion of the Trail Creek property (3C011). This disturbance would account for less than 1 percent of the general habitat on this property. Proposed disturbance in this area would include new access roads (less than 0.5 miles) and up to 4 drill pads (based on double the amount of drill holes proposed in the 2012 Exploration Plan).

The effects of habitat removal and exploration disturbance on sage-grouse would depend on whether the leks are occupied during construction, timing of construction, and whether sage-grouse still use habitat in the vicinity of the Project Area. As mentioned in Section 3.6.1.1, the management status of the leks within 0.6 miles of the Project Area (3C006 and 3C011) was undetermined in 2013 and lek 3C006 has not been visited consistently in the last 5 years. Lek 3C006 and 3C011 were not active in 2013, however, one male sage-

grouse was observed at lek 3C011 (440 feet west from the Trail Creek property) in 2011. Based on recent use of the leks west of the Trail Creek property and presence of scat in the Caldwell Canyon property, it is probable that sage-grouse are using the Project Area during some portions of the year. Construction activities and drilling operations would typically take place between late June and early October, outside of the lekking season, thereby eliminating the potential for impacts to lekking grouse. Further, EPMs would be required per the Pocatello RMP that would preclude temporary human disturbance (e.g., routine maintenance, inspections, and construction activities) and mineral exploration during the lekking season, which would reduce the potential for impacts to breeding sage-grouse (Sections 2.3.3 and 3.6.2.2).

If sage-grouse were using the Project Area outside of the lekking season (e.g. for nesting or brood-rearing), exploration activities would have the potential to disturb the grouse and disrupt their behavior. Disturbance would primarily be in the form of noise, and to a lesser extent, human presence. Results of recent research on the environmental effects on sage-grouse from noise from natural gas extraction facilities indicate that noise (in the form of reproductions of man-made sound sources such as drilling operations and truck pass-bys) at certain magnitudes can lead to a substantial decline in sage-grouse lek attendance (Blickley, 2010). Additional research has documented impacts on sage-grouse from oil and gas-related activities, including road noise and drilling operations. These impacts were realized in the form of reduced lek attendance out to 4 miles from the point of disturbance (Walker et al., 2007). Since exploration drilling activities would not occur during the lekking season and seasonal sage-grouse restrictions near leks would apply (Section 2.3.3), impacts to mating opportunities and reproduction would not occur. However, results of this research do show sensitivity of sage-grouse to some noise levels up to 4 miles from the source, and therefore, noise from exploration activities have the potential to affect grouse up to 4 miles away. Noise from exploration activities, including construction, drilling, and reclamation activities have the potential to interfere with normal activities of sage-grouse and could result in energetic consumption. Impacts from noise could be realized through temporary changes in habitat use, foraging, predator avoidance, and parental care, and possibly local patterns of movement. As noise disturbances would be temporary and occur at each drill pad for short time periods (1 to 6 days, depending on worker shift type and drilling method [Section 2.1.1]), noise impacts to sage-grouse are expected to be temporary and long-term avoidance of habitat and loss of foraging opportunities are not likely.

Roads accessing the properties are within 1 mile of the six sage-grouse leks in and within the vicinity of the Project Area. While this project requires BLM approval, and restrictions of the use of these access roads could be applied, the roads are already currently in use by the public and do not represent a new disturbance. Traffic on the roads accessing the properties is expected to increase only slightly during exploration activities by P4 employees commuting daily to and from the properties. Since the roads currently receive use by the public and increases in use would be minor, no access restrictions are proposed at this time. Use of these roads has the potential to cause temporary disturbances to leks, if use occurred during the lekking season and if the leks were occupied. However, given that the operating period would not start until June at the earliest, use of these roads by P4 is not expected to impact lekking grouse.

Up to 16.2 acres of preliminary general sage-grouse habitat in the entire Caldwell Canyon property would be removed from implementation of the exploration plan, representing 1 percent of the property. Of this general habitat, approximately 82 percent is comprised of mountain shrub communities and the remainder consists primarily of forest communities; thus not all of the general sage-grouse habitat impacted is suitable for use by sage-grouse. Up to 3.2 acres of general habitat in the entire Trail Creek property would be removed from exploration, representing less than 1 percent of the property. Of this general habitat, approximately 77 percent is comprised of mountain shrub communities and the remainder consists primarily of aspen forest communities. Of the general habitat disturbed in the Caldwell Canyon property (accounting for the potential doubling of drill pads and roads), up to 0.7 acres would be in shrub-dominated riparian (0.3 acres) and wetland (0.4 acres) habitats. The Sage-grouse National Technical Team (Sage-grouse NTT, 2011) recommended that riparian areas and wet meadows within preliminary general sage-grouse habitat be conserved. Disturbance to these areas would be temporary and the disturbed areas would be reclaimed; no resulting loss in species diversity of grasses and forbs are expected. Note that mitigation is proposed in Section 2.4 that, if applied, would result in reduction of impacts to wetlands (Section 3.6.2.3). No riparian areas or wetlands would be disturbed in general habitat in the Trail Creek property.

Overall, adverse direct and indirect impacts to the greater sage-grouse are expected to be small. There could be temporary disturbance to sage-grouse from exploration activities outside of the lekking season and a minor amount of preliminary general sage-grouse habitat would be disturbed/removed (approximately 1 percent of the entire Project Area), including up to 0.7 acres of shrub-dominated riparian (0.3 acres) and wetland areas (0.4 acres; accounting for the doubling of potential disturbance). Disturbed areas would be reclaimed, but mature sagebrush communities could take up to 20 to 100 years to become established and provide suitable cover. No fences, off road vehicle use, or tall structures are associated with this project; therefore, risks to sage-grouse associated with these features and activities would not be created from the Proposed Action.

Wolverine

The Project Area could be used incidentally by wolverines potentially moving through the area. The wolverine is a generalist species and appears to be little affected by changes to the vegetative characteristics of its habitat. In addition, preliminary evidence suggests wolverines possibly shift activity to avoid the most used motorized and non-motorized activity areas within their home ranges. The Project Area likely does not sustain the depth of snow pack preferred by the wolverine for denning habitat. Potential disturbance impacts of exploratory drilling on the wolverine, if they were using the Project Area, would be temporary and negligible.

BLM Sensitive Species

Some of the BLM sensitive animal species listed in the Affected Environment (Section 3.6.1) would potentially be affected by the Proposed Action and are carried forward for further analysis. During development of the affected environment for sensitive species, several consistent themes arose regarding potential effects. Accordingly, this analysis groups potentially affected sensitive animal species into three categories based on habitat requirements and impacts to these habitat types:

1. Species potentially affected by activities in the mountain shrub habitat zone.
2. Primarily aquatic and riparian species potentially affected by activities in wetland, riparian, or aquatic habitats.
3. Species reliant on multiple habitats but primarily affected by activities in aspen and conifer forest habitats.

Table 15 depicts the categorization of the BLM sensitive species carried forward for further consideration. The environmental consequences discussion for BLM sensitive species is organized by the three categories presented above rather than by species. Individual species potentially impacted by the Proposed Action and rationale are displayed in Tables 13 and 14. Where additional detail is needed, individual species are addressed in this section under the category headings. Since federally listed, candidate, and proposed species (BLM Type 1) are addressed individually above, they are not addressed by category in this Section.

Table 15. Categorization of Potentially Affected Sensitive Species¹

Category	Applicable Species
Category 1 – Primarily mountain shrub-dependent species potentially affected by activities in mountain shrub habitats.	Pygmy Rabbit, Columbia Sharp-tailed Grouse, Sage Sparrow, Brewer’s Sparrow, Ferruginous Hawk, Green Needlegrass, Great Basin Desert Buckwheat, Tufted Cryptantha, Uinta Basin Cryptantha, Birchleaf Mountain-Mahogany, Cooper’s Rubber Plant, Hooker’s Buckwheat, Ibapah Springparsley, Silky Cryptantha, Starveling Milkvetch
Category 2 - Primarily aquatic and riparian-dependent species potentially affected by activities near waterways and riparian areas.	Bald eagle, Boreal Toad, Western Toad, Northern Leopard Frog, Common Garter Snake, Willow Flycatcher, Sharp-tailed Grouse, Wild Timothy
Category 3 - Species reliant on multiple habitats but primarily affected by activities in forested habitats.	Northern Goshawk, Calliope Hummingbird, Flammulated Owl, Lewis’ Woodpecker, Williamson’s Sapsucker, Hammond’s Flycatcher, Olive-sided Flycatcher, Loggerhead Shrike, Virginia’s Warbler, Uintah Chipmunk

¹Type 1 BLM sensitive species are not addressed in this table since they are addressed individually.

The types, duration, and extent of potential impacts on sensitive species from proposed construction, maintenance, and use of roads, construction of drill pads, and exploration drilling would be the same as described for vegetation in Section 3.4 and fish and wildlife in Section 3.5.

Category 1 Species – Mountain Shrub

The proposed action would result in physical disturbance and loss of up to 13.6 acres of mountain shrub habitat in the Caldwell Canyon property and up to 32.4 acres of this habitat in the Trail Creek property that may be used by Category 1 species during part or all of the year (Tables 9 and 10). This could result in localized disruption of breeding and nesting activities of Category 1 birds such as the Brewer's sparrow (Table 13). The temporary effects to Category 1 wildlife from construction disturbance would cease once construction activities have ended. However, impacts from habitat loss would be longer-term, until the shrub community becomes re-established. Proposed exploration could also result in the potential for trampling of or removal of habitat for sensitive plant species (Table 14). If sensitive plant species are recorded within proposed disturbance areas, roads and pads would be micro-sited; therefore, sensitive plant species would not be removed or trampled (Section 2.3.2). Proposed surface disturbances would be revegetated once the drilling program is complete and disturbed areas would return to a vegetated state within 1 to 2 years after the project is complete. However, the vegetation composition would be altered, seral condition would be altered over the short-term, and mature shrub and forest communities would not be established for 20 to 100 years (Stevens and Monsen, 2004; Baker, 2006; Section 3.4.2). The potential to introduce noxious weeds and other invasive species would exist, as described under Section 3.4. If weeds become established in disturbed areas, this would reduce the quality of habitat for Category 1 wildlife species and could preclude the establishment of Category 1 plants. However, the potential for weeds to be established and spread would be minimized with the application of EPMS and BMPs (Section 2.3.2).

Overall, adverse direct impacts to Category 1 species are expected to be minor due to the small project footprint, temporary nature of disturbances, and implementation of EPMS and BMPs. Potential indirect impacts to sensitive plants and wildlife would be the same as described in Sections 3.4 and 3.5. The potential for indirect impacts would be avoided or minimized through utilization of environmental protection measures as described in Sections 2.3 and 3.6.2.2.

Category 2 Species – Aquatic and Riparian

Habitat for Category 2 species, in the form of riparian, wetland, and aquatic habitats, occurs in the Project Area. Potential impacts to habitat for Category 2 wildlife species would be similar to that described for fish and wildlife (Section 3.5). Drill pads and roads are not proposed within 500 feet of perennial streams (see Section 3.7); therefore, aquatic species and habitat in perennial streams would not be directly affected. Exploration activities are proposed that would disturb or remove up to 0.7 acres of riparian habitats in the Caldwell Canyon property and up to 0.4 acres in the Trail Creek property. Further, truck traffic along the existing road that follows Caldwell Creek from Slug Creek Road and road crossings of wetlands and riparian areas in both properties could intermittently and temporarily disturb Category 2 wildlife species along Caldwell Creek. Activities in these areas create the potential for sediment entering aquatic habitats and affecting the habitat and associated aquatic species. However, EPMS and BMPs would be required that would minimize or eliminate the potential for sediment from entering aquatic habitats and impacting Category 2 species (Section 3.6.2.2). Note that mitigation is proposed in Section 2.4 that, if applied, would result in reduction of impacts to wetlands (Section 3.6.2.3). Proposed exploration

could also result in the potential for trampling of or removal of habitat for sensitive plant species (wild timothy; Table 14). If sensitive plant species are recorded within proposed disturbance areas, roads and pads would be micrositied; therefore, sensitive plant species would not be removed or trampled (Section 2.3.2).

The operator intends to obtain drilling water from Slug Creek, Trail Creek and/or Caldwell Creek. At most, the operator would withdraw approximately 4,000 gallons per day which could intermittently result in small surface flow reductions in Caldwell Creek, Trail Creek and/or Slug Creek. However, flow changes from water withdrawals would be minor compared to typical flow volumes in these waterways (Section 3.7.2.1). Water withdrawals from Caldwell Creek would have a greater effect on in-stream water levels than Slug Creek, since Caldwell Creek is a smaller waterway. However, these flow reductions would be temporary during and immediately after filling the water trucks and for most of the day there would be no flow reductions. Additionally, these temporary small flow changes would not be expected to adversely affect riparian and wetland vegetation conditions due to the short time period flow reductions would occur. Therefore, water withdrawals and flow-related impacts to Category 2 species in Caldwell Creek and/or Slug Creek are expected to be negligible. Further, with application of EPMs that would prevent the entrapment of fish in water intake pumps (Section 2.3.3), water withdrawals from Slug Creek and Trail Creek would not adversely affect the aquatic fish and wildlife.

Fish – Yellowstone cutthroat trout are known to occur in Trail Creek, approximately 0.9 miles west of the Trail Creek property. No streams from the Project Area feed into Trail Creek, thus no impacts to trout in this stream would result from implementation of the Proposed Action. Yellowstone cutthroat trout could occur in Slug Creek, which could receive flow from Canyon Creek during extreme runoff events. Impacts to water quality of Caldwell Creek are not expected due to application of the SWPPP and other BMPs designed to minimize erosion and transport (Section 2.3.5 and Section 3.7.2.1) and the distance of this stream from exploration disturbances (~470 feet). Since impacts to water quality of Caldwell Creek would not result from the Proposed Action, impacts to the quality of Slug Creek and the associated cutthroat trout fishery would also not occur. Further, Dry Creek would not be impacted from the proposed exploration, thus the cutthroat trout fishery in this stream also would not be impacted.

Birds – Potential habitat for willow flycatcher would be removed in the Project Area during exploration. If willow flycatcher were to nest along Caldwell Creek, they could be disturbed by truck traffic and noise from vehicles accessing the drill sites on the road along Caldwell Creek and/or drilling holes proposed on the south side of Caldwell Creek. Potential impacts to nesting flycatchers would be reduced with application of preconstruction surveys and spatial seasonal buffers around nests (Section 2.3.3).

Amphibians – Category 2 amphibian species (Table 15) could use the stock ponds and wetland areas during breeding and non-breeding periods. There are several wetland crossings on the south side of Caldwell Creek and one on the east side of Trail Creek; disturbances in these areas could have direct effects on Category 2 amphibian species if they occur in the proposed disturbance footprint during implementation.

Adverse direct and indirect impacts to Category 2 species would be minimized by application of the EPMs and BMPs or would be minor due to nature of the proposed work under Alternative 1.

