

# North Dutch John 2D Seismic Project Environmental Assessment

High Desert District – Rock Springs Field Office

July 2010



The BLM manages more land – 245 million acres – than any other Federal agency. This land, known as the National System of Public Lands, is primarily located in 12 Western States, including Alaska. The Bureau, with a budget of about \$1 billion, also administers 700 million acres of sub-surface mineral estate throughout the nation. The BLM's multiple-use mission is to sustain the health and productivity of the public lands for the use and enjoyment of present and future generations. The Bureau accomplishes this by managing such activities as outdoor recreation, livestock grazing, mineral development, and energy production, and by conserving natural, historical, cultural, and other resources on public lands.

**BLM/WY/PL-10/031+1310**

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## 1.0 INTRODUCTION

### 1.1 BACKGROUND

Azalea Oil Company (Azalea) proposes to conduct geophysical operations consisting of a 2D seismic survey for oil and gas resources in Sweetwater County, Wyoming. The U.S. Department of Interior, Bureau of Land Management (BLM) Rock Springs Field Office (RSFO) has determined that an Environmental Assessment (EA) will be prepared for this project, referred to as the North Dutch John (NDJ) 2D Seismic Project. The project area is located approximately 50 miles southwest of Rock Springs, Wyoming, in sections 1, 2, 3, 10, 11, 12, T12N-R107W; section 6, T12N-R106W; sections 35 and 36, T13N-107W; and section 31, T13N-R106W (Appendix A, Map 1-1).

Azalea submitted a Notice of Intent (NOI) to the BLM RSFO on September 11, 2009 for the proposed 2D seismic project which would consist of three seismic traverses (lines) totaling 10.2 linear miles. Azalea Oil Company owns 100% interest in oil and gas leases under sections 1, 2, 3, 10, & 11 T12N-R107W. Approximately 7.5 miles of the 10.2 mile seismic program (74%) would be acquired on these leases.

Oil and gas are believed to be present in the proposed North Dutch John Project Area, based on a seismic survey conducted by Phillips Petroleum Company in 1963. Four wells have been drilled in the vicinity of the project area (sections 1 and 4, T12N-R107W) by several companies during the last 30 years, although all four wells are dry holes. The geological and seismic information from these previous projects allowed Azalea to narrow the focus of this prospect to a relatively small area less than 3 sections in size. The existing data indicates that there may be a structural trap (a geologic feature that captures hydrocarbons) within the project area, although Azalea does not believe that these data define the trap well enough to drill a test well. As such, Azalea determined that more data are needed to find the best drill site and avoid the “false seismic image” which Azalea observed from the existing seismic data that led to the drilling of dry holes in the area by other companies.

If the 2D seismic survey identifies the structural trap described above, then Azalea may initiate the permitting process for the drilling of 1-4 oil and gas wells in the project area. If the 2D seismic fails to identify a drillable prospect, then Azalea would likely not pursue the drilling of natural gas wells in the project area. Azalea estimates that the probability that the 2D seismic program will successfully define a drillable prospect is about 25%.

Both Alternative 1 and Alternative 2 utilize a two dimensional (a height and depth cross-section of the earth) seismic approach, versus a more widespread three dimensional (a width, height, and depth cross-section of the earth) approach. It was decided that more seismic data were needed to define the geology of the area and thus reduce the risk of an unsuccessful well drilling. Both 3D and 2D seismic were considered but because the existing wells and seismic data already limited the choices of potential drill sites, Azalea elected to shoot 2D seismic data. While 3D seismic

yields more data and a better image of the subsurface, its surface impact and expense are several times as great as a 2D seismic program covering the same area. The time constraints on field work imposed by various environmental concerns and hunting seasons also favored a 2D seismic program. Seismic shot with the 2D method is cost effective but is also constrained by requiring the source and receiver locations to occupy the same straight lines.

## **1.2 BACKGROUND ON SEISMIC EXPLORATION**

Seismic surveys are used to image the earth's subsurface in order to identify areas that could potentially contain hydrocarbons. The technology involves the creation of seismic shock waves (waves similar to those created when a pebble is dropped into a pool of standing water). The shock waves are reflected and refracted (bent) to varying degrees and travel at different speeds as they pass through different rock types. The shock waves encounter the different rock layer boundaries with different compositions, which affect the speeds of the waves. Some of the seismic shock waves are reflected upward and recorded on the surface by a grid of recording devices called geophones.

Two-dimensional (2D) seismic programs involve a source line and a series of receiver lines. The receiver lines are generally evenly spaced and oriented perpendicular to the source line. The shock waves are generated along the source lines and the geophones are laid out along the receiver lines. The geophones are connected to a data-recording truck by wires laid along the ground. The time required for the waves to travel from the seismic source down to a given reflecting rock unit and back to the geophone is related to the depth and type of the rock.

For this project, buried seismic explosive charges would be used to generate shock waves. A portable drill rig drills an approximate 50-foot deep hole where the explosive charge is placed and the hole refilled. The explosive charge at the source point is electronically detonated and the seismic data is recorded by the data-recording truck. The data-recording truck then moves forward to the next source point, where the process is repeated. The data obtained is stored for later analysis.

## **1.3 PURPOSE AND NEED**

Exploration and development of federal mineral resources by private entities is an integral part of the BLM's national energy policy and directed by federal regulation. The BLM is authorized to approve geophysical surveys on BLM-administered public lands pursuant to the Mineral Leasing Act (MLA) of February 25, 1920, as amended, and the Code of Federal Regulations 43 CFR Part 3150. Other relevant guidance includes the BLM Handbook H-3150 (Rel. 3-289 6/7/94).

The Proposed Action would allow the leaseholder to explore for oil and gas resources on their federal oil and gas leases within the NDJ project area including federal oil and gas leases W-159186, W-161414, and W-161879. The BLM will decide whether to allow Azalea to perform

2D seismic exploration activities within the project area, and whether shot holes can be drilled by buggy mounted drills or heli-portable drills.

According to the Green River RMP (BLM 1997), the Project Area is open to consideration of mineral leasing and exploration, except where these activities would cause unacceptable impacts. The objective for seismic surveys is to provide opportunity for collection of geophysical data, while protecting natural resource values. Geophysical activities are required to conform to the off highway vehicle (OHV) management prescriptions for the planning area.

This EA will allow BLM to evaluate the potential impacts of Azalea's Proposed Action in light of other resource values and management directives.

## **1.4 CONFORMANCE WITH LAND USE PLANS**

The RMP (BLM 1997) includes a mineral resource objective that provides for leasing, exploration, and development of oil and gas, while protecting other values. The management action states that BLM-administered public lands not specifically closed are open to consideration of oil and gas leasing with appropriate mitigation measures. Timing limitations (seasonal restrictions) will be applied when activities occur during crucial periods or would adversely affect important or sensitive resources. Similarly, the BLM's "objective for management of geophysical exploration activities is to provide opportunity for exploration of mineral resources and collection of geophysical data while protecting other resources." The NDJ project area is located within an area defined in the RMP as the Sugarloaf Basin Special Management Area (SMA), an area open to oil and gas leasing with appropriate mitigation measures and timing limitations.

### **1.4.1 Sugarloaf Basin SMA**

The management objectives for the Sugarloaf Basin SMA include: 1) improve watershed condition and enhance watershed values; 2) improve riparian areas to proper functioning condition; 3) provide opportunities for dispersed recreation uses in the area consistent with the primary watershed, riparian, and wildlife objectives; and 4) maintain and protect important wildlife habitat (BLM 1997). In addition, the SMA is managed as an avoidance area for rights-of-way (ROW) and surface-disturbing activities, with motorized vehicle use limited to designated roads and trails. The SMA is open to mineral leasing and related exploration and development activities with appropriate mitigation requirements applied to protect resource values. Aquifer recharge zones in the area are managed to protect groundwater quality and aquifer recharge function. Restrictions from surface disturbing activities for protection of raptors, big game crucial winter range, and big game calving/fawning areas apply to the Sugarloaf Basin SMA (see Table 1-1).

**Table 1-1. Land Use Buffers for the Sugarloaf Basin SMA (BLM 1997).**

<b>Affected Areas/Resources</b>	<b>Restriction</b>	<b>Restricted Area</b>
Big Game Crucial Winter Ranges	Nov. 15 - April 30	Antelope, elk, moose, and mule deer crucial winter ranges
Parturition Areas	May 1 - June 30	Designated parturition areas
Greater Sage Grouse Lek	Mar. 1 - May 15	Within one-quarter mile radius of lek
Sage Grouse Nesting Areas	Mar. 15 - July 15	Up to 2-mile radius of nesting area
Golden Eagle Nest	Feb. 1 - July 31	Within one mile radius
Osprey Nest	Feb. 1 - July 31	Within one-half mile radius
Swainson's Hawk Nest	Feb. 1 - July 31	Within one-half mile radius
Ferruginous Hawk Nest	Feb. 1 - July 31	Within one mile radius
Coopers Hawk Nest	Feb. 1 - July 31	Within one-half mile radius
Burrowing Owl Nest	Feb. 1 - July 31	Within one-half mile radius
Merlin Nest	Feb. 1 - July 31	Within one-half mile radius
Other Raptors	Feb. 1 - July 31	Within one-half mile radius
Game Fish Spawning Areas	Spring spawning, Fall spawning	Determined on case-by-case basis

Source: Green River RMP (BLM 1997).

The Sugarloaf Basin SMA is a management area where travel is limited to designated roads and trails. Vehicles are generally only allowed on existing two-tracks and improved roads that have received cultural clearance and been pre-approved by the BLM. Geophysical activities are required to conform to the off highway vehicle (OHV) management prescriptions for the planning area.

#### **1.4.2 Relationship to Statutes, Regulations, or Other Plans**

Development of federal oil and gas leases is an integral part of the BLM oil and gas leasing program under the authority of the Mineral Leasing Act of 1920 (MLA), as amended; the Mining and Mineral Policy Act of 1970 (MMPA); the Federal Land Policy Management Act of 1976 (FLPMA); the National Material and Minerals Policy, Research and Development Act of 1980 (NMMPRDA); the Federal Oil and Gas Royalty Management Act of 1982 (Pub. L. No. 97-451); the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (FOOGRLA); and the Energy Policy Act of 2005, which promotes the development of oil and gas resources by facilitating oil and natural gas production from existing federal oil and gas leases. The BLM oil and gas leasing program is intended to encourage the development of domestic oil and gas resources, thereby reducing national dependence on foreign energy supplies.

This EA has been prepared in accordance with the NEPA (42 U.S.C. §§ 4321 – 4347), as amended. The regulatory framework that governs oil and gas drilling, production, and abandonment involves a number of policies, legislation, and regulations. The Azalea NDJ 2D Seismic Proposal is being evaluated in accordance with requirements of Onshore Oil & Gas Regulations (43 CFR) Part 3150 - Onshore Oil and Gas Geophysical Exploration (National link),

NEPA and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR §§ 1500-1508), and the BLM NEPA Handbook H-1790-1 (Rel. 1-1710 01/30/2008).

## 1.5 ISSUES

A 30-day public scoping period was conducted between December 17, 2009 and January 16, 2010 (see Appendix B for the Scoping Notice). During the scoping period, the RSFO received four comment letters. Comment letters were received from the Biodiversity Conservation Alliance, Greater Little Mountain Coalition, Trout Unlimited, and Wyoming Wildlife Federation. The comments covered a wide range of issues and concerns about potential impacts to fish and wildlife, impacts to recreation (hunting), impacts to the Sugar Loaf SMA and Little Mountain Ecosystem from future oil and gas development, and a preference for the use of helicopters/heli-portable drills instead of buggy-mounted drills. A summary of the scoping comments is included as Appendix C of this EA.

In addition to the public comments collected during the scoping process, a BLM interdisciplinary team considered issues associated with and the potential consequences to various natural resources due to seismic exploration. In addition, a meeting was held between representatives of the BLM RSFO, Wyoming Game and Fish Department, and Azalea to discuss project issues.

Following are the key issues identified during the public scoping period and by the BLM interdisciplinary team. These issues were used as a basis for evaluation of potential impacts in this EA:

- Potential impacts to sensitive species, including midget-faded rattlesnake, pygmy rabbit, juniper obligates, nesting raptors, Colorado River cutthroat trout, etc.
- Potential conflicts with management objectives and decisions for the Sugar Loaf SMA and Little Mountain Ecosystem.
- Potential disturbance to wildlife, including big game.
- Potential conflicts with big game hunting seasons, including disturbance of big game and avoidance of the area due to project activities.
- Cumulative impacts to the Little Mountain Ecosystem due to existing and proposed oil and gas exploration and development.
- Impacts to vegetation and development of new two-tracks due to the use of vehicles (e.g., buggy drills and all-terrain vehicles [ATVs]) outside of existing roads.
- Potential for reducing impacts through the use of helicopters and heli-portable drills for shot hole drilling.
- Potential impacts to junipers and mountain mahogany.
- Enforcement and monitoring of mitigation measures and stipulations, including off road vehicle use and reclamation.