Category 3 Species – Multiple Habitats

Category 3 species could be affected by Alternative 1 primarily through lost foraging opportunities, disturbance during the breeding season, and removal of forest vegetation. Noise and human presence could also disturb Category 3 species and temporarily displace them to adjacent undisturbed habitats.

Birds – Nesting activities of Category 3 raptors could be temporarily disturbed during exploration activities. However, implementation of seasonal restrictions would result in the minimization or avoidance of this impact. Raptors could temporarily be precluded from hunting on portions of the Project Areas during project implementation, and would likely hunt in nearby undisturbed habitats. Birds, such as the Calliope hummingbird, could nest in aspen patches and forage within mountain shrub habitats within the Project Area. Exploration activities would preclude this species, and other birds using similar habitats, from foraging on portions of the Project Area. Construction of roads and drilling activities in mountain shrub habitat that is proximate to aspen pockets within the Project Area could also disturb nesting and foraging by Lewis' woodpecker, Virginia's warbler, and Williamson's sapsucker if they occur in the aspen areas. However, the proposed drill holes and roads would be limited in extent and largely outside the aspen areas. Up to 2.0 acres of aspen would be removed during exploration in the Caldwell Canyon property and up to 9.8 acres in the Trail Creek property, representing a minor loss of this habitat (less than 1 percent of this vegetation type in each property). Potential effects on nesting birds would be avoided or minimized with implementation of seasonal restrictions, and other EPMs and BMPs (Section 2.3).

Flammulated owls and northern goshawks could occur in the Douglas-fir forest in the Project Area. However, removal of conifer habitat would be minimal (up to 0.4 acres in the Caldwell Canyon property and individual trees or groups of trees in the Trail Creek property). Therefore indirect impacts to habitat for these species would be minimal. Indirect effects to flammulated owls from construction disturbance could occur, but are expected to be negligible as flammulated owls have been documented as being tolerant of human presence (Hayward and Verner, 1994 p. 41).

Mammals –The Uintah chipmunk could occur in the Douglas-fir forest at the north end of the Caldwell Canyon property and, if present, could be adversely affected by disturbance to dens or temporary disturbance by noise and human presence. However, impacts are expected to be minor since minimal disturbance (up to 0.4 acres) would occur within areas with conifer forest.

Overall, adverse direct and indirect impacts to Category 3 species are expected to be minor and temporary.

3.6.2.2 Environmental Protection Measures and Best Management Practices

P4 has committed to several EPMs and BMPs in their exploration plans that address and would reduce or eliminate some potential TES impacts commonly associated with earth-disturbance projects. The EPMs and BMPs are discussed in more detail in Section 2.3. The measures and practices and the impact issue(s) they address are summarized in Table 16.

Table 16. Threatened, Endangered, and Sensitive Species Issues – Minimizing Impacts

Environmental Protection Measure	Potential Impacts Avoided	Applicable TES Category	Comments
Seasonal closure (operating season between late June/early July and early October)	<ul style="list-style-type: none"> • Potential to adversely affect TES during winter months • Potential to adversely affect sage-grouse lekking activity 	All	<ul style="list-style-type: none"> • Avoids disturbance related effects on possible sage-grouse winter activity and during spring lekking • Activity during the sage-grouse lekking period would be avoided • Activity during the wet (mud) season is minimized resulting in water quality benefits
Pre-construction surveys for migratory birds	<ul style="list-style-type: none"> • Impacts to nesting birds 	All	<ul style="list-style-type: none"> • Conduct surveys prior to exploration during breeding periods for migratory birds to determine the presence of active nests
Seasonal restrictions	<ul style="list-style-type: none"> • Impacts to breeding sage-grouse • Impacts to wintering elk • Impacts to elk calving and deer fawning • Impacts to nesting raptors • Impacts to nesting migratory birds 	All	<ul style="list-style-type: none"> • Restrict activities within 0.6 miles of active leks during the breeding season • Restrict activities in big game winter range • Restrict activities near elk and deer calving and fawning areas • Restrict activities near raptor nests during the breeding season • Restrict activities near non-raptor migratory bird nests
Retain snags and mature vegetation to the extent possible	<ul style="list-style-type: none"> • Removal of important nesting habitat and cover 	1 and 3	<ul style="list-style-type: none"> • Maintains important nesting habitat and cover
Pre-construction surveys for TES plants	<ul style="list-style-type: none"> • Impacts to TES plants 	1 and 2	<ul style="list-style-type: none"> • If TES plants are found during surveys, project features would be microsited to avoid impacts.

Environmental Protection Measure	Potential Impacts Avoided	Applicable TES Category	Comments
Construct roads in the fall where possible	<ul style="list-style-type: none"> Impacts to nesting birds 	1, 2, and 3	<ul style="list-style-type: none"> This action would be discretionary, based on specific conditions, so that soil erosion over the winter would not result.
Site drill pads and roads to avoid wetland and riparian areas where feasible	<ul style="list-style-type: none"> Impacts to wetlands and shrub-dominated riparian areas 	2	<ul style="list-style-type: none"> Note where avoidance is not feasible, impacts would result and coordination with the USACOE regarding permitting would be required.
Manage existing roads and trails to minimize disturbance to occupied leks and other important seasonal habitats	<ul style="list-style-type: none"> Impacts to sage-grouse 	1	<ul style="list-style-type: none"> Minimizes disturbance to sage-grouse leks; location of other seasonal sage-grouse habitats are not known
Groundwater protection and use of highly diluted drilling fluids	<ul style="list-style-type: none"> Potential drilling fluid to contaminate groundwater 	2	<ul style="list-style-type: none"> Avoids potential water quality and fisheries issues
No culvert installations proposed	<ul style="list-style-type: none"> Sediment entry to riparian and wetland habitats 	2	<ul style="list-style-type: none"> No culvert installations are proposed in the exploration plans

Environmental Protection Measure	Potential Impacts Avoided	Applicable TES Category	Comments
Sumps would be constructed at drill pads for the collection of drill cuttings, drilling mud, and wastewater	<ul style="list-style-type: none"> • Would help to prevent drill fluids and cuttings from entering drainages which would reduce the potential for contamination of aquatic habitats. 	2	<ul style="list-style-type: none"> • Avoids potential water quality and fisheries issues
Stormwater Pollution Prevention Plan	<ul style="list-style-type: none"> • Erosion and sedimentation of surface waterways could adversely affect water quality or alter riparian vegetation conditions. 	2 and 3	<ul style="list-style-type: none"> • Minimizes potential water quality effects on Yellowstone cutthroat trout and sediment-induced effects on Caldwell, Slug, and Dry Valley Creeks
Isolation and Control of Toxic/Deleterious Materials and Noxious Weeds	<ul style="list-style-type: none"> • Surface water contamination • Exposure hazard to wildlife • Introduction of noxious weeds to the Project Area reduces habitat quality 	All	<ul style="list-style-type: none"> • Minimizes effects to vegetation conditions benefitting sage-grouse, Brewer's sparrow, raptors and amphibians
Fire prevention and control measures	<ul style="list-style-type: none"> • Potential to accidentally burn shrub and forest habitats 	1 and 3	<ul style="list-style-type: none"> • Minimizes the potential for adverse fire-related effects on mountain shrub, aspen and conifer
Reclamation and revegetation plan	<ul style="list-style-type: none"> • Post-project habitat quality reduction • Introduction of noxious weeds • Long-term erosion issues 	All	<ul style="list-style-type: none"> • Reclaims surface disturbances benefitting TES after project completion • Post-drilling water quality effects avoided

Environmental Protection Measure	Potential Impacts Avoided	Applicable TES Category	Comments
Drill hole plugging and abandonment	<ul style="list-style-type: none"> • Potential hazard to wildlife (entrapment within drill holes) Potential to alter groundwater conditions in riparian areas through preferential flow paths 	All	<ul style="list-style-type: none"> • Potential for drill holes to trap mainly small animals would be avoided • Preferential flow paths not anticipated and avoided by drill hole plugging, thus avoiding potential riparian and wetland vegetation effects

3.6.2.3 Mitigation

Application of mitigation for wetlands, which would require the siting of drill pads and holes to avoid wetlands, siting of new roads to minimize crossings of wetlands, the use of temporary, manufactured crossings over wetlands in the Caldwell Canyon property, and realignment of proposed roads in both properties (Section 2.4.1), would result in an increase in 0.02 acres of disturbance to wildlife habitat in the Trail Creek property and a decrease in 0.3 acres of disturbance to wildlife habitat in the Caldwell Canyon property than without application of mitigation. Modification of the road alignment in the Trail Creek property would result in 33.2 acres of impacts to mountain shrub communities, 0 acres in wetlands, and 9.2 acres in aspen woodlands, representing a reduction in impacts to wetland and aspen communities and an increase to mountain shrubland communities than without application of mitigation (Section 3.4.2.1). Modification of three road alignments in the Caldwell Canyon property and use of temporary bridges over ephemeral drainages and wetlands would result in approximately 1.0 acres of impacts to mountain shrub communities, 0.2 acres in wetlands, and 0.1 acres in shrub-dominated riparian communities, representing a decrease in impacts to wetland and shrub-dominated riparian communities and an increase to mountain shrub communities than without application of mitigation. Proposed mitigation would result in minimization of impacts to riparian areas and associated benefits to aquatic wildlife species.

Adjustment of road alignments to avoid wetlands would not result in any changes to impacts to preliminary general sage-grouse habitat than that described under the Proposed Action without mitigation; up to 19.4 acres of preliminary general sage-grouse habitat would still be removed.

Application of mitigation for sage-grouse, consisting of marking strategically-selected barbed-wire fences in the vicinity of the Project Area (Section 2.4) would increase fence visibility and reduce the potential for sage-grouse collisions. This mitigation would not reduce the loss of preliminary general sage-grouse habitat or reduce the potential for noise disturbance; however, reducing the potential for sage-grouse collisions would benefit the sage-grouse population in the area and offset the impacts of the Proposed Action on sage-grouse and their habitat.

3.6.2.4 Alternative 2 Direct and Indirect Impacts

Alternative 2 would consist of not approving the exploration and prospecting activities and not issuing an exploration license and prospecting permit. Therefore, the proposed drill holes and associated access roads would not be constructed, and TES in the Project Area would not be disturbed over existing conditions and TES habitat would not be removed or altered. Alternative 2 would not cause direct or indirect impacts to TES.

3.7 Water Quality – Surface Water and Groundwater

3.7.1 Affected Environment

The Caldwell Canyon and Trail Creek properties are located within the Blackfoot sub-basin, which encompass an area of just over 1,270 square miles. Major drainages in the Blackfoot sub-basin include Slug Creek, Wolverine Creek, Brush Creek, Corral Creek, Meadow Creek, Trail Creek, Angus Creek, Diamond Creek, Lanes Creek, Dry Valley Creek, and the Little Blackfoot River. The major drainages in the immediate vicinity of the Caldwell Canyon and Trail Creek properties include three tributaries to the Black foot River: Dry Valley Creek to the east of the Caldwell Canyon property; Slug Creek to the west of the Caldwell Canyon property and east of the Trail Creek property; and Trail Creek to the West of the Trail Creek Property. The Blackfoot River flows in a southwesterly direction directly north of the Caldwell Canyon property and then flows in a northerly direction northwest of the Trail Creek property. Stream flow in the drainage is sourced from springs and is augmented with precipitation and snowmelt. There are no perennial streams within 500 feet of the proposed activities in the Project Area.

The main water sources for the drilling project would be from Trail Creek, Slug Creek, and/or Caldwell Creek. Two springs in the Caldwell Canyon property may also be used as a secondary water source. Existing flow conditions for both Trail Creek and Slug Creek are presented below. Currently there is no existing flow data for Caldwell Creek.

Flow in Slug Creek is typically highest during spring runoff, and decreases during the late summer and early fall with flows being highest in the lower section of the creek near the proposed withdraw sites. Flow in Slug Creek near the proposed withdraw sites was measured at sites DSW-35 and DSW-36 for the Draft Baseline Technical Report-Surface Water Resources Baseline Characterization for the Dairy Syncline Mine Project (unpublished report) in the fall of 2008 and 2011 and the spring of 2009 and 2011 (Table 17, DSW-35 and DSW-36). Additional flows were collected annually at DSW-35 by IDEQ for water quality monitoring efforts of the Southeast Idaho Phosphate Mining Resource Area Selenium Project. There are two IDEQ Beneficial Use Reconnaissance Program (BURP) monitoring sites in the immediate vicinity of DSW-35 (SPOCA013) and upstream of DSW-36 (SDEQA1941). Flow was collected at SPOCA013 in 1994 and 2001 and at SDEQA1941 in 2010. Table 17 displays dates of water flow sampling and flow (cfs) results.

Table 17. Historical Flows in Slug Creek

Flow Measurement Sites	Discharge (cfs)												
	Fall 2008 ¹	Fall 2011 ¹	Spring 2004 ²	Spring 2006 ²	Spring 2007 ²	Spring 2008 ²	Spring 2009 ¹	Spring 2010 ²	Spring 2011 ¹	Spring 2012 ²	Summer 1994 ³	Summer 2001 ³	Summer 2010 ³
DSW-35	3.312	8.043	1.1	10.1	6.4	7.2	18.432	7.7	48.580	6.8	1.67	0.97	--
DSW-36	2.194	4.767	--	--	--	--	13.444	--	44.820	--	--	--	1.0

¹Flow data was collected for the Draft Baseline Technical Report for the Dairy Syncline Mine Project (unpublished data).

²Flow data was collected by IDEQ Pocatello Regional Office for the annual water quality monitoring efforts in the Southeast Idaho Phosphate Mining Resource Area Selenium Project (IDEQ, 2013a)

³BURP Monitoring data collected by IDEQ (IDEQ, 2013b)

Flow in Trail Creek, as in Slug Creek, is typically highest during spring runoff and decreases during the late summer and early fall. Flow in Trail Creek was collected by IDEQ annually in the spring from 2006 through 2012 for water quality monitoring efforts of the Southeast Idaho Phosphate Mining Resource Area Selenium Project. There are also two IDEQ BURP monitoring sites in the immediate vicinity of the proposed withdraw site (SPOCA004, and SPOCA050). Flow was collected at SPOCA050 in the summer of 1996 and at SPOCA004 in the summer of 2001. There is currently no flow data available for the fall season. Table 18 displays dates of water flow sampling and flow (cfs) results.