- Impacts to streams, seeps, springs, and riparian areas.
- Impacts to subsurface hydrology due to shot holes.
- Potential spread of existing invasive plants and noxious weeds.

The EA was made available for a 30-day public review from May 25 through June 25, 2010. During the public review period, the RSFO received comment letters 13 organizations and individuals. Public comment letters and comment response table are included in Appendix F of this EA.

## **2.0 PROPOSED ACTION AND ALTERNATIVES**

This chapter describes Alternative 1 (Proposed Action – Shot Hole Drilling Using Buggy Mounted Drills), Alternative 2 (Shot Hole Drilling Using Heli-Portable Drills), and the No Action Alternative.

### **2.1 ALTERNATIVE 1 - PROPOSED ACTION (SHOT HOLE DRILLING USING A BUGGY MOUNTED DRILL)**

The Proposed Action involves a 2D seismic survey consisting of receiver stations (geophones) every 110 feet and source locations (shot points) every 440 feet. The survey is designed so that there would be four times as many receiver stations as shot points. No permanent facilities are proposed for this project.

This project would involve three distinct phases:

- 1) Surveying in shot hole and receiver locations.
- 2) Drilling (using a buggy drill) and loading of shot holes.
- 3) Laying out the receiver lines and geophones, detonating the charges, and recording the data.

The survey would consist of three seismic traverses (lines) designated as DJ-1, DJ-2, and DJ-3 (Appendix A, Map 1-1). The three seismic lines total approximately 10.2 miles within the project area, of which 9.6 linear miles (94%) are on BLM-administered lands and 0.6 linear miles (6%) is on State of Wyoming land; no private lands are located within the project area. Shot hole drilling and seismic recording are proposed to occur during July and August 2010 to avoid big game hunting seasons to the extent feasible and to minimize impacts to seasonal streams and riparian areas. The only project activity that would be allowed to occur prior to August 1 would be the shot point/receiver survey, which would not involve any off road vehicle travel (see Section 2.1.1.1 below). Surface disturbance would be temporary in nature, with the majority of disturbance limited to minor soil compaction and vegetation trampling.

The total length of time that seismic activities would occur at the site is expected to be less than 4 weeks, although this timeframe would not be continuous (i.e., there may be days of inactivity between project phases) or vary due to other weather conditions. Locations of the seismic lines have been sited in a manner that maximizes the use of existing roads and two-tracks for access as much as possible (Appendix A, Map 2-1). Portions of these lines may be moved in order to avoid sensitive resources, steep slopes, etc. In order to reduce potential impacts to vegetation and soils, the first phase, surveying locations of shot and receiver locations, and the third phase, laying out geophones, detonating the charge, and recording data, would not involve any cross country vehicle travel (any activities outside of existing roads and trails would be done on foot). The second phase, drilling and loading shot holes, would involve the use of a buggy drill. The buggy drill is the only vehicle that would travel off existing roads under the Proposed Action,

and any off-road travel by the buggy drill would be minimized to the extent feasible. The buggy drill would avoid travel on slopes over 25 percent, and setback distances from sensitive resources would be employed to avoid driving the buggy drill in those areas (Table 2-1 and Appendix A, Map 2-1). In addition, surveys for biological (i.e., sensitive plants and wildlife) and cultural resources will be completed prior to seismic operations, and identified resources would be avoided in accordance with BLM standards.

In order to avoid areas of steep slopes, approximately 1.4 miles of the southern portion of the DJ-3 line was rerouted in May, 2010. The southern terminus of this line was shifted approximately 600 ft west and the line now intersects and follows the original line north near the staging area. The revised portion of DJ-3 was surveyed for biological, cultural, and hydrological resources.

**Table 2-1. Shot Hole Setbacks.**

<b>Sensitive Resource</b>	<b>Setback Distance</b>
Springs	1,320 feet (1/4 mile)
Riparian Areas	500 feet
Streams	100 feet
Archaeological Sites	100 feet
Slopes greater than 25%	Drilling not allowed
State and County Road ROW	100 feet

**2.1.1 Project Operations**

As described above, this project would involve three distinct phases: 1) surveying of shot and receiver locations; 2) drilling (using a buggy drill) and loading of shot holes; and 3) laying out of receiver lines and geophones, detonating the charges, and recording data. Each of these phases is described in detail below. It is not anticipated that these phases would overlap. It is expected that project operations would require approximately 12 total days during late July and August 2010.

**2.1.1.1 Shot Point/Receiver Survey**

Two land surveyors would flag the locations for the shot points and receivers. The surveyors would drive to the field in two light trucks, and these trucks would only be driven on existing roads and two tracks. The survey would be performed entirely on foot in order to minimize impacts to vegetation, soils, and other sensitive resources (e.g., riparian areas). The surveyors would use GPS coordinates to mark each shot and receiver location with a pin flag. A maximum of 125 shot holes located along 10.2 miles of traverse would be surveyed. The surveyors would also flag any sensitive resource setbacks (e.g., cultural sites, seeps, etc.) and associated route modifications. Land surveying would take approximately 3 days.

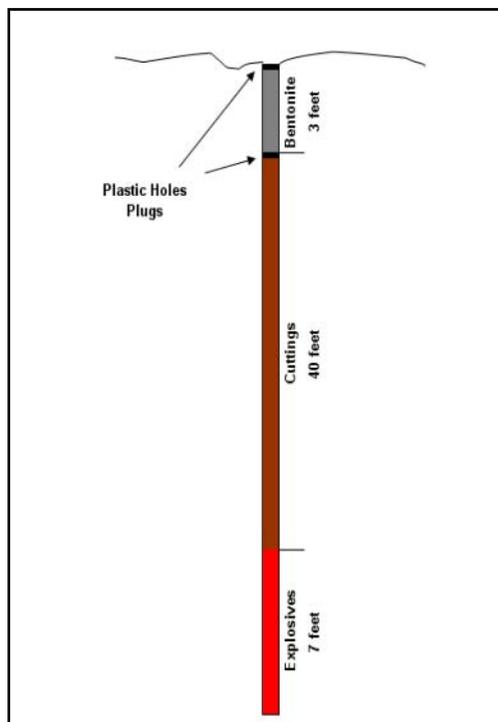
**2.1.1.2 Shot-Hole Drilling**

The seismic survey would consist of approximately 125 total shot holes located on three linear traverses. These holes would be drilled by a buggy-mounted drill in order to minimize impact on soils and vegetation in the area. The buggy drill (Figure 2-1) would be transported to the area on a trailer and offloaded. The truck that delivers the buggy drill would also contain fuel for the buggy drill and provide transport for the 2-man buggy drill crew. The drill has a gross vehicle weight (GVW) of 10,000 pounds and a ground load of 4.2 pounds per square inch (PSI). This is similar in size and weight to a Skidsteer or Bobcat loader but with wider tires to distribute the weight over a larger surface. The buggy drill would utilize “smooth tread” tires, which would be approved by BLM prior to use, in order to minimize potential disturbance to vegetation and soils. The drill is articulated for maneuverability. The buggy drill would be driven along existing roads to points where the seismic lines intersect those roads in order to minimize cross country travel. A Transportation Plan depicting specific travel routes to be used to access specific portions of a seismic line and avoid sensitive resources has been prepared (see Appendix E). This plan may be modified prior to the start of project activities in order to avoid identified sensitive resources. The buggy drill would enter and exit portions of the seismic lines using the same route, but would offset their exit route to avoid driving over the same area whenever feasible to reduce potential impacts. The buggy drill would then follow the seismic line traverses to designated shot point locations. No holes would be drilled (and the buggy drill would not travel) on slopes over 25 percent or within the prescribed distances from sensitive resources per the standard offset requirements. In addition, areas of heavy vegetation (e.g., junipers), where it is not practical to drill would also be avoided. No juniper trees would be cut and mountain mahogany also would be avoided.



**Figure 2-1. – Buggy Drill**

Each shot hole would be drilled to a maximum depth of 50 feet using compressed air and the bottom 7 feet of the hole would be loaded with 10 pounds of Seisgel explosive (Figure 2-2). Seisgel is a very stable plastic explosive specially formulated and packaged for the seismic industry. The explosives would be transported to the site by a licensed contractor and stored in a secure magazine, with daily accounting to ensure that no explosives are removed from the project area. Regulations of the Bureau of Alcohol, Tobacco, and Firearms regarding explosives would be followed. All shot holes would then be backfilled and plugged in accordance with State of Wyoming rules. Each shot hole would be backfilled with drill cuttings and the top 3 feet plugged with bentonite and capped by a plastic identification plug. Excess drill cuttings would be scattered on site. The buggy drill would course along the seismic traverse consecutively from one shot hole location to the next, continuing until it either drills all designated locations or encounters steep topography or other sensitive areas described previously. At this point, the drill would backtrack to the nearest existing road and drive to the next consecutive point where an existing road crosses a seismic traverse. A maximum of two trips would be made by the drill along each seismic traverse. No location on a seismic traverse is more than 0.5 miles from an existing road, which would minimize the amount of cross country travel. Once drilling is completed, the buggy drill would then be loaded back onto the trailer and would leave the area. The explosives magazine would also be removed at this time. Drilling and loading of the holes is projected to take 5 days. Operations would occur during daylight hours.



**Figure 2-2. – Shot Hole Schematic**

### **2.1.1.3 Detonation and Recording**

The seismic recording crew would use five light trucks and trailers to move equipment to the staging area. In addition, another light truck would transport the recording instruments to the staging area and remain there throughout the project. Only existing roads and two tracks would be used. The proposed staging area may be reached by following U.S. 191 to County Road 33 (CR 33) (also known as Flaming Gorge Road), turning east on Iron Mountain Road (which intersects CR 33 in Section 3, T12N, R107W) and traveling for approximately 1.5 miles to the staging area (Appendix A, Map 1-1). The proposed staging area is centrally located near the intersection of the three proposed seismic lines, has direct road access (Iron Mountain Road), and is of sufficient size to accommodate project staging requirements (i.e., would not require expansion). The staging area comprises approximately 4 acres at the site of a former test well that was graded and leveled in 1965. The seismic recording truck would be positioned in the staging area and would record the entire program from this site.

The recording crew would consist of 20 people who would be lodged in Rock Springs and transported approximately 50 miles to the job site each day following a morning safety meeting. The crew would use light trucks to place geophones, recording cable, and recording boxes at points where the seismic traverses intersect existing roads. The geophones (Figure 2-3) and recording boxes would then be moved to the surveyed receiver positions along the seismic traverse on foot. Six geophones would be placed on the ground 3 feet apart, centered at each receiver location. Recording boxes containing electronics and a battery (approximately the size of a lunchbox) would be placed at every sixth receiver location. The receivers are connected to each other and to the recording truck by a wire about the size of a heavy duty extension cord.



**Figure 2-3. – Geophone Array**

Before detonation, safety measures and procedures would be implemented to ensure the safety of all field personnel. Under direction from the seismic observer stationed in the recording truck, the shots would be discharged one at a time and the seismic echoes recorded. The impulse from the shot force would not be heard or felt more than 300 feet from the shot point and no effects of the shot would be evident on the surface. The recording would start when sufficient geophones are placed along any traverse. The layout and recording would proceed simultaneously, but in different portions of the project area. After recording is complete in a given area, the layout crew would make another trip along the traverse to recover the geophones, recording boxes, and survey pin flags. This would occur simultaneously with recording of shots in other areas. Recording operations are projected to take up to 4 days. Operations would occur during daylight hours.

#### **2.1.1.4 Reclamation**

Project reclamation would proceed concurrently with seismic survey operations. All pin flags, flagging, stakes, and any other material associated with the project left on the surface would be collected as the seismic operations progress by two members of the recording crew. Reclamation measures would be undertaken as soon as possible to restore areas as close to their original condition as possible. At the completion of the seismic survey, a final inspection would be conducted by the BLM Authorized Officer (AO). Additional reclamation would be carried out, if required by the BLM AO.

Drill cuttings would be spread over a radius of approximately 3 feet around the shot hole. The shot hole would not exceed a diameter of two inches and would be backfilled with soil and cuttings, and contoured to the approximate topography of the area. The shot holes are expected to recover without additional reclamation, with the goal of returning to pre-disturbance conditions within one or two growing seasons. Compacted native vegetation is expected to recover within one growing season, and would not likely require any additional reclamation. Barriers (e.g., logs or fence posts) and signs would be placed at the junction of the existing roads with the seeded off-road locations of the seismic lines to prevent access to recently reclaimed areas.