Table 18. Historical Flows in Trail Creek

Flow Measurement Site	Discharge (cfs)								
	Spring 2006 ¹	Spring 2007 ¹	Spring 2008 ¹	Spring 2009 ¹	Spring 2010 ¹	Spring 2011 ¹	Spring 2012 ¹	Summer 1996 ²	Summer 2001 ²
Trail Creek	25.4	4.2	12.9	26.0	7.9 ¹	7.9 ¹	5.6	7.6	0.91

¹ Flow data was collected by IDEQ Pocatello Regional Office for the annual water quality monitoring efforts of the Southeast Idaho Phosphate Mining Resource Area Selenium Project (IDEQ, 2013a)

² BURP Monitoring data collected by IDEQ (IDEQ, 2013b)

The only surface water body near the Project Area that has a beneficial use designation assigned by Idaho Department of Environmental Quality (IDEQ) is the Blackfoot River-confluence of Lanes and Diamond Creeks to Blackfoot Reservoir (IDAPA, 2010). Table 19 lists the Blackfoot River and the associated beneficial use designations (IDAPA, 2010). However, regardless if a water body is non-designated, the standards for cold water aquatic life, contact recreation, agricultural water supply, industrial water supply, wildlife habitat, and aesthetics apply to all water bodies in the State of Idaho. Designated beneficial uses for the Blackfoot River include cold water aquatic life, salmonid spawning, primary contact recreation, domestic water supply, and special resource waters.

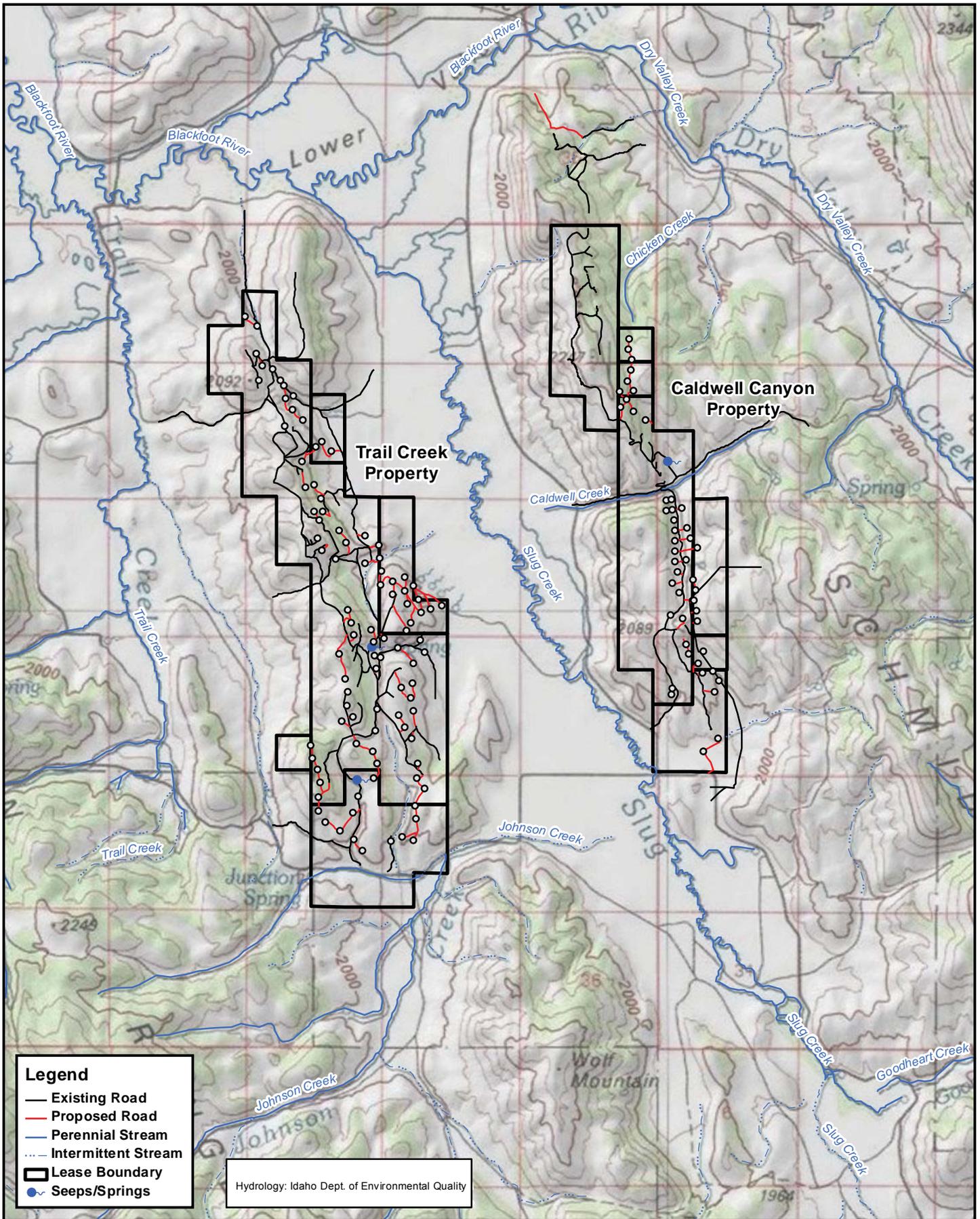
Table 19. Surface Water Beneficial Use Designations

Hydrologic Unit Code	Sub-Basin	Water Body	Type	Aquatic Life	Recreation	Other
17040207	Blackfoot	Blackfoot River – Confluence of Lanes and Diamond Creeks to Blackfoot Reservoir	Perennial	COLD, SS	PCR	DWS

Abbreviations: COLD = cold water aquatic life; DWS = domestic water supply; PCR = primary contact recreation (swimming); SS = salmonid spawning

303(d) Listed Impaired Water Bodies from the IDEQ Working Principles and Policies for the 2010 Integrated (303[d]/305[b]) Report dated August, 2011, with final US Environmental Protection Agency approval on September 20, 2011 (IDEQ, 2011)

Section 303(d) of the Clean Water Act requires states to identify streams and lakes that do not meet water quality standards and to establish total maximum daily loads (TMDLs) for the listed pollutants. All of the unnamed tributaries to Dry Valley and Slug creeks within the vicinity of the Caldwell Canyon property and all of the streams within the vicinity of the Trail Creek property have been identified as impaired water bodies for the cold water aquatic life designation due to sedimentation/siltation (IDEQ, 2001). Livestock grazing and mining (Dry Valley Creek only) have been identified as a likely source of pollutants in these drainages (IDEQ, 2001). A TMDL was created in 2001 by the IDEQ to address the cold water aquatic life use impairments caused by sediment and nutrients in the Blackfoot River sub-basin. Table 20 lists the water bodies within 1 mile of the Caldwell Canyon and Trail Creek properties, the 303(d) listing, and identified impairments for which there is no U.S. Environmental Protection Agency-approved TMDL (IDEQ, 2001 and 2011). The water bodies listed in Table 20 are also presented graphically in Figure 8.



- Legend**
- Existing Road
 - Proposed Road
 - Perennial Stream
 - Intermittent Stream
 - ▭ Lease Boundary
 - Seeps/Springs

Hydrology: Idaho Dept. of Environmental Quality



Date: 5/30/2013

P4 Production

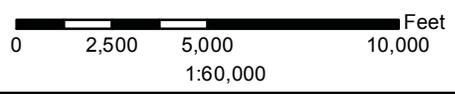


Figure 8
Project Area Hydrology
Caldwell Canyon/Trail Creek EA

Table 20. 303(d) Water Body Listings

Water Body	Assessment Unit	Stream Length (miles)	303(d) Listed Impaired Water ¹	303(d) Listed Impairment	TMDL Pollutant
Mill Canyon (West)	ID17040207S K010_02	33.54	No	N/A	N/A
Blackfoot River— Headwaters to Slug Creek	ID17040207S K010_04	13.82	Yes	Oxygen, Dissolved; Selenium; and Temperature	Sedimentation/ Siltation
Blackfoot River- Confluence of Lanes and Diamond Creeks Blackfoot Reservoir	ID17040207S K010_05	20.67	Yes	Oxygen, Dissolved; Sedimentation/ Siltation; Selenium; and Temperature	Sedimentation/ Siltation
Trail Creek- Headwaters and Unnamed Tributaries	ID17040207S K011_02	17.88	Yes	Sedimentation/ Siltation	Sedimentation/ Siltation
Trail Creek-Source to Mouth (Below Findlayson Ranch)	ID17040207S K011_03	5.54	Yes	Fishes Bioassessments; Habitat Assessment; Low Flow Alterations; and Sedimentation/ Siltation	Sedimentation/ Siltation
Upper Trail Creek-2 nd Order Section to Below Findlayson Ranch	ID17040207S K011_03a	1.08	Yes	Sedimentation/ Siltation	Sedimentation/ Siltation
Slug Creek- Headwaters and Unnamed Tributaries	ID17040207S K012_02	101.64	Yes	Sedimentation/ Siltation	Sedimentation/ Siltation
Lower Johnson Creek	ID17040207S K012_03a	2.91	Yes	Biota/Habitat Bioassessments	N/A

Water Body	Assessment Unit	Stream Length (miles)	303(d) Listed Impaired Water ¹	303(d) Listed Impairment	TMDL Pollutant
Slug Creek-Source to Mouth	ID17040207S K012_04	18.15	Yes	Benthic-Macro; Biota/Habitat; Fishes Bioassessments; Habitat Assessment; Low Flow Alterations; Physical Substrate; and Sedimentation/ Siltation	Sedimentation/ Siltation
Dry Valley Creek- Unnamed Tributaries	ID17040207S K013_02	21.30	Yes	Sedimentation/ Siltation	Sedimentation/ Siltation
Chicken Creek (Tributary to Dry Valley Creek)	ID17040207S K013_02b	2.86	Yes	Sedimentation/ Siltation; and Selenium	Sedimentation/ Siltation
Dry Valley Creek- Source to Mouth	ID17040207S K013_03	4.98	Yes	Benthic-Macro; Biota/Habitat; Habitat Assessment; and Selenium	N/A

¹Source: IDEQ, 2001 and 2011

3.7.1.1 Caldwell Canyon

Figure 8 shows the surface water resources in the area of the Caldwell Canyon property. The Project Area sits between Slug Creek to the west, Dry Valley Creek to the east. Slug creek flows northwest where it enters the Blackfoot River northwest of the Project Area, and Dry Valley Creek also flows northwest where it enters the Blackfoot River north and east of the Project Area. There is one perennial stream within the Caldwell Canyon Property, Caldwell Creek, which flows west through the center of the Project Area towards Slug Creek. In addition, there is one intermittent stream that flows through the northwestern corner of the Project Area.

Several springs have been identified in the Caldwell Canyon property by visual observation and by reviewing regional topographic maps (Figure 8). Two of these have been selected in

this property as possible water sources for drilling. No drinking water wells are known to be located within or in the near vicinity of the proposed exploration drilling activities.

Groundwater sampling occurred in 2009 from two sites located at the very south end of the Caldwell Canyon property. In these two holes, the groundwater elevation is 6,346 and 6,381 feet and the depth to water was 15 and 9 feet, respectively. Additional groundwater sampling occurred in 11 locations from sites within 1 mile of the southern boundary of the Caldwell Canyon property boundary. The groundwater elevation at these sites is between 6,325 and 6,368 and the average depth to water was between 8 and 95 feet depending upon whether the drill hole was collared near the ridge top or closer to the valley floor. These water levels indicate a mix of regional groundwater levels and localized perched water tables. The majority of the phosphate resource in the Project Area is believed to be well above the regional water table.

3.7.1.2 Trail Creek

Figure 8 shows the surface water resources in the area of the Trail Creek Property including creeks and springs. The Project Area is between Slug Creek and Trail Creek. Slug Creek flows northwest where it enters the Blackfoot River north of the Project Area and Trail Creek flows northwest where it enters the Blackfoot River northwest of the Project Area. The Project Area includes Johnson Creek, a perennial stream in the southern portion of the project area that flows east towards Slug Creek, and three intermittent streams including: an unnamed stream in the northern portion of the Project Area that drains Mill Canyon; a small unnamed intermittent stream in the middle section of the project area that flow through the ID-014081 lease; and a small stream flowing south towards Johnson Creek in the southern area of the project.

Several seeps/springs have been identified in the Trail Creek property by visual observation and by reviewing regional topographic maps (Figure 8). No drinking water wells are known to be located within or in the near vicinity of the proposed exploration drilling activities. Groundwater sampling has not been associated with this property and therefore, the groundwater elevation is unknown.

3.7.2 Environmental Consequences

3.7.2.1 Alternative 1 Direct and Indirect Impacts

Surface Water

It is estimated that 4,000 gallons of water would be removed each day for the proposed activities. P4 plans to obtain Temporary Water Use Permits from the IDWR for the 2013 calendar year including two locations on Slug Creek, one location on Trail Creek, one location on Caldwell Creek, and two springs. The amount of water that would be allowed for withdraw under the Temporary Water Use Permit is 5 acre-feet per year with a maximum withdraw rate of 0.10 cubic feet per second. The temporary permits would be submitted yearly to the IDWR.

Flow data has been collected during previous studies for both Trail Creek and Slug Creek (Section 3.7.1), but flow data is currently not available for Caldwell Creek. Based on the flow data collected at or near the proposed withdraw site on Trail Creek, if the maximum amount allowed for withdraw (0.10 cfs) occurred in Trail Creek during average flows in

spring (12.8 cfs) and summer (4.3 cfs) this would account for approximately 0.8 and 2.3 percent of the flow respectively. Based on the flow data collected at or near the proposed Slug Creek withdraw site DSW-35, if the maximum amount allowed for withdraw (0.10 cfs) occurred in Slug Creek during average flows in the fall (5.7 cfs), spring (13.3 cfs), and summer (1.3cfs), this would account for approximately 1.8, 0.8, and 7.7 percent of the flow respectively. Based on the flow data collected at or near the proposed Slug Creek withdraw site DSW-36, if the maximum amount allowed for withdraw (0.10 cfs) occurred in Slug Creek during average flows in the fall (3.5 cfs), spring (29.1 cfs), and summer (1 cfs), this would account for approximately 2.9, 0.3, and 10 percent respectively. Therefore, water withdrawals would have temporary and minor effects on surface waters during spring to early summer when flows are greater. As flows decrease throughout the summer and fall, P4 would supplement water supplies from Caldwell Creek and springs as needed. If flows are ever too small for withdraw in the creeks and springs, P4 would develop a well to be used for drilling water in compliance with IDWR rules and regulations.

Exploration drilling produces small volumes of formation water and drill cuttings that could potentially impact nearby surface waters. However formation water and drill cuttings are not anticipated to impact nearby surface water as the volumes of either would be insufficient to be transported or to generate leachate that would reach any surface waterbodies. The maximum estimate of drill cuttings for each hole drilled in the Caldwell Canyon property would be 2.64 cubic yards and 3.09 cubic yards for the Trail Creek property. No perennial streams occur within 500 feet of proposed drilling activities and erosion control measures would be utilized for all activities within the Project Area (Section 2.3.5).