Reclamation planned for the staging area, if necessary, would include planting BLM-approved certified weed-free native seed. In the event that rutting of roads or two-tracks occurs, the ruts would be repaired by the crew. Damage to roads and two-tracks would be documented and reported to the BLM AO. Reclamation would, to the extent possible, restore the area to as close to its original condition as possible.

#### **2.1.1.5 Solid Waste Management and Sanitation**

Self-contained, chemical portable toilets would be provided at the staging areas for human waste disposal. The toilet holding tanks would be pumped out, as needed, and the contents disposed of in the nearest BLM-approved sewage disposal facility.

Garbage, trash, and other non-flammable waste materials would be collected and disposed of at an approved sanitary landfill. Trash would not be burned or buried on location.

#### **2.1.1.6 Spill Response**

If spills of diesel fuel or other hazardous fluids occur during the seismic operations, Azalea or their contractors would immediately begin cleanup operations and contact the BLM and other regulatory agencies (e.g., EPA National Response Center, State of Wyoming), as required. Azalea or their contractors would maintain on-site Material Safety Data Sheets (MSDS) for all chemicals used during seismic operations, in accordance with 29 CFR § 1910.1200(g).

#### **2.1.2 Design Features of the Proposed Action**

Design features are those specific means, measures, or practices that make up the Proposed Action such as standard operating procedures, stipulations, and best management practices including those that Azalea has voluntarily agreed to avoid or minimize environmental impacts. These design features are provided below.

##### **2.1.2.1 General Operations**

- Azalea has agreed that vehicular traffic, except for buggy drills, will only be allowed on existing two-track or improved roads and that a Transportation Plan will be developed. Class III cultural surveys will be conducted on the two-track and roads identified in the Transportation Plan.
- Seismic operations will cease on August 31, 2010, prior to the beginning of archery hunting season, to prevent project activities from disturbing large game species (i.e., elk, mule deer, and pronghorn antelope).
- Azalea will collaborate with the BLM and Wyoming Game and Fish Department to notify the public of the seismic activity while the project is being conducted.

##### **2.1.2.2 Air Quality**

- Members of the seismic crew would be encouraged to carpool to and from surrounding towns to minimize vehicle-related emissions.

##### **2.1.2.3 Cultural Resources**

- Azalea has agreed to conduct a Class III archaeological clearance for a 50-foot corridor from the centerline of the seismic traverse on each side for the length of the lines.
- Based on the results of field surveys, all cultural sites will be avoided. The survey crew will move any source points associated with identified cultural sites to avoid these resources.

- If cultural resources are discovered during seismic activities, all activity along the seismic line would cease, and Azalea would immediately notify the BLM. The BLM and Wyoming State Historic Preservation Office representatives would then determine how to avoid impacting the site or artifact.

#### **2.1.2.4 Hazardous and Solid Waste/Trash Disposal**

- Fuel and lubricants would be temporarily stored in transportable containment trailers at staging areas, with secondary containment, to minimize potential for accidental releases/spills.
- All spills or leaks of diesel fuel, hydraulic fluid, lubricating oil, and coolant, including contaminated soil material, would be excavated and placed in an appropriate container and transported to an approved disposal site. All incidents would be reported to the appropriate regulatory agency, allowing the agency representative to monitor the reclamation of the site.
- All solid waste or trash would be transported for disposal to an approved solid waste disposal facility.
- Portable human waste receptacles will be placed at the staging area and maintained, as necessary, for the duration of the seismic program. Human waste receptacles can also be placed along access routes and established two-track roads, as needed.
- An Emergency Response Plan (ERP) will be located in each vehicle used for seismic operations to ensure rapid response to leaks and spills.

#### **2.1.2.5 Erosion and Sedimentation Control**

- No cross-country travel, except for buggy drills, would be allowed; all other vehicles would be restricted to designated roads and two-tracks.
- Buggy drills would use “smooth tread” tires, which would be subject to approval by BLM prior to use.
- Employees and contractors would be instructed to travel at appropriate speeds to limit disturbance to soils and vegetation, and to minimize the potential for vehicle-wildlife and vehicle-vehicle collisions.
- At the end of the project, all equipment, supplies, and trash would be removed.
- The staging area, where vegetation may have been disturbed, would be re-contoured and reseeded, if necessary.
- Ephemeral low water stream crossings would be avoided when the streams are flowing.

#### **2.1.2.6 Vegetation Resources**

- To reduce the introduction/ spread of noxious and invasive weed species from vehicles and equipment to the well sites, employees and contractors would not be allowed to drive

off-road with the exception of buggy drills.

- Surveys for threatened, endangered, or sensitive plant species will be conducted prior to the initiation of the seismic survey.
- A noxious weed control management program will be implemented to prevent or control the spread of noxious weeds at the proposal site. All vehicles that enter the proposed Project Area will be washed prior to the beginning of the survey.
- All applicable equipment, including on-road and off-road equipment, would be cleaned to remove weed seed and soil (which may contain weed seeds), prior to commencing operations on public lands within the Project Area.
- Weed infestations resulting from the seismic operations would be treated, as necessary, by an herbicide approved by the BLM AO to prevent additional weed spread.

#### **2.1.2.7 Wildlife Protection**

- Azalea would comply with all BLM restrictions for the protection of wildlife.
- Surveys will be conducted for juniper obligate species, pygmy rabbits, and midget faded rattlesnakes prior to the initiation of the seismic survey.
- To reduce the potential for wildlife-vehicle collisions, Azalea would require their employees and contractors to always drive at safe speeds.
- No dogs / pets will be allowed in the proposed Project Area.
- No firearms will be allowed in the proposed Project Area.

#### **2.1.2.8 Public/Crew Safety**

- Azalea would take all necessary precautions for the protection and safety of the public for the duration of the seismic program.
- To further facilitate coordination with local emergency services, Azalea would provide mapped locations of the proposed seismic exploration areas and times to the respective emergency services, personnel, as applicable, in advance of any exploration activities. In addition, Azalea would have cell phones, satellite phones or radios onsite, as appropriate, to provide immediate communication to emergency services.
- Emergency Response Plans (ERP) will be drafted and available at the staging area, in all contractor and sub-contractor vehicles, as well as at crew offices in Rocks Springs, BLM RSFO, and other applicable agency offices as necessary.
- Vehicle traffic, with the exception of buggy drills, would be limited to existing roads and two-tracks. Vehicles would travel at speeds within set speed limits of main access roads and at slower speeds appropriate for conditions on more remote roads and two-tracks.

- At a minimum, all crew members would comply with the Occupational Safety and Health Administration (OSHA) rules and regulations.

#### **2.1.2.9 Existing Facilities/Right of Way Protection**

- Azalea will be responsible for road repair and/or improvements as needed on the existing BLM access roads per BLM road standards if the damages are a result of the seismic operation.
- Safe operating distances (based on accepted industry standards) will be maintained between shot holes and existing facilities including oil and gas wells, roads, pipelines, and electrical utility lines.
- Any facilities impacted by the proposed seismic survey would be repaired or replaced as soon as practical before the end of the project.

#### **2.1.2.10 Fire Protection**

- Vehicles with catalytic converters will be restricted to approved roads and two-tracks. Parking or idling will not be permitted in portions of roads or two-tracks with tall vegetation.
- All brush build-up around mufflers, radiators, heater-treaters, and other engine parts will be avoided; periodic checks will be conducted to prevent this build-up.
- All personnel will be advised that smoking is only allowed in crew vehicles. All other areas are designated as non smoking areas.
- All personnel will be advised that campfires or uncontained fires of any kind are prohibited except in an extreme emergency situation as defined in contractor safety manuals. The ERP includes a fire communications protocol for contacting fire-fighting personnel. Fire boxes will be used, if required.
- Prior to start-up Azalea will engage local fire prevention agencies and discuss protocols for emergency fire fighting.
- Personnel will be trained in fire fighting techniques, as needed.
- Firefighting equipment will be kept on site at all times. The equipment will be painted red with “Fire Equipment” printed on the container in a highly visible manner. These containers will have the contents displayed on the exterior of the box.

## **2.2 ALTERNATIVE 2 – SHOT HOLE DRILLING USING HELI-PORTABLE DRILLS**

Alternative 2 consists of a 2D seismic survey similar to that described under the Proposed Action, except that shot holes would be drilled using heli-portable drills (transported to shot hole locations via helicopter) instead of with a buggy mounted drill. This alternative would eliminate entirely the use of vehicles outside of any existing roads or two-tracks. All other project activities (i.e., surveying of shot and receiver locations, laying out of receivers, and recording

data) would be completed as described under the Proposed Action. As such, this section only describes activities that would occur during shot-hole drilling that would differ from those described under the Proposed Action.

Use of helicopters and heli-portable drill rigs for shot hole drilling is typically reserved for areas where access is limited due to extreme terrain (e.g., steep slopes) or sensitive areas. Use of helicopters and heli-portable drills considerably increases the manpower required as well as the cost of drilling shot holes compared with using buggy-mounted drills.

Under this alternative, shot hole drilling with the use of a helicopter is anticipated to involve the following equipment and manpower:

- One SA 315B Lama helicopter.
- 15 personnel (helicopter pilot, crew manager, 5 drillers, 5 drill helpers, mechanic, flight coordinator, fuel truck driver).
- Five heli-drills, each with a 4-cylinder diesel compressor (about 1,500 pounds), and associated support baskets.
- Two flat bed trucks and trailers to deliver and pick up helicopter and drills.
- One fuel truck for helicopter.
- One shop/parts trailer.
- Three transport vehicles for personnel.

A comparison of the equipment, manpower, and timeframes associated with shot hole drilling using a buggy drill (Alternative 1) compared to using a helicopter (Alternative 2) is provided in Table 2-2 below.

**Table 2-2. Alternative 1 and 2 Comparison of Shot Hole Drilling.**

	<b>Alternative 1</b>	<b>Alternative 2</b>
<b>Vehicles</b>	1 buggy drill 1 truck/trailer	1 helicopter 1 fuel truck 2 trucks/trailers 3 crew transport vehicles
<b>Manpower</b>	2	15
<b>Days in Field</b>	5 days	5 days

The helicopter, drills, and associated equipment would be transported to the project area by flat bed trucks; these trucks would leave the project area after drop off and would return when shot hole drilling is completed to remove the helicopter, drills, and equipment. Following a morning safety briefing, the crew would travel to the project area each day from Rock Springs via three transport vehicles. A night watchman would be on site during non-working hours to guard equipment, helicopter, and explosives. The staging area (a former 4-acre well pad) would be the

same as that described under the Proposed Action, and would serve as an equipment storage area and helicopter landing and fueling pad.

Each drill rig and associated equipment would be delivered to each shot hole location by helicopter. The helicopter would typically hover at approximately 150 feet above ground level while picking up and delivering the drill rig and equipment. The drill rig would be assembled at each shot location by a driller and drill helper, who would walk to each shot hole location from the nearest existing road or two track. The support basket would include drill bits, drill pipe, explosives, tools, fuel for the compressor, and hole plugging supplies.

Because the largest expense of heli-portable drilling is the helicopter, its efficiency is important, and the goal is to have the helicopter working at all times throughout the day. The heli-portable drills are limited in the speed and depths they can drill as compared to buggy mounted drills. One helicopter can efficiently move and support five drills at a time, so employment of five drills is typical of heli-portable drill operations. Four drills would typically be drilling at a time while one is being moved by the helicopter. The helicopter must make three trips to support each shot hole: one to transport the drill, one to transport the compressor, and one to transport the support basket. Drilling, loading, and plugging of each shot hole would take about 1.5 hours. Helicopter drilling operations are anticipated to occur 10 hours per day, and it is anticipated that up to 30 shot holes can be drilled per day by this method (requiring a total of 90 trips per day by helicopter). At this rate, it is anticipated that drilling of an estimated 125 shot holes would take about 5 days. However, delays are more likely with helicopter use than buggy use due to safety issues caused by rain storms or high winds; if weather conditions or wind speeds reach a level that is determined to cause a safety hazard to helicopter operations, helicopter operations would cease (i.e., the helicopter would land in the staging area) until it is determined that it is safe to resume helicopter operations.

### **2.3 NO ACTION ALTERNATIVE**

In accordance with the NEPA and the CEQ regulations, a No Action Alternative is required. The No Action Alternative would be the denial by the BLM of Azalea's proposal to conduct the NDJ 2D seismic survey. It serves as a benchmark, enabling decision-makers to compare the magnitude of environmental effects resulting from the Proposed Action and any action alternatives with a No Action Alternative. Under the No Action Alternative, there would be no new impacts to vegetation, wildlife, special status plant and animal species, soil, cultural resources, recreation, surface water and groundwater, range resources, and other resources.