Two new temporary intermittent stream crossings are proposed in the Trail Creek property and eight new ephemeral drainage/wetland crossings are proposed in Caldwell Canyon (Figure 5 call-out boxes); these could potentially lead to increased sediment loads into the stream but would be minimized by implementation of the BMPs. Potential sediment impacts would be minimized through utilization of a SWPPP, and in the long-term, by the required revegetation plan (Section 2.3.5 and 3.7.2.2). Specific BMPs included in Section 2.3.5 are in accordance with BMP Practices for Mining in Idaho. Accordingly, with implementation of BMPs, the proposed drilling would not adversely impact or further contribute to water limitations of Trail Creek, Slug Creek, Caldwell Creek, or other drainages in the Blackfoot sub-basin, including the Blackfoot River.

Noxious weeds, where located, would be controlled within new disturbance areas or disturbed areas such as access roads and drill sites (Section 2.3.2). Impacts to surrounding waterbodies from herbicide application would be avoided by using low toxicity chemicals such as Milestone, Telar, and Spret; applying herbicides directly to plants by hand application; and applying chemicals according to the manufacturers instructions.

Groundwater

The possible risks to groundwater from proposed exploration drilling include:

- the direct impact of the drilling fluids and well materials on groundwater;
- the potential of drilling fluids or formation water stored on the surface infiltrating into groundwater; and
- leachate from drill cuttings infiltrating into the groundwater.

One of the potential risks to groundwater from exploration drilling is the direct impact of drilling fluids and well material on groundwater. However, direct impacts to groundwater from the proposed well drilling are not anticipated for the following reasons: the small volume of drilling fluids compared to the size of the aquifers and the diluted concentration of the drilling fluids and material used. Most of the exploration drill holes are not expected to reach groundwater, limiting the potential exposure of the groundwater to drilling. Small concentrations of lubricating foam, bentonite mud, and/or polymers would be used to assist with exploration drilling activities (Section 2.1.1). Where interception of groundwater could occur, the volume of drill fluids used (approximately 0.5 gallons of foam and 1 gallon of mud and/or polymer solution per 3,000 to 4,000 gallons of make-up water) for an average depth drill hole is considered *de minimis* and would be of insufficient volume to pose a substantial threat to groundwater. Further, the period that the foreign materials within these fluids could contact groundwater would be very short, due to the short period that the drill holes would be open (1 to 6 days; Section 2.1.1.4). The drilling foam, polymers, and mud materials that are proposed for use in the drilling process would be highly diluted and are typically used for this type of application. As a result, the drilling fluids, if intercepted with groundwater, are not anticipated to have a negative impact on groundwater.

The drilling would produce an insignificant volume of fluids (formation water and drilling fluids) and drill cuttings. The approximate volume of rock chips or core samples removed per drill hole on the Caldwell Canyon property would be between 0.62 and 2.64 cubic yards (average 1.85 cubic yards). The approximate volume of rock chips or core samples removed per drill hole on the Trail Creek property would be between 0.94 and 3.09 cubic yards (average 2.02 cubic yards). The drill cuttings and fluids from the well would be confined to the drill holes and contained in sumps and piles adjacent to the drill holes during the short drilling period (1 to 6 days). The volume of drill cuttings would only be exposed to the elements during the drilling period. The limited size and exposure time of the drill cuttings pile could create an insignificant amount of leachate, if any. Drilling fluids could potentially infiltrate into the ground that may leach harmful elements out of the soil and reach the groundwater. However, this is unlikely given the relatively small volume of fluid available for infiltration, the small area of vadose zone that could potentially be impacted, and the lack of proven potential contaminants in the vadose zone. As a result of the small volume of source material (drill cuttings) and the small volume of fluid produced from drilling, any potential impact would be insignificant in comparison with the volume of the aquifer.

Once drilling activities are complete for a particular drill location, the drill hole would be sealed with bentonite grout or acceptable alternatives per State of Idaho regulations (and in all cases, capped with cement). The fluids inside the sump would be allowed to evaporate or infiltrate into the ground surface, and the sump would be filled and reclaimed. The majority of the drill cuttings would be returned to the drill holes or buried in the sump. Selenium exposure leaching from the drill cuttings and from the Meade Peak Member is a potential contaminant of concern in the Project Area. Over the last decade, numerous studies have been conducted to improve the understanding of selenium occurrence, toxicity, persistence, and mobility at phosphate mining sites in southeastern Idaho (Perkins and Foster, 2004; Hein et al., 2004; Grauch et al., 2004; Herring and Grauch, 2004; Maxim, 2000, 2002, 2005). These studies provide a regional overview of the sources, release mechanisms, and transportation pathways for selenium and other constituents of potential

concern associated with phosphate mining. Impacts to groundwater from selenium during exploration drilling in the Caldwell Canyon and Trail Creek properties are expected to be negligible due to the extremely small volume of seleniferous shale being removed from the drill holes; the limited surface disturbance of the Meade peak Member as the drill pads will typically be located on the Rex Chert Member; the short potential infiltration time; the limited exposure to rain and snow; dilution; and the geologic conditions in the area.

The volume of material proposed for removal during drilling at both the Caldwell Canyon and Trail Creek properties would be minimal. The approximate volume of rock chips or core samples removed per drill hole that would contain selenium on the Caldwell Canyon property would be between 0.41 and 1.74 cubic yards (average 1.22 cubic yards). The approximate volume of rock chips or core samples removed per drill hole that would contain selenium on the Trail Creek property would be between 0.62 and 2.04 cubic yards (average 1.33 cubic yards). These volumes were estimated conservatively; based on knowledge of the geologic formations in the area it was estimated that selenium would be present in two-thirds the thickness (66 percent) of the phosphatic shale intercepted during drilling and collected in the drill samples. The shale that would be removed from each drill hole at both properties would be stockpiled for 1 to 6 days and then would be put back into the original drill hole. The short duration of stockpiling would limit any leaching. In addition, the chance of the stockpiles coming into contact with snow or stormwater would be unlikely because EPMS and BMPs would be implemented (Section 3.7.2.2) and drilling would be generally scheduled for the summertime, when less snow and rain are likely to occur. The holes would be capped with cement or other approved materials post-drilling so surface water would not enter the groundwater.

In addition to the small amount of drill cuttings that could contain selenium, and the short duration of exposure time, the trace amounts of selenium that could potentially reach groundwater would be diluted and are expected to be non-detectable. The likelihood that small amounts of selenium could travel to the Wells Aquifer is very small as the Meade Peak Member is between the surface and the Wells Aquifer. The Meade Peak Member generally has low-permeability and acts as an aquitard that separates regional groundwater flow in the Wells Formation from smaller-scale groundwater systems in the overlying units (Ralston et al., 1977; Cannon and Ralston, 1980; Winter, 1980). In spite of this, if selenium infiltrated into the Wells aquifer it would likely be diluted to a non-detectable level. The Wells aquifer can produce relatively large quantities of water used for domestic, agricultural, and industrial water supply (Whetstone, 2003). Regional studies of hydrogeology indicate that the Wells Formation is an extensive aquifer (Ralston et al., 1977; Ralston et al., 1980; Winter, 1980; Muller and Mayo, 1983).

The other potential risk to groundwater from exploration drilling is that drill holes could create a temporary preferential pathway from the surface or the aquifers above the Wells aquifer. The elevation of proposed drilling would range between 6,400 and 7,151 feet at the Caldwell Canyon property and 6,397 and 7,052 feet at the Trail Creek property. Drilling depth would range from 100 to 450 feet with an average of 300 feet at the Caldwell Canyon property and 150 to 500 feet with an average of 325 feet at the Trail Creek property. Based on the known elevation of groundwater in the southern portion of the Caldwell Canyon property (6,346 to 6,381 ft), where depth to groundwater in 2009 ranged from 9 to 15 feet below the surface, and the known elevation of groundwater within 1 mile to the south of this

property (6,325 to 6,368 ft), where depth to groundwater ranged from 8 to 95 feet below the surface (Section 3.7.1), groundwater could be intercepted at a small number of the drill holes, particularly those occurring at lower elevations and near wetlands and other water features. It is expected that the depth of groundwater at most of the proposed drill hole locations is much greater than 8 to 95 feet below the surface and that groundwater typically would not be intercepted. Drill holes would be sealed and abandoned upon completion of drilling according to State of Idaho Regulations (Sections 2.3.6 and 2.3.12) which would prevent future water migration from surface to groundwater.

3.7.2.2 Environmental Protection Measures and Best Management Practices

Several EPMs and BMPs proposed in Section 2.3 would be applied that would avoid or minimize the potential for impacts to water quality. These are summarized here and detailed in Section 2.3.

All drilling sites would be constructed with a sump to control drill cuttings and fluids from potentially reaching any nearby waterbody. The size and specific location of the sumps would be determined in the field in order to make the best use of the existing landscape and topography to minimize environmental and stability risks. Drilling fluids would contain sediments from the drill cuttings as well as the highly diluted concentrations of lubricating foam, bentonite, and/or polymer used by the drilling contractor. The lubricating foam would be biodegradable, and polymers, if required for drilling, would be used in highly diluted quantities with minimal toxicity (Halliburton, 2011; Halliburton, 2012; MiSwaco, 2008).

Although no direct impacts to surface waters are anticipated, silt fence, straw wattles, and/or other storm water BMPs would be utilized in areas where there is a risk of contact with surface water in order to ensure that drilling fluids and sediment erosion do not impact the environmental resources or threaten 303(d) listed water bodies (see Section 2.3.5).

The proposed BMPs would be implemented in accordance with Practices for Mining in Idaho and would reduce sediment impacts to surface waters by:

- Aiding in vegetation growth and establishment to restabilize topsoil;
- Aiding in slope stabilization through recontouring and revegetating;
- Increasing the density of soil to reduce settling and improving resistance to erosion;
- Planning construction activities to avoid stormwater runoff periods;
- Preventing stormwater runoff from causing erosion and directing runoff water to vegetated areas where infiltration is possible;
- Collecting stormwater in retention areas to prevent runoff and erosion;
- Utilizing natural materials for bank stabilization to prevent erosion of stream banks; and
- Utilizing straw bales and sediment barriers to filter sediment out of runoff water.

All drill holes would be plugged according to State of Idaho regulations “Well Construction Standards Rules” (IDAPA 37.03.09, Rule 25).

3.7.2.3 Mitigation

Application of mitigation for wetlands, which would require the siting of drill pads and holes to avoid wetlands, the siting of new roads to minimize crossings of wetlands, and the use of temporary, manufactured crossings over wetlands in the Caldwell Canyon property (Section 2.4), would reduce the potential for sediment delivery into ephemeral drainages and wetlands from road and pad construction. Application of mitigation would reduce the number of new crossings of ephemeral drainages/wetlands from eight to six at the Caldwell Canyon property and thus would reduce the potential for sediment delivery into wetlands from road construction. This mitigation would not result in a change in number of temporary stream crossings at Trail Creek, thus there would still be the potential for sediment delivery to two intermittent streams. Potential sediment impacts would be minimized through application of BMPs, regardless of the application of this mitigation. The realignment of the road outside of a wetland at the Trail Creek property would eliminate the potential for sediment delivery into this wetland from road construction.

3.7.2.4 Alternative 2 Direct and Indirect Impacts

Alternative 2 would consist of not approving the exploration and prospecting activities and not issuing an exploration license and prospecting permit. Therefore, the proposed drill holes and associated access roads would not be constructed, and surface and ground water in the Project Area would not be disturbed over current conditions. Alternative 2 would not cause direct or indirect impacts to water quality.

3.8 Livestock Grazing

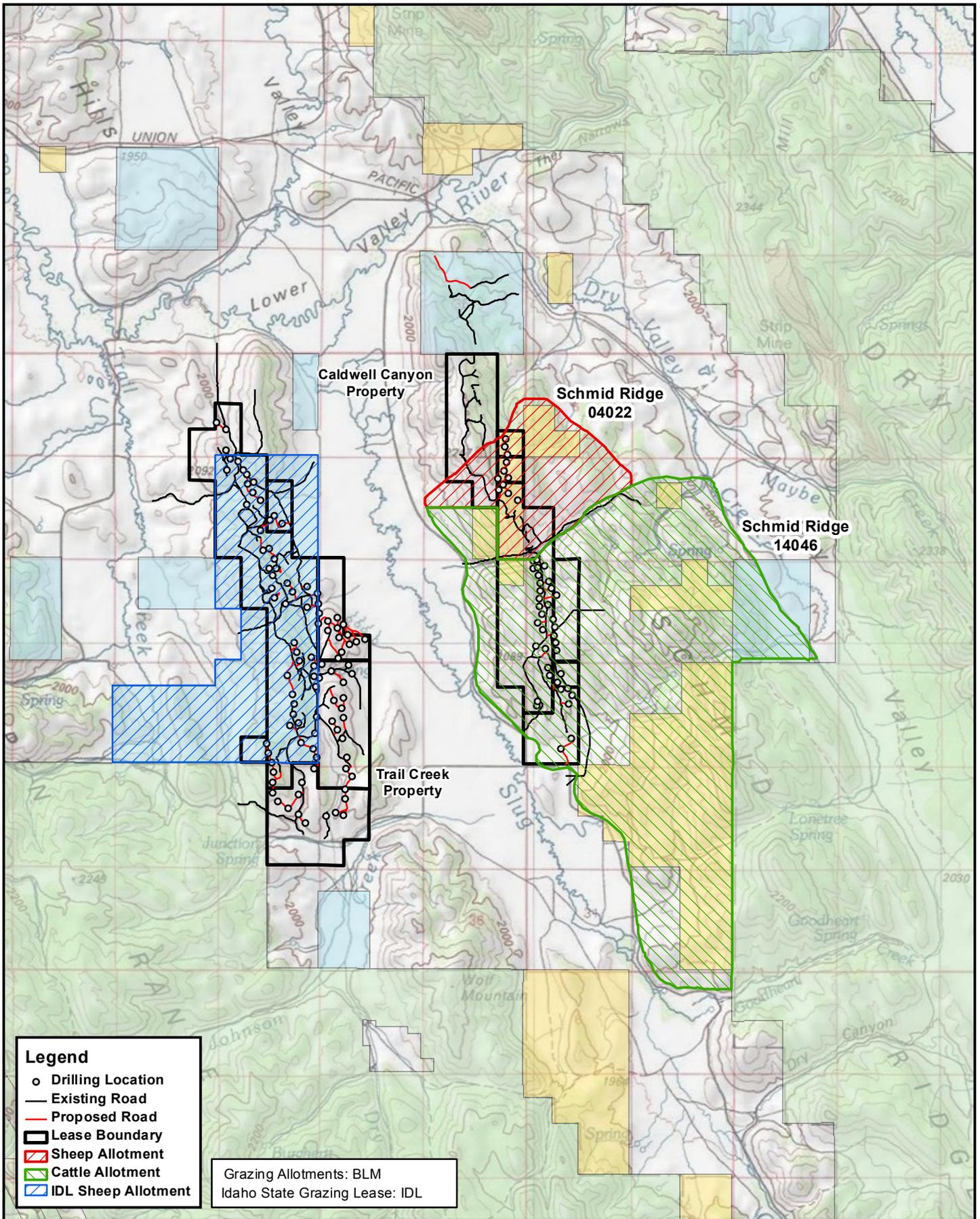
3.8.1 Affected Environment

Livestock in the proposed Project Area is managed through a permitting process that authorizes livestock grazing in specific areas known as grazing allotments. Grazing allotments are further divided into pastures for better livestock grazing management. An allotment may have one or more grazing permits. Each grazing permit authorizes a season of use and allocates forage in terms of animal unit months (AUMs). An AUM is the amount of forage needed to sustain one cow and calf, five sheep, or one horse for one month.