## **3.0 AFFECTED ENVIRONMENT**

### **3.1 INTRODUCTION**

Chapter 3 provides a description of the existing human and natural environment resources that could be affected by Alternative 1, Alternative 2 and the No Action Alternative in the analysis area. The analysis area is defined for each resource and is based on the nature of the resource. For some resources, the analysis area is the proposed Project Area, and for other resources the analysis area encompasses a larger area. For example, a larger area is analyzed for wildlife species, which are mobile, versus plant species, which are stationary. The existing baseline conditions in the analysis area are a result of past and present activities in the area. Aspects of the baseline condition that affect a specific resource are presented in the discussion for that resource.

### **3.2 SOIL RESOURCES**

The development of soils is governed by many factors, including climatic conditions (the amount and timing of precipitation, temperature, and wind), the parent material that the soil is derived from, topographic position (slope, elevation, and aspect), geomorphic processes, and vegetation type and cover.

Soil mapping conducted by the National Resource Conservation Service (NRCS) provides information about each soil type within the project area that can be used to evaluate the erosion potential and reclamation potential of each soil unit.

#### **3.2.1 Project Area Soils**

Soils found in the Project Area developed from material derived from glacial till, colluvium, alluvium, or sedimentary rock. These soils can be found on alluvial fans, hills, ridges, terraces, channels, and till plains. They are very shallow to very deep soils formed mainly in materials transported by water, wind, or gravity (USDA 1979).

Soils occurring in the project area are found between 6,000 and 8,000 feet in elevation. Slopes in the project area range from 0% to 60+ %. Project area soils normally have 1 to 3 soil horizons, with a combination of silt, loam, clay, sand, gravel, and cobble. The soils range in color from pale brown to grayish brown. The ability of the soils to transmit water ranges from slow to moderately rapid. The available water capacity is dependent on the soil type and varies from low to high (approximately 0.5 to 10.0 inches) (USDA 1979). Detailed descriptions of the Project Area soils are included in Table 3-1 below.

**Table 3-1. Project Area Soil Types and Descriptions.**

<b>Map Unit Complex Name</b>	<b>Dominant Soil Name/Percent of Complex</b>	<b>Slope (%)</b>	<b>Soil Description</b>
Rock outcrop-Wint-Horsley association, steep	Rock outcrop/40%	Steep	These soils are shallow and excessively drained. The ability to transmit water is moderate. Available water capacity is very low (approximately 0.5 to 1.5 inches). Potential for wind erodibility is very low and water erodibility is severe.
Rock outcrop	Rock outcrop /100%	Steep	These areas are mostly bare bedrock exposures of sandstone and shale. The terrain is sloping to vertical with a local relief of 50 to 500 feet
Tisworth fine sandy loam	Tisworth/80%	1 – 6	These soils are deep and well drained. The ability to transmit water is slow. Available water capacity is moderate (approximately 3.0 to 6.0 inches). The surface horizon is brown fine sandy loam. Wind erodibility and water erodibility are moderate.
Tisworth-Goslin complex	Tisworth/60%	3 – 10	These soils are very deep and well drained. The ability to transmit water is slow. Available water capacity is low. The surface horizon is a pale brown sandy loam. Wind erodibility and water erodibility are moderate.
Redcreek-Thermopolis complex	Redcreek/40%	3 – 30	These soils are shallow and well drained. The ability to transmit water is moderately rapid. Available water capacity is low (approximately 1.5 to 3.5). The surface horizon is a brown sandy loam. Wind erodibility is moderate and water erodibility is moderate to severe.
Rentsac-Blackhall complex, cool	Rentsac/40%	2 – 12	These soils are very shallow and well drained. The ability to transmit water is moderately rapid. Available water capacity is low (approximately 0.5 to 3 inches). The surface horizon is a pale brown cannery sandy loam to a dark grayish brown loam. Wind erodibility is moderate and water erodibility is moderate to severe.
Rentsac-Blackhall complex, cool	Rentsac/30%	20 – 50	These soils are shallow and well drained. The ability to transmit water is moderately rapid. Available water capacity is low (approximately 1.0 to 3.0 inches). The surface horizon is dark grayish brown loam. Wind erodibility and water erodibility are severe.
Plite-Grieves complex	Plite/50%	3 – 10	These soils are very deep and well drained. The ability to transmit water is moderate. Available water capacity is moderately high (approximately 8.0 to 10.0 inches). The surface horizon is a grayish brown loam. Wind erodibility is slight and water erodibility is moderate.

Map Unit Complex Name	Dominant Soil Name/Percent of Complex	Slope (%)	Soil Description
Blazon-Shinbara-Rentsac complex	Blazon-Shinbara/60%	20 – 60	These soils are shallow and well drained. The ability to transmit water is moderate. Available water capacity is very low (approximately 1.5 to 3.5 inches). The surface horizon is a grayish brown to pale brown loam. Wind erodibility is slight and water erodibility is severe.
Blackhall-Elk Mountain complex	Blackhall/60%	0 – 15	These soils are shallow and well drained. The ability to transmit water is moderately rapid. Available water capacity is low (approximately 1.5 to 3.0 inches). The surface horizon is a brown fine sandy loam. Wind erodibility is moderate and water erodibility is slight to severe.

(USDA 1979)

### 3.3 WATER RESOURCES

#### 3.3.1 Surface Water

For purposes of this EA, the surface water resource analysis area encompasses the area from west of the Rock Springs uplift to the Flaming Gorge Reservoir. This includes the Sugarloaf Basin SMA. Surface water hydrology is shown on Map 3-1 (Appendix A).

The project area is located within the Little Mountain watershed, which sits within the Lower Green River watershed. Precipitation flows via local streams and draws of the relatively small, local area watersheds (less than 100 square miles). The streams in the project area are intermittent (flows seasonally in response to snow melt) or ephemeral (flows infrequently in response to storm events). They receive water via runoff from rainfall, springs, or snowmelt that drain from the east on the flanks of Little Mountain and flowing westward to Flaming Gorge Reservoir. Three streams systems are located in the project area and are described below (see Appendix A, Map 3-1).

The northern portion of the project area drains to the intermittent Krause Marsh Creek. Krause Marsh Creek is a perennial stream at its headwaters and becomes intermittent at its lower reaches (D. Doncaster, BLM RSFO Hydrologist, pers. comm. June 5, 2008). The stream receives water from snowmelt on Little Mountain and from rainstorms. Some of the flow into Krause Marsh Creek also comes from springs along the west flank of Little Mountain.