Grazing permits are tied to adjacent or nearby privately-owned property which is either owned or leased by the permittee and which sustains some portion of the livestock grazing operation during the year.

3.8.1.1 Caldwell Canyon

Two grazing allotments overlap the Caldwell Canyon property: Schmid Ridge #14046 and Schmid Ridge # 04022 (Figure 9). Allotment #14046 has two permittees, Dorris Bollar Hayden (Hayden) and Blotter Family Limited (Blotter). Livestock grazing management on these allotments is summarized in Table 21. Permitted use of the allotment #04022 is approximately 103 AUMs or 9.91 acres per AUM; permitted use of the allotment #14046 is approximately 1,291 AUMs or 4.49 acres per AUM.



Date: 5/30/2013

P4 Production



Figure 9
Livestock Grazing Allotments
Caldwell Canyon/Trail Creek EA



Table 21. Grazing Allotments in the Project Area – Caldwell Canyon Property

Grazing Allotment	Allotment # (Permittee)	Permitted Acres in Allotment			Permitted Acres Overlapping Property			Permitted Use (AUM)		Season of Use
		BLM	Private	Total	BLM	Private	Total	BLM	Private	
Schmid (Sheep)	04022 (Basterrechea)	337	688	1,025	197	196	393	34	69	5/16 to 9/30
								9.91 acre/AUM		
Schmid (Cattle)	14046 (Hayden and Blotter)	1,926	3,869	5,795	120	761	881	385	906	6/15 to 10/15
								4.49 acre/AUM		

3.8.1.2 Trail Creek

No BLM-issued grazing permits occur within the Trail Creek property. Sheep grazing occurs exclusively on state land. A state grazing lease issued to the Jouglard Sheep Company overlaps this property (Figure 9; Table 22). Permitted use of the allotment #G800118 is approximately 714 AUMs or 3.25 acres per AUM.

Table 22. Grazing Allotments in the Project Area – Trail Creek

Grazing Allotment Number	Permittee	Permitted Acres in Allotment	State permitted acres	State Permitted Acres Overlapping Property	Permitted Use (AUM)	Season of Use
G800118 (Sheep)	Jouglard Sheep Company	2,320	2,320	1,202	714 (3.25 acres/AUM)	5/15 to 6/15 & 9/15 to 10/5

3.8.2 Environmental Consequences

3.8.2.1 Alternative 1 Direct and Indirect Impacts

The analysis of impacts of the proposed exploration activities on livestock grazing addresses public, state, and private land impacted. Impacts are described in terms of loss of AUMs.

Operation of the existing and new access roadways would also create a short-term potential for livestock collisions with vehicles. However, P4 would coordinate with the private surface owners regarding the location and timing of scheduled exploration activities so that the surface owner can choose to modify when their livestock would be in their pastures. Further, P4 would direct their employees to keep closed gates closed after passing through fenced property boundaries. If livestock are not pastured in areas where active exploration activities are occurring, the risk of vehicle collisions would be eliminated. However, modification of grazing patterns could result in increased forage pressure elsewhere in the grazing allotments.

Caldwell Canyon

Exploration drilling of the Caldwell Canyon property would result in impacts to the Schmid grazing allotments (#04022 and #14046). Approximately 9.6 acres of public land in the sheep livestock grazing allotment (#04022) would be impacted by the construction and maintenance of the access roads and drill pads. This equates to 2.8 percent of public land and 0.9 percent total in this allotment. Impact of these acres would result in a short-term loss of approximately 1 AUM (1 percent) from Allotment #04022 (Table 23). No impacts to private land in Allotment #04022 would occur as a result of the proposed exploration activity. No impacts to public land within Allotment #14046 would occur, however, 2.5 AUM (<1 percent) would be lost on allotments occurring on private land as a result of the proposed exploration activity.

Table 23. Grazing Allotments on Public Land Impacted – Caldwell Canyon Property

Grazing Allotment	Allotment #	Permittee	Class of Livestock	Acres Public Land Impacted	Acres Private Land Impacted	Permitted AUMs Lost
Schmid	04022	Basterrechea	Sheep	9.6	0	1.0
	14046	Hayden and Blotter	Cattle	0	11.3	2.5

Once the disturbed areas are reclaimed and vegetation successfully established, these AUMs would be recovered. Loss to AUMs would be staggered over time, reducing the impacts to AUMs at any one given time. Given the small number of AUMs affected and the short-term nature of the impacts, the impacts to the Schmid grazing allotments are not expected to affect the overall quality or availability of grazing areas for permittees. It is possible that the BLM would modify the grazing permits for the period of the exploration

lease to account for the short-term loss in AUMs, however this is unlikely due to the small number of AUMs lost at one time during the proposed exploration.

Trail Creek

Exploration drilling of the Trail Creek property would result in impacts to the Jouglard allotment (#G800118). Up to 18.6 acres of state land in the sheep livestock grazing allotment would be impacted by the construction and maintenance of the access roads and drill pads. The allotment and associated impacts would all occur on state appropriated lands. Impact of these acres would result in a short-term loss of approximately 5.7 AUMs from Allotment #G800118 (Table 24). The reduction of 5.7 AUMs from the allotment is less than 1 percent of the available AUMs (719) on the allotment. Since this allotment does not overlap private lands, there would be no impact to grazing on private lands in the Trail Creek property. Once the disturbed areas are reclaimed and vegetation successfully established, these AUMs would be recovered. In addition, loss of AUMs would be staggered over time, reducing the impacts to AUMs at any one given time. Given the small number of AUMs affected and the short-term nature of the impacts, the impacts to the grazing allotment on the Trail Creek property are not expected to affect the overall quality or availability of grazing areas for permittees.

Table 24. Grazing Allotments on State Land Impacted – Trail Creek Property

Allotment #	Permittee	Class of Livestock	Acres Public Land Impacted	Acres Private Land Impacted	Permitted AUMs Lost
G800118	Jouglard Sheep Co.	Sheep	18.6	0	5.7

3.8.2.2 Environmental Protection Measures and Best Management Practices

No proposed EPMS or BMPs in Section 2.3 would reduce the loss of AUMs from the three grazing allotments.

3.8.2.3 Mitigation

Application of mitigation for wetlands, as described in Section 2.4, would result in a negligible change to grazing AUMs described in Section 3.8.2.1 due to the less than 1-acre difference in vegetation loss incurred with and without mitigation.

3.8.2.4 Alternative 2 Direct and Indirect Impacts

Current management of public lands would continue and new mineral exploration of the Project Area would not occur. Grazing on the sheep and cattle allotments would continue under current permit terms and would not be impacted.

3.9 Visual Resources

BLM maintains the scenic values of public lands by using a Visual Resource Management (VRM) system. The system defines scenic values and provides a way to describe and evaluate landscape appearance by classifying public lands into one of four VRM classes.

Each class has management objectives to help manage that area to protect the quality of the scenic values of the public lands.

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.

Class II Objective: To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.

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

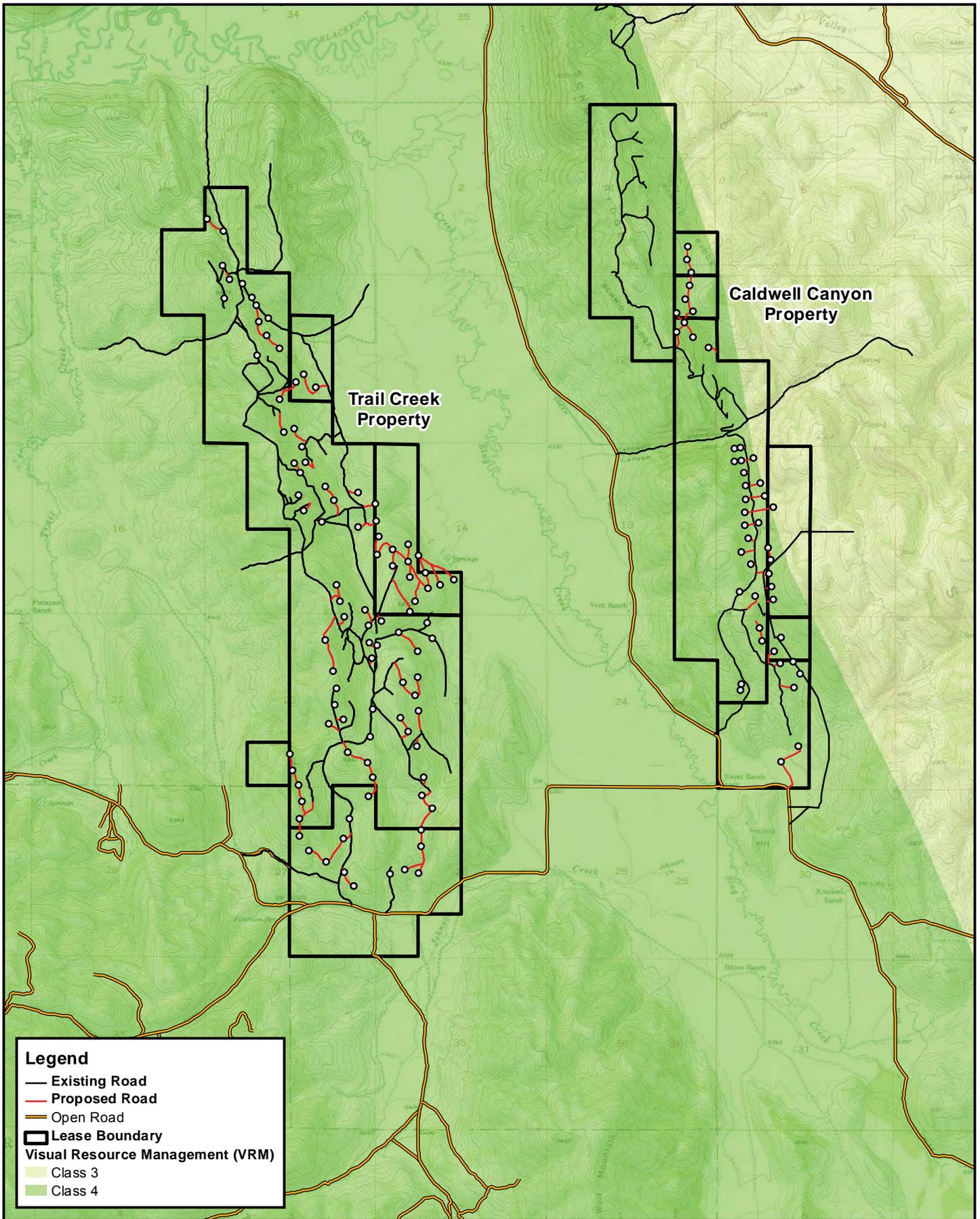
Class IV Objective: To provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high (BLM, 1986).

3.9.1 Affected Environment

The majority of the Project Area occurs within VRM Class IV (Figure 10). The entire Trail Creek property (2,483 acres) and the majority of the Caldwell Canyon property (1,462 acres/89 percent) are classified as VRM Class IV. Approximately 173 acres (11 percent) of the Caldwell Canyon property are within Visual Resource Management Class III.

3.9.2 Environmental Consequences

Drill roads and pads would be viewed by a limited number of people, primarily because public use of the Project Area and the surrounding viewshed is low. The proposed drilling activities would not be visible from sensitive viewpoints, and therefore would be visually subordinate in the characteristic landscape. Proposed exploration drilling activities would be temporary and disturbed areas would be reclaimed. Therefore, impacts to visual resources would be temporary.



Legend

- Existing Road
- Proposed Road
- Open Road
- ▭ Lease Boundary
- Visual Resource Management (VRM)**
- Class 3
- Class 4



Date: 5/30/2013

Visual Resource Management: BLM

P4 Production

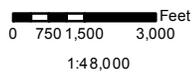


Figure 10
Visual Resource Management
Caldwell Canyon/Trail Creek EA

3.9.2.1 Alternative 1 Direct and Indirect Impacts

Much of the Trail Creek and Caldwell Canyon properties has limited access and is seldom seen by the public except from a landscape level. Both properties have public view points that would be directly impacted by the proposed exploration activities. Direct impacts would occur to color and visual patterns; however these impacts would be temporary and lessen over time as natural vegetation color and lines returned. Proposed exploration would impact 1 percent of the areas designated as VRM IV in Caldwell Canyon and 2 percent in Trail Creek (Table 25). Less than 1 percent of the impacts would occur in VRM III designations in the Caldwell Canyon property and none in the Trail Creek property. Overall impacts to the visual resource would be minor and would be consistent with VRM Class III and IV management objectives. VRM class designations would not change as a result of the proposed exploration activities.

Table 25. Visual Resource Management Classes Impacted (acres)

Property	VRM Class III	Impacted VRM Class III	VRM Class IV	Impacted VRM Class IV
Caldwell Canyon	173.2	0.2	1,461.5	16.0
Trail Creek	0.00	0.00	2482.6	43.2
Total	173.2	0.2	3,944.1	59.2

3.9.2.2 Alternative 2 Direct and Indirect Impacts

Current management of public lands would continue and new mineral exploration of the Project Area would not occur. There would be no alterations and the existing visual resource and VRM class designations would remain the same.

3.9.2.3 Environmental Protection Measures and Best Management Practices

No proposed EPMs or BMPs in Section 2.3 would reduce the temporary alterations to the visual resource. Reclamation would occur annually upon completion of exploration drilling, reducing the duration of visual impacts (Section 2.1.1.5).

3.9.2.4 Mitigation

Application of mitigation for wetlands, as described in Section 2.4 would not result in any changes to the impacts to the visual resources or VRM designations described in Section 3.9.2.1.

Chapter 4

4.0 Cumulative Impact Assessment

Cumulative effects are those impacts to the environment which result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

This section provides the incremental impacts that the action alternative and no action alternative are likely to have when considered in the context of impacts associated with past, present, and reasonably foreseeable management actions that have occurred or are likely to occur in the area in the last 20 years and over the next 30 years. This temporal framework was chosen based on the Trail Creek Exploration Plan, which is planned to run through 2021, and potentially through 2025, and the period reported by Steven and Monsen (2004) for mature sagebrush to become reestablished (20 to 30 years).

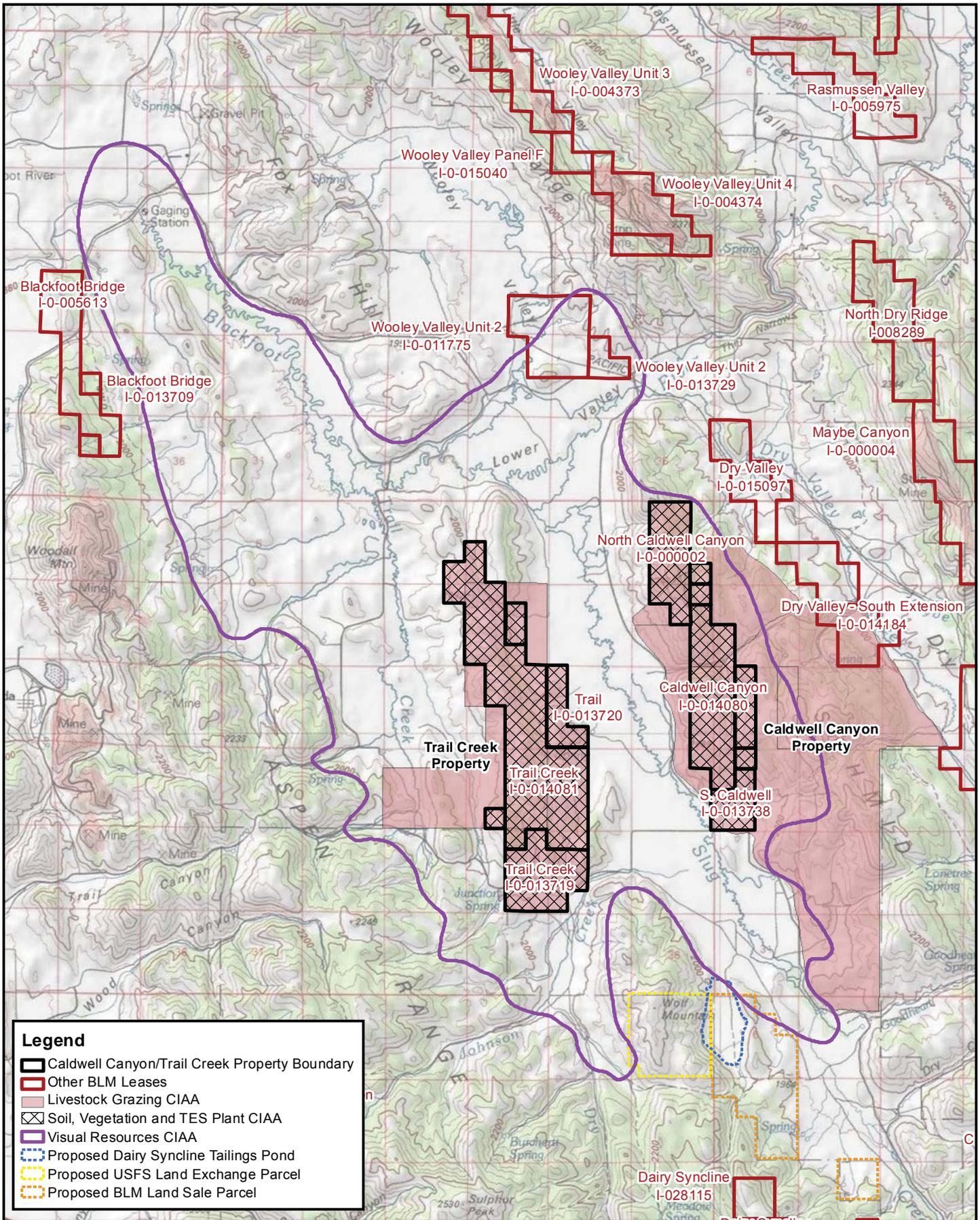
Cumulative Impact Analysis Areas (CIAA) are defined for each resource or subset of resources, depending on the extent of potential indirect disturbances. These are defined in each resource section (Section 4.3) and are mapped in Figures 11 and 12.

4.1 Past and Present Actions

Information for past and present actions was based on aerial photographic data, agency records, and GIS data. The following past and present actions, which have impacted the CIAAs to varying degrees, have been identified: livestock grazing, the local transportation network, and ongoing phosphate exploration. These actions do not represent every individual action that may have impacted the CIAAs, but they are the suite of actions most likely to have contributed substantial impacts based on the analysis.

4.1.1 Livestock Grazing

Two grazing allotments occur on public and private lands in the analysis area and overlap the Caldwell Canyon property: Schmid Ridge sheep allotment #04022 and Schmid Ridge cattle allotment #14046 (Figures 9 and 11). The two allotments total 6,738 acres and include BLM-administered and privately-owned lands. Grazing in this area has occurred historically and is expected to occur at levels similar to current permits in the future. Additionally, one sheep grazing allotment (#G800118) occurs on state lands overlapping the Trail Creek property (Figures 9 and 11). This allotment is leased to the Jouglard Sheep Company and totals 2,321 acres of state-managed lands.



Legend

- Caldwell Canyon/Trail Creek Property Boundary
- Other BLM Leases
- Livestock Grazing CIIA
- Soil, Vegetation and TES Plant CIIA
- Visual Resources CIIA
- Proposed Dairy Syncline Tailings Pond
- Proposed USFS Land Exchange Parcel
- Proposed BLM Land Sale Parcel



Date: 5/30/2013

P4 Production

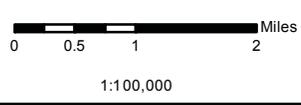
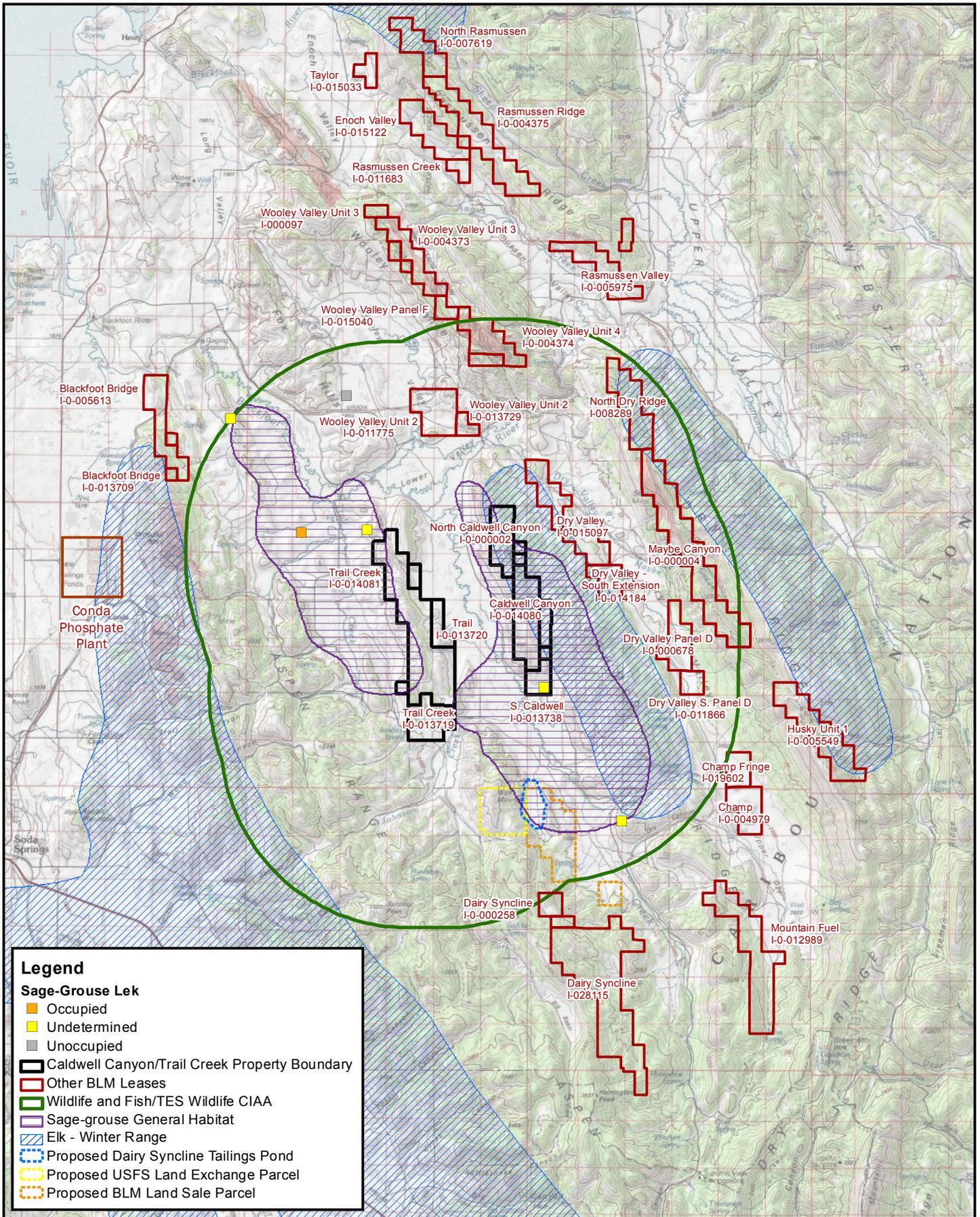


Figure 11
Cumulative Impacts
Livestock, Soil, Vegetation, &
TES Plant Analysis Areas
Caldwell Canyon/Trail Creek EA



Legend

- Sage-Grouse Lek**
- Occupied
- Undetermined
- Unoccupied
- ▭ Caldwell Canyon/Trail Creek Property Boundary
- ▭ Other BLM Leases
- ▭ Wildlife and Fish/TES Wildlife CIAA
- ▭ Sage-grouse General Habitat
- ▭ Elk - Winter Range
- ▭ Proposed Dairy Syncline Tailings Pond
- ▭ Proposed USFS Land Exchange Parcel
- ▭ Proposed BLM Land Sale Parcel



Date: 5/30/2013

P4 Production



Figure 12
Cumulative Impacts
Wildlife/TES Wildlife Analysis Area
Caldwell Canyon/Trail Creek EA

4.1.2 Mineral Development and Exploration

Phosphate leases are found throughout the analysis areas. Mineral exploration for phosphate has occurred over the past 70 years in the Caldwell Canyon and Trail Creek lease areas and includes the following activities:

- Exploration drilling in Caldwell Canyon lease area from 1947-2012. Historic work in the CIAAs began with drilling along the ridge south of Caldwell Creek with the more recent activity focusing north of Caldwell Creek. This activity includes 1940 (22 holes), 1990 (11 holes), 1991 (11 holes), 1992 (10 holes), 1996 (21 holes), 1998 (7 holes), 2008 (2 holes), 2010 (13 holes), and 2011 (1 hole).
- Exploration drilling in Trail Creek lease area from 1977-2003 including 1977 (95 holes), 2001 (6 holes), 2002 (13 holes), and 2003 (31 holes).

Since 1947, a total of 243 drill holes (9 acres) have been completed in the Project Area, 98 holes in the Caldwell Canyon lease area and 145 holes in the Trail Creek lease area.

Additional exploration and mineral development has occurred in the last 20 years or is currently occurring (Blackfoot Mine) in other leases within approximately 8 miles of the Project Area (Figure 12). These have resulted in approximately 4,677 acres of disturbance, of which most have been reclaimed, and have resulted or will result in approximately 739 acres of disturbance (Blackfoot Mine) and include:

- **Champ Mine** (Leases I-019602, I-04979) – The Champ Mine and its extension are located in the upper Dry Valley, Caribou County, Idaho. The mine was an open-pit operation located on two low hills on the valley floor. Mining at the Champ Mine began in 1982 and continued until 1986. This mine resulted in approximately 392 acres of surface disturbance on federal lands (USFS). The site has been inactive since mining was completed, with the exception of Agrium conducting some exploration drilling in 2011 and some slope buttressing work that was done in 2010 to protect Goodheart Creek.
- **Wooley Valley Mine** (Leases I-097, I-4373, I-015040, I-04374, I-04775, I-011775, and I-013729) – The Wooley Valley Mine operated intermittently from the mid 1950s until the mid 1970s. This mine resulted in approximately 808 acres of surface disturbance on federal (BLM and USFS) and private lands. The 2-mile rail spur that was built to the Wooley Valley tipple site in 1968 is still used today to load ore from Agrium's (Nu-West Industries) North Rasmussen Ridge Mine. There is currently a limestone quarry located on southern-most extent of the Wooley Valley mine pit. This operation is on a BLM-issued free use permit to Caribou County, Idaho. The limestone is used on Caribou County road projects.
- **Maybe Canyon Mine** (Lease I-04) – The Maybe Canyon Mines (North and South) are located on the east side of Dry Valley, about 17 miles northeast of Soda Springs, in Caribou County, Idaho. The mines together are over 3.5 miles in length. Mining at the Maybe Canyon began in 1965 continued intermittently until 1995. This mine resulted in approximately 1,228 acres of surface disturbance.
- **Dry Valley Mine** (Leases I-015097, I-014184, I-0678, and I-011866) – Mining at the Dry Valley Mine began in 1992 and continued until 2011 by Agrium (Nu-West). This

mine resulted in approximately 888 acres of surface disturbance on federal (BLM and USFS), state, and private lands. Operations in 2012 at the Dry Valley Mine were entirely focused on reclamation since production ended in May 2011. Backfilling of pits was completed in October 2012. All recontoured surfaces were topsoiled and seeded prior to the onset of winter. Monitoring at the site will continue for the next several years.

- **Agrium Conda Phosphate Fertilizer Manufacturing Plant** – This plant, located northeast of Soda Springs and approximately 5.6 miles west of the Trail Creek Property (at its closest) is used by Agrium (Nu-West) to manufacture fertilizer. It is supplied with ore from Agrium’s mines. The plant has been active for more than 20 years.
- **Enoch Valley Mine** (federal leases I-011683, I-015033, I-015122 and State of Idaho leases I-7957 and I-8379) - The Enoch Valley Mine is located in Caribou County, Idaho, about 19 miles northeast of Soda Springs, Idaho. Mining at this lease was conducted at three federal phosphate leases and two State of Idaho phosphate leases. P4 began to develop their leaseholds in preparation for mining in late 1987. The initial pit mining began in 1989 and shipment of ore from the mine began in the spring of 1990. Mining continued until 2004 with a total disturbed acreage of 645 acres including state, private, and federal (USFS) lands.
- **Mountain Fuel Mine** (Lease – I-012989). The Mountain Fuel Mine (sometimes referred to as the Upper Dry Valley Mine) is located about 15 miles east of Soda Springs, Idaho. The mine operated briefly in 1966 and 1967 and then was shut down until 1981. Production began again in 1985. Mining continued from 1986 until 1993 with a brief shutdown in 1987. Lease modifications were granted in 1989, 1990, and 1991, bringing the total acreage of the lease to 716 acres on USFS land.
- **Blackfoot Bridge Mine** (Leases I-05613 and I-013709) – This mine is currently active. Activities associated with the Blackfoot Bridge Mine occur on federal phosphate leases administered by the BLM on land with surface owned or administered by the BLM and three private landowners in Caribou County, approximately 9 miles northeast of Soda Springs, Idaho. The Blackfoot Bridge Project consists of a new open pit phosphate mining operation on two federal mineral leases that would include external overburden piles, a haul road, and a water management plan. The Blackfoot Bridge Project is being mined in a phased approach with mining and reclamation activities continuing for approximately 17 years. Surface disturbance resulting from the Proposed Action would total approximately 739 acres, with approximately 674 total acres (91 percent) eventually being reclaimed. An Environmental Impact Statement (EIS) has been completed for this project and a Record of Decision signed. Construction has occurred since 2012 and mining has commenced.

Additional phosphate leases occur within approximately 8 miles of the Project Area that have undergone some exploration more than 20 years ago but have not been mined (Sulfur Canyon, Swan Lake Gulch, Johnson Creek, Dry Fork, Good Heart Creek, Schmid Ridge leases). Additional phosphate leases within this area have been previously mined (Dry Canyon, Diamond Creek, Bear Canyon, North Diamond Creek, Fox Hills, and

Woodall/Conda Mine), but are either closed or in the reclamation stage. Since activity at these leases has not occurred within the temporal framework of the cumulative impact analysis, they are not addressed here or in Figure 12.

4.1.3 Transportation Network

Within the Caldwell Canyon and Trail Creek boundaries, there are approximately 37 miles or 54.2 acres of existing roads. These roads are used for access to phosphate lease areas and grazing allotments, and by the BLM, state, private land owners, and general public. Additional miles of road exist in the larger CIAAs and are used for the same reasons.

4.2 Reasonably Foreseeable Actions

Reasonable estimates of future actions occurring within the analysis areas considered in the cumulative impact evaluation are described below.

4.2.1 Livestock Grazing

Livestock grazing is anticipated to remain consistent with current levels on the private, public, and state lands into the future. It is anticipated that adjustments to livestock grazing management such as permitted AUMs and construction of fencing or stock ponds could occur. The current livestock grazing permit on public and private lands for Allotment # 04022 expires in 2020 and for Allotment #14046 in 2018. The current livestock grazing permit on State of Idaho lands for allotment #G800118 expires in 2031. It is anticipated that these permits would be renewed with similar allocations.

4.2.2 Mineral Development and Exploration

In the area within approximately 8 miles of the Project Area, future mining has been proposed to recover phosphate ore for the following projects (Figure 12):

- **Husky 1 North Dry Ridge Project Mine and Reclamation Plan** (Leases I-05549, I-04, and I-008289) – Activities associated with the Husky 1 North Dry Ridge Project Mine and Reclamation Plan would occur on federal phosphate leases administered by the BLM, on National Forest System Lands, and on private lands in Caribou County, approximately 19 miles northeast of Soda Springs, Idaho. This project would include an open pit phosphate mine and associated features including stockpiles, temporary and permanent external overburden storage areas, mine pit backfill areas, haul roads, equipment staging areas, surface water runoff and sediment control structures, water wells, power lines, and temporary re-routing of a public access road from Dry Valley to Diamond Creek. The Husky 1 North Dry Ridge Project would be mined in a phased approach with mining and reclamation activities continuing for 13 years. The ultimate surface disturbance resulting from the implementation of this plan would total approximately 1,050 acres, with approximately 975 acres (93 percent) eventually being reclaimed. The Draft EIS for this project is currently being prepared.
- **Rasmussen Valley Mine** (Lease I-05975) – Exploration drilling has occurred intermittently in the areas since 1969, with most recent drilling between 2008 and 2010 by Nu-West Industries. Activities associated with the Rasmussen Valley Mine would occur on a federal phosphate lease administered by the BLM on land with

surface owned or administered by the BLM, USFS, State of Idaho, and private landowners in Caribou County, approximately 18 miles northeast of Soda Springs, Idaho. The Rasmussen Valley project would consist of a new open pit phosphate mining operation on one federal lease and would include a new open pit mine and associated features including a haul road, waste dumps, topsoil stockpiles, a staging area, fuel storage area, and power line. The ore would be mined in a phased approach beginning at the southern end of the phosphate deposit moving north, with mining and reclamation activities continuing for approximately 4 years. Surface disturbance resulting from the Proposed Action would total approximately 420 acres, with approximately 403 acres (96 percent) eventually being reclaimed. A Draft EIS is currently being prepared to analyze the impacts of mining phosphate in Rasmussen Valley.

- **Dairy Syncline Project (Leases I-028115, I-000258)** – Activities associated with the proposed mine and reclamation plan would occur on lands administered by the USFS and BLM, as well as on state and private lands, with the mineral estate administered by the BLM and the State of Idaho, approximately 12 miles east of Soda Springs, Idaho in Caribou County, Idaho. Simplot is proposing to exercise their mining and development rights of the Dairy Syncline Phosphate Leases. Proposed mining activities would consist of six open pits, topsoil stockpiles, mine equipment parking and service areas, access and haul roads, a mill and tailings pond facility, an ore stockpile area, a power line extension from Dry Valley, permanent external overburden storage areas, and runoff/sediment control facilities. The ore would be mined in a phased approach beginning with the west pit and moving north, with concurrent mining of pits occurring as the sequencing progresses. Anticipated life of the mine is 30 years. Disturbed lands resulting directly from the proposed activities would total approximately 1,796 acres on lease and 337 acres off lease, for a total of 2,133 acres of surface disturbance; approximately 2,018 acres (95 percent) of this disturbance would be reclaimed.

As part of this proposal, a land sale with mitigation (BLM) and a land exchange (USFS) of federal lands for private holdings are proposed for the tailings pond area. The proposed mitigated land sale would require an amendment to the 2012 Pocatello RMP. The proposed configuration of the tailings pond would be large enough to hold all of the tailings expected to be generated during the life of the mine. A Draft EIS is currently being prepared to analyze the impacts of mining phosphate in the Dairy Syncline Lease Area, enlarging the lease area, the proposed land sale and land exchange, and amending the RMP.

As the results of the proposed exploration at the Caldwell Canyon and Trail Creek properties are not known, and since the BLM has not received applications for mining permits for these properties, it is not reasonable to assume that mining would occur in these areas in the foreseeable future. Therefore, mining for phosphate ore in the Caldwell Canyon and Trail Creek lease areas is not considered in this analysis (see US District Court Case No. CV-05-258-E-BLW; Greater Yellowstone Coalition v. Reese, District Idaho, August 4, 2005).

Surface disturbance for the proposed Husky 1 North Dry Ridge, Rasmussen Valley, and Dairy Syncline mines combined, prior to reclamation, if approved, would approximate 3,601 acres, with approximately 3,396 acres eventually being reclaimed. Surface disturbance from these mines is considered in the cumulative impact analysis, where applicable.

4.2.3 Transportation Network

Existing roads in the CIAAs would likely continue to be used to by the BLM, state, private land owners, and general public. With development of new mines, it can be anticipated that additional roads would be constructed in the CIAAs, but would be reclaimed upon completion of mining. Surface disturbance from potential future road construction is included in the total surface disturbance from mining operations in Section 4.2.2.

4.3 Cumulative Impacts by Resource

The following section describes the cumulative impacts of the proposed exploration drilling in the Caldwell Canyon and Trail Creek properties when combined with other past, current, and foreseeable future management actions in the CIAAs. Only resources that would be directly and/or indirectly impacted by the Proposed Action are addressed.

4.3.1 Soil Resources

The CIAA for soils is the boundary of the individual lease properties (Figure 11). This area was chosen as the direct and indirect impacts to soil would not extend outside of this area.

4.3.1.1 Alternative 1 – Proposed Action

Within the soil CIAA, there have been approximately 243 holes drilled within the P4 Project Area. These areas have been reclaimed, revegetated by P4, and inspected by the BLM. Within the Project Area, P4's previous drilling activities including roads resulted in approximately 63 acres of disturbance. Other past, present, and future impacts on soils in the Project Area include livestock grazing, road construction, and road use. These activities have led to the disturbance, compaction, and erosion of soils. The entire P4 exploration program within the soil CIAA would result in a cumulative temporary disturbance to up to 59.6 acres through construction of access roads and drill pads. However, this cumulative impact on soil resources would remain minor since it represents a small percentage (< 2 percent) of the soil CIAA and temporary disturbances would be revegetated at the end of the implementation period for both the federal and non-federal tracts of land. With implementation of the recommended EPMS (Section 2.3), no long-term cumulative impacts to soil resources are expected as a result of the Proposed Action.

4.3.1.2 Alternative 2 – No Action

Alternative 2 would consist of not approving the exploration and prospecting activities and not issuing an exploration license and prospecting permit. Under Alternative 2, the proposed drill holes and associated access roads would not be constructed, and the Project Area would remain in its existing condition including 63 acres of area previously disturbed from phosphate exploration. Since Alternative 2 would not cause direct or indirect impacts to soil resources, it would not contribute to cumulative effects.

4.3.2 Vegetation Resources

The CIAA for vegetation is the boundary of the individual properties containing the leased areas and off-lease areas that would be affected by proposed exploration (Figure 11). This area was chosen as the direct and indirect impacts to vegetation would not extend outside of this area.

4.3.2.1 Alternative 1 – Proposed Action

Past, present, and reasonably foreseeable actions that could affect vegetation in the vegetation CIAA, in addition to that proposed by the Proposed Action, include non-federal exploratory drilling, road construction and use, and grazing. Past drilling and road construction have disturbed soil and removed existing vegetation in the CIAA. Past and present livestock grazing has modified and potentially removed existing vegetation and has compacted and disturbed soil. Soil disturbance can create a vector for the establishment of noxious weeds and invasive plants. Vegetation removal can result in modifications to seral stages and composition of vegetation communities.

The impacts of the Proposed Action on vegetation would add cumulatively to those from past, current, and future livestock grazing. Livestock grazing occurs within and adjacent to the vegetation CIAA and is one of the drivers of the existing vegetated conditions within this area. Livestock grazing has created a risk for establishment of weeds, and noxious weeds are evident in the analysis area (Figure 4).

The impacts of the Proposed Action on vegetation would add cumulatively to those from past and future exploration drilling and road construction and use. Within the phosphate lease areas in the vegetation CIAA, past drilling activities have resulted in approximately 63 acres of disturbance. These areas were reclaimed, but the disturbance caused short-term changes in vegetation community composition and seral stage. No reasonably foreseeable mining disturbance would occur within the vegetation CIAA. Past exploration and road construction and use has removed vegetation and created the risk for noxious weeds and other invasive species to establish and spread. Noxious weeds are known to occur in the vegetation CIAA (Figure 4).

Alternative 1 would result in the short-term loss of up to 60 acres of vegetation and a short- and long-term modification of vegetation communities (duration depending on the vegetation community) in the disturbed areas. Further, the Proposed Action would result in the potential for weed establishment in disturbed areas. Past and proposed exploration of the P4 phosphate leases in the vegetation CIAA would result in a cumulative disturbance to approximately 123 acres of vegetated habitats through construction of access roads and drill pads. Cumulative impacts to vegetation from past and future exploration would be minimized through reclamation (including reseeding disturbed areas) and noxious weed management.

4.3.2.2 Alternative 2 – No Action

Alternative 2 would consist of not approving the exploration and prospecting activities and not issuing an exploration license and prospecting permit. Under Alternative 2, the proposed drill holes and associated access roads would not be constructed. Past and present disturbances in the Project Area would continue to have the ability to impact

vegetation communities, as under the Proposed Action. Since Alternative 2 would not cause direct or indirect impacts to vegetation, it would not contribute to cumulative effects.

4.3.3 Wildlife and Fish Resources

The CIAA for wildlife and fish includes the area within a 4-mile buffer of the Project Area (Figure 12; 81,140 acres). This area was selected as it represents the furthest extent anticipated for indirect impacts on sage-grouse from mining activities. This area encompasses the perennial streams adjacent to the phosphate lease areas. Since no direct and indirect impacts to fish are expected from the Proposed Action, they are not discussed in this section.

4.3.3.1 Alternative 1 – Proposed Action

Existing habitat conditions for wildlife within the CIAA have been modified by past actions such as mineral exploration and development, road construction and use, and grazing. These actions have modified seral stage and composition of vegetation communities, disturbed and compacted soils, created a risk for the establishment of noxious weeds and invasive plants, and modified, removed, degraded, and fragmented wildlife habitat. Past drilling has resulted in approximately 63 acres of surface disturbance in the Project Area; however, these areas have since been reclaimed. Additional surface disturbance from past drilling and mining at the Champ, Wooley Valley, Maybe Canyon, and Dry Valley Mines has also occurred within the wildlife and fish CIAA, with most (exception being Maybe Canyon), being fully reclaimed. Each of these activities has changed the habitat available for wildlife, either in the short- or long-term, and has resulted in current conditions discussed in the Affected Environment. Short-term impacts have included shifts in seral stages of vegetation from late seral to early seral conditions. Long-term impacts have included habitat fragmentation from roads and conversion of plant communities (such as forested and shrubland communities to grassland). Therefore, although disturbed areas have been reclaimed, the habitat for wildlife is not necessarily in pre-disturbance condition.

Future impacts to wildlife from proposed mining at the Husky 1 North Dry Ridge and Dairy Syncline mines would be more extensive than that of past exploration. In the wildlife CIAA, future mining would remove an estimated 351 acres associated with the North Dry Ridge and Maybe Canyon leases of the Husky 1 North Dry Ridge Project Mine and approximately 221 acres of wildlife habitats from the Dairy Syncline Mine tailings pond, for a total of approximately 572 acres. The current value of this habitat would be lost until fully reclaimed, which could take several decades to up to 100 years, depending on the vegetation type. Some habitat, such as that removed from mine pits or covered by waste dumps, would never be returned to current conditions and thus the current value of some areas would not be fully restored. Larger wildlife using areas where habitat was removed could be displaced until the vegetation communities became re-established and mature; smaller wildlife using these areas would likely not survive due to small home ranges. Animals may recolonize disturbed areas after they have revegetated. Wildlife using areas in the vicinity of mining activities could also be temporarily disturbed by construction noise, blasting, and vehicle use, and habitat fragmentation.

Impacts to wildlife from the Proposed Action primarily would consist of temporary disturbance and displacement of wildlife using the Project Area and short- and long-term changes to wildlife habitat through the modification of up to 60 acres of vegetation

communities. The majority of the impacts would be long-term (97 percent) due to the period of time it would take for forest and shrub communities to become reestablished to pre-disturbance conditions. With implementation of the proposed EMPs and BMPs, the extent of potential impacts to wildlife would be reduced, and in some cases, avoided (see Section 3.5.2.2). These impacts would add cumulatively to those from past and future livestock grazing (on approximately 9,060 acres) and the approximately 2,446 acres of short- and long-term habitat loss (3 percent of the wildlife CIAA) from past exploration drilling, mining, and road construction and use, of which the majority have been reclaimed.

Approximately 13,480 acres of elk winter range occur in the wildlife and fish CIAA (Figure 12). This habitat falls within portions of the Maybe Canyon, North Dry Ridge, Dry Valley, and Caldwell Canyon lease areas. Additional winter range overlaps the proposed Husky 1 Mine (280 acres) outside of the CIAA, of which a portion would be removed. Removal of this habitat through future mining has the potential to impact forage for wintering elk. Establishment of grassland vegetation in disturbed areas within winter range may result in beneficial impacts to forage availability to elk, however, conversion of shrublands to grasslands would remove important thermal cover. Cumulatively, the Proposed Action would result in a negligible impact to elk, as only 11 acres of winter range would be removed, and the impact would be short-term.

4.3.3.2 Alternative 2 – No Action

Alternative 2 would consist of not approving the exploration and prospecting activities and not issuing an exploration license and prospecting permit. Under Alternative 2, the proposed drill holes and associated access roads would not be constructed. Past and present disturbances in the Project Area would continue to have the ability to impact fish and wildlife, as under the Proposed Action. Since Alternative 2 would not cause direct or indirect impacts to fish and wildlife habitat and individuals, it would not contribute to cumulative effects.

4.3.4 Threatened, Endangered, and Sensitive Species

The CIAA for TES wildlife includes the area within a 4-mile buffer of the Project Area (Figure 12; 81,140 acres). A 4-mile buffer was selected as it represents the furthest extent anticipated for indirect impacts on sage-grouse from mining activities. This distance was based on literature reporting impacts from oil and gas activities (Holloran, 2005; Walker et al., 2007; and Johnson et al., 2011). Research documenting impacts on sage-grouse from oil and gas development, including road noise and drilling operations, have reported reduced lek attendance out to 4 miles from the point of disturbance (Walker et al., 2007). Federal phosphate leases outside of the TES wildlife CIAA are considered in this analysis if a 4-mile buffer surrounding the leases intersects the 4-mile buffer around the Caldwell Canyon and Trail Creek lease areas. In these cases, only the area within the intercept is included in the analysis. The reasoning to include portions of these additional leases is because it is anticipated that noise from mining operations outside of the CIAA for TES wildlife could impact sage-grouse out to 4 miles from the source, and therefore have the potential to impact sage-grouse in the CIAA. These leases are shown in Figure 12 and described in the context of exploration and mining in Section 4.1 and 4.2. Since no direct and indirect impacts to sensitive fish species are expected from the Proposed Action, they are not discussed in this section.

P4 historic drilling in the TES wildlife CIAA has resulted in approximately 63 acres of surface disturbance which was reclaimed. Past and proposed exploration of the P4 phosphate leases in the TES wildlife CIAA would result in a cumulative disturbance of approximately 123 acres of wildlife habitats through construction of access roads and drill pads. Past mining has added an additional 2,446 acres of disturbance to wildlife habitat in the CIAA, of which the majority has been reclaimed. Proposed mining of leases in the TES wildlife CIAA could result in an additional 572 acres of disturbance and loss of wildlife habitats. Therefore, cumulatively, the Proposed Action combined with past drilling and road construction and past, current, and future mining would equate to approximately 3,140 acres of disturbance to wildlife habitat (about 4 percent of the CIAA).

The CIAA for TES plants is the same as that for vegetation (the boundary of the Caldwell Canyon and Trail Creek properties). This area was chosen because due to the immobility of plants; the direct and indirect impacts to TES plants would not extend outside of this area. The potential cumulative impacts to TES plants would be the same as described for general vegetation in Section 4.3.2 and are therefore not repeated here.

4.3.4.1 Alternative 1 – Proposed Action

Federally Listed, Candidate, and Proposed Species

Potential impacts to the Canada lynx and wolverine, if they were using the Project Area, would be temporary and negligible. Therefore, proposed exploration drilling would not add cumulatively to impacts to these species.

Sage-grouse

Based on a review of the literature, the primary threats to sage-grouse include habitat loss (with wildfire, invasive plant species, urban, and agricultural expansion being major sources); habitat fragmentation; improperly managed livestock grazing; West Nile virus; and climate change (USFWS, 2008b and 2010a). Mining has also been listed as a cause of loss of sagebrush habitats (USFWS, 2010b). Other threats, as they relate to the proposed project, include increased noise and roads (USFWS, 2008b and 2010a). Additional threats to sage-grouse identified by the USFWS include infrastructure (power lines, communication towers, fences, and railroads), energy development, recreational hunting, recreation, disease, and predation (USFWS, 2010a).

With implementation of the recommended EMPs and BMPs, including seasonal restrictions, the Proposed Action would not result in impacts to lekking grouse. However, the project would result in long-term loss of up to 46 acres of mountain shrub communities and 21 acres of preliminary general sage-grouse habitat. Of the general habitat lost, approximately 17 acres is comprised of mountain shrub communities while the rest is not considered suitable sage-grouse habitat. Habitat loss would add cumulatively to such impacts from past exploration and mining activities and past, current, and future livestock grazing and road construction and/or use. As for general wildlife, the largest potential cumulative impact to sage-grouse would be from future habitat loss from mining associated with other projects in the TES wildlife CIAA. There are approximately 18,265 acres of general sage-grouse habitat and zero acres of priority habitat within the CIAA. Of this general habitat, approximately 221 acres occurs in the proposed tailings pond for the Dairy Syncline Mine (Figure 12). Development of the tailing pond and associated access road

would result in a loss of 225 acres of general habitat. This would add cumulatively to the loss of 21 acres of general habitat proposed from exploration drilling in the Project Area (for a total of 246 acres); however, the total loss represents less than 2 percent of the general habitat in the TES wildlife CIAA. Grazing in existing livestock allotments would also cause potential disturbance to approximately 5,928 acres of general sage-grouse habitat; since grazing does not necessarily equate to habitat loss, these acres are not added to the cumulative loss of general sage-grouse habitat.

The project would also result in potential disturbance to nesting and brood-rearing activities through the noise from exploration operations (see Section 3.6.2.1). Noise impacts would be temporary, occurring at each drill pad for short time periods (1 to 6 days). This disturbance would add cumulatively to such impacts from past exploration and mining activities and past, current, and future mining and road construction and/or use. Approximately 1,470 acres of preliminary general sage-grouse habitat (representing 8 percent of preliminary general sage-grouse habitat in the CIAA) would be subject to noise disturbance from future mining in the TES wildlife CIAA and in portions of leases with 4-mile buffers overlapping the CIAA. Cumulatively, with the noise disturbance from the Proposed Action, approximately 1,491 acres of preliminary general sage-grouse habitat would be subject to noise disturbance. Construction activities associated with the portions of the proposed Husky Mine, Dairy Syncline Project, Blackfoot Mine, and Rasmussen Valley Mine have the potential to disturb sage-grouse seasonal use of the area through noise-related impacts. There would be noise and traffic associated with the Agrium Conda Phosphate Fertilizer Manufacturing Plant. However, given the distance from the occupied sage-grouse lek (~4 miles), activity at the plant is not expected to result in measurable effects and would not add cumulatively to the potential effects of the Proposed Action.

BLM Sensitive Species

Category 1 Species – Sagebrush

The Proposed Action would result in the disturbance to and short-term loss of up to 46 acres of mountain shrub communities, of which the majority consists of sagebrush communities. Substantial loss of sagebrush communities in the western U.S. have occurred through past and ongoing development and by wildfires. These communities have also been impacted through the spread of noxious weeds and from past overgrazing. An indicator of these effects is the inclusion of several sagebrush-dependent species on the BLM Sensitive Species list and the recent designation of sage-grouse as a Candidate species under the Endangered Species Act. Within the TES wildlife CIAA, livestock grazing, exploration drilling, and road construction and use have resulted in degradation to sagebrush habitats. Future mining not associated with this project in and near the TES wildlife CIAA would result in further loss of sagebrush habitats, resulting in loss of habitat for sagebrush associated wildlife species such as the Brewer's sparrow. Category 1 species could be displaced from the Project Area from noise and human presence associated with exploration activities to areas of lesser habitat quality. Displacement, however, would be short-term. Future mining disturbance in the CIAA could also cause temporary displacement of wildlife. Disturbance and loss of sagebrush habitat from the Proposed Action and associated impacts on sensitive wildlife would add cumulatively to the impacts of habitat disturbance and loss from past and future impacts of the TES wildlife CIAA.

Construction activities associated with and access to the Dairy Syncline Project tailings pond and the northern two leases of the Husky 1 North Dry Ridge Project Mine have the potential to disturb TES wildlife use of the area and would result in additional loss and disturbance of mountain shrub wildlife habitat.

Category 2 Species – Aquatic and Riparian

Since long-term impacts to aquatic and riparian habitats would not occur under Alternative 1 and temporary impacts would be minimized through EPMs and BMPs, Alternative 1 would not substantively contribute to cumulative impacts to Category 2 species. If proposed wetland mitigation is implemented, potential impacts to wetlands would be minimized, and in some cases, eliminated. The minor short-term loss of riparian habitats anticipated from implementation of the Proposed Action (1.1 acres) would add cumulatively to impacts to riparian areas and associated riparian wildlife from past, current, and future grazing, exploration activities, and road construction and use, and mining. More specifically, grazing can lead to streambank erosion and sediment delivery into aquatic habitats, thereby reducing the quality of such habitats. Mining, exploration, and road construction and use can lead to increased stream crossings and construction near riparian areas, also resulting in the potential for erosion and sediment delivery and reduced habitat quality. Future mining, due to the greater disturbance footprints, would have the potential for the greatest amounts of disturbance to riparian habitats, including impacts to Slug Creek, Dry Valley Creek, Caldwell Creek, and/or Trail Creek, if new road crossings of streams and wetlands are proposed.

Category 3 Species – Multiple Habitats

The entire P4 exploration program would result in cumulative impacts on Category 3 species due to the additional surface disturbances and additional potential to displace Category 3 species. Up to 12.2 acres of forest habitats would be lost over the long-term from the Proposed Action, representing less than 2 percent of this vegetation type in the Project Area. Category 3 species could be displaced from the Project Area from noise and human presence associated with exploration activities to areas of lesser habitat quality. Displacement, however, would be short-term.

Past and proposed exploration of the P4 phosphate leases in the TES wildlife CIAA would result in a cumulative disturbance to approximately 123 acres of wildlife habitats through construction of access roads and drill pads. Proposed mining associated with other projects of leases in the TES wildlife CIAA could result in an additional 572 acres of disturbance and loss of wildlife habitats, including sagebrush, riparian, and forested habitats. This would likely result in a long-term loss and modification of wildlife habitats through the conversion of habitat types from forest and shrublands to grassland, and could result in wildlife displacement and lost foraging opportunities and habitat for prey species. Cumulative impacts to wildlife from past and future exploration would be minimized through implementation of EMPs and BMPs.

4.3.4.2 Alternative 2 – No Action

Alternative 2 would consist of not approving the exploration and prospecting activities and not issuing an exploration license and prospecting permit. Under Alternative 2, the proposed drill holes and associated access roads would not be constructed. Past and present disturbances in the Project Area would continue to have the ability to impact fish

and wildlife, as under the Proposed Action. Since Alternative 2 would not cause direct or indirect impacts to TES, it would not contribute to cumulative effects.

4.3.5 Livestock Grazing

The CIAA for livestock grazing includes the Project Area and the furthest extent of the Schmid Ridge sheep and cattle grazing allotments and Jouglard sheep allotment (Figures 9 and 11). This area overlaps portions of the Caldwell Canyon, Trail Creek, and Dry Valley South Extension lease areas (Figure 11). This area includes the 6,820-acre Schmid Ridge livestock allotments and the 2,321-acre Jouglard sheep allotment. It was selected as it encompasses lands within and adjacent to the phosphate leases in the Project Area where livestock grazing is occurring. Proposed exploration in the Project Area would temporarily remove up to 9.6 acres from public lands on the permitted sheep grazing allotment (Schmid), 11.3 acres from private lands on the permitted cattle allotment (Schmid), and 18.6 acres of state lands on the permitted sheep allotment (Jouglard). This removal and associated short-term loss of less than one AUM on public lands, 2.5 AUMs on private lands, and 5.7 AUMs on state lands (total of 8.7 AUMs) is expected to be negligible, and would therefore not be expected to add cumulatively to the loss of forage and AUMs from past exploration and mining and reasonably foreseeable future mining activities within the livestock grazing CIAA.

4.3.6 Visual Resources

The CIAA for Visual Resources includes the project area and portions of Blackfoot River Road, Slug Creek Road, South Trail Road, North Trail Road, Dry Valley Road, and several National Forest Roads and unnamed dirt ranch roads (Figure 11). Much of the proposed exploration would occur in areas not visible from public roads or inaccessible due to access across private property. Areas of disturbance from the Proposed Action visible to the public would have minor impacts to the overall viewshed, creating minimal color and visual contrast over a short time period. Due to the minor and temporary viewshed impacts, and the lack of change in VRM class designations, the Proposed Action is not expected to add cumulatively to visual impacts from past and future mining in the Visual Resources CIAA.

4.3.7 Water Quality – Surface Water and Groundwater

Direct and indirect impacts to the quality of surface water and groundwater are not anticipated from the Proposed Action or would be negligible (3.7.2). Therefore, the proposed exploration drilling would not add cumulatively to or elevate the levels of the impairments and pollutants currently existing in streams in the Blackfoot sub-basin, as described in Table 20, Section 3.7.1.

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Chapter 5

5.0 Consultation and Coordination

5.1 Persons and Agencies Consulted

The following agencies/tribes were consulted on this proposal:

- Idaho Department of Fish and Game
- Idaho Department of Lands
- Idaho Department of Water Resources
- Idaho Department of Environmental Quality
- U.S. Fish and Wildlife Service
- Natural Resource Conservation Service
- Shoshone-Bannock Tribe (Yvette Tuell and Danny Stone)
 - Staff-to-staff discussions held February 9, 2012 and February 20, 2013

5.2 List of Preparers and Reviewers

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- Blaine Newman, Supervisory Resource Management Specialist, Pocatello Field Office, BLM
- Matt Rendace, Supervisory Natural Resource Specialist, Pocatello Field Office, BLM
- Jeff Cundick, Minerals Branch Chief, Pocatello Field Office, BLM
- Gary Billman, Resource Specialist-Senior Lands, Idaho Falls, Idaho Department of Lands
- Tricia LaRue, NEPA Specialist, Brown and Caldwell
- Chris Reichard, Biologist, Brown and Caldwell
- Kenn Hardin, Biologist, Brown and Caldwell
- Kati Carberry, Biologist, Brown and Caldwell
- Rebecca Thompson, NEPA Specialist/Biologist, Brown and Caldwell
- J. Bryan Mason, Archeologist, Brown and Caldwell
- Todd Glindeman, Water Resource Specialist, Brown and Caldwell
- Greg Carson, GIS Specialist, Brown and Caldwell
- Jeremiah Thomas, GIS Specialist/Geologist, Brown and Caldwell
- Wesley Hipke, Hydrogeologist, Brown and Caldwell

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