West Spring Creek flows through the southeast portion of the project area. West Spring Creek drains from the lower portion of Little Mountain. There are not any known springs associated with the creek and it is likely ephemeral for its entire length.

Horseshoe Draw drains off Iron Mountain, which is located in the Project Area. Horseshoe Draw is an ephemeral drainage that flows to the west.

In addition to the named streams, some un-named ephemeral drainages begin on Iron Mountain and drain to the named streams.

The project area is within the BLM Sugarloaf Basin SMA where improving watershed condition and enhancing watershed value for groundwater recharge is a primary management objective per the Green River RMP (BLM 1997).

Existing land use activities in the area that potentially affect water resources include wildfire, livestock grazing, wild horse range, big game range, unimproved and improved roads, OHV use, dispersed recreation, and firewood cutting. The overall lack of development or intensive land use activities in the area has resulted in relatively little human caused impacts to surface water quality.

The Wyoming Department of Environmental Quality Water Quality Division (DEQ/WQD) has not established designated water use classifications for either Krause Marsh Creek or West Spring Creek. By default, however, these creeks are classified as class 3. Class 3 waters are intermittent, ephemeral, or isolated waters and because of natural habitat conditions, do not support nor have the potential to support fish populations or spawning, or certain perennial waters which lack the natural water quality to support fish (e.g., geothermal areas). Uses designated on Class 3 waters include aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value (DEQ/WQD no date).

Based on information on the EPA STORET and USGS National Water Information System (NWIS) online databases, there is no water quality data for creeks within the project area. The DEQ/WQD collected one water sample in nearby Upper Marsh Creek in 1997 (EPA, 2008a). Based on similar climactic, hydrologic, geologic, and land use conditions, the water quality in Krause Marsh Creek and West Spring Creek should be similar to that of Upper Marsh Creek. Upper Marsh Creek is characterized as having moderate to high hardness (560 mg/L), moderate to high alkalinity (337 mg/L), near neutral pH (8.0), and relatively high total suspended solids (TSS) (565 mg/L). These results are typical of other undisturbed area streams.

According the EPA EnviroMapper there are no water discharge permits, toxic waste release sites, hazardous waste sites, CERCLA-related sites, or impaired streams in the project area (EPA 2008b).

### **3.3.2 Groundwater**

For purposes of the groundwater assessment, the analysis area includes the Sugarloaf Basin SMA. This area is within the Flaming Gorge Subbasin of the Green River watershed. Groundwater resources are relatively undeveloped in the analysis area, primarily because land ownership is almost entirely federal (i.e., there are no private wells). As a result, information on aquifer properties, well yields, recharge/discharge relations, and water quality is limited and primarily available for wells from outside the project area. The most comprehensive assessment of groundwater resources in this area was completed by the U.S. Geological Survey (USGS) in 2004 (Mason and Miller 2004) and is summarized below.

### **3.3.2.1 Regional Groundwater Aquifers**

The primary water bearing aquifers in the project area are in the Tertiary (65 to 1.8 million years ago) Green River and Wasatch Formations. These units form the majority of bedrock surface exposures and are the most widely used aquifers in Sweetwater County (Mason and Miller 2004). Groundwater depths are generally less than 200 feet below ground surface (bgs), are confined by overlying impermeable rock layers, and contain water under pressure. The groundwater flows to the west toward Flaming Gorge Reservoir (Mason and Miller 2004).

In the southern part of the Sugarloaf Basin SMA, the Tertiary Fort Union Formation and the Mesaverde Group (primarily the Ericson Sandstone and Rock Springs Formation) are important aquifers. Aquifers are also present in older deeper rock layers (greater than 2,600 feet) throughout the region. Water quality in these aquifers is generally poor containing high levels of salt (Mason and Miller 2004).

According to the Wyoming State Engineers Office (WSEO) groundwater database, no groundwater wells have been drilled within the project area (WSEO 2008); however, a few miscellaneous use wells have been installed to the south and southeast of the project area. The potential for groundwater development in the project area is considered poor except near recharge areas on the side of Little Mountain (Mason and Miller 2004; Welder 1968).

### **3.3.2.2 Groundwater Quality**

Twelve water-quality samples have been collected by the USGS in the vicinity (though outside) of the project area (Mason and Miller 2004). Eleven of these samples are from springs and one sample is from a well located in the headwaters of Sage Creek. The samples represent water from the Green River Formation (6 samples), the Wasatch Formation (4 spring samples, 1 well sample). Table 3-3 provides a summary of key water quality parameters for the Wasatch and Green River samples.

**Table 3-2. Groundwater Quality Summary.**

Parameter	Wasatch Formation		Green River Formation	
	Median	Range	Median	Range
TDS (mg/L)	413	287–2380	550	246–987
Sulfate (SO <sub>4</sub> ) (mg/L)	130	50–1400	141	30–490
Manganese (Mn) (µg/L)	<10	<10–20	<10	<10–10
Iron (Fe) (µg/L)	120	20–410	30	<10–30

In general, the results indicate that water from the springs and wells is suitable to marginally suitable for domestic use and suitable for livestock and industrial purposes. None of the samples was collected from the spring in Krause Marsh Creek drainage, but presumably groundwater quality would be within the ranges observed for the USGS samples since the project area is near recharge areas and in similar geologic settings.

### **3.3.2.3 Recharge/Discharge**

Recharge to groundwater occurs by infiltration of precipitation in outcrop areas, infiltration of snowmelt runoff, and leakage from streamflow. The estimated groundwater recharge per year to the Tertiary aquifers in the project area is less than 0.5 inches per year, although higher altitude areas generally have higher precipitation and greater recharge. The higher-altitude areas in the project area (primarily Little Mountain and vicinity) receive an estimated 12–16 inches of precipitation per year; lower altitude areas typically receive around 7–8 inches per year (Mason and Miller 2004). May is usually the month with the highest precipitation.

Springs are common around Little Mountain and most have perennial discharge (Dennis Doncaster, BLM RSFO Hydrologist, pers. comm., on June 5, 2008); however, there are no documented springs in the project area.

## **3.4 VEGETATION**

A field survey to identify and verify plant species and communities in the project area is scheduled to occur during May 2010.

### **3.4.1 Vegetation Communities**

Analysis of gap analysis project (GAP) vegetation data shows that the majority of the project area is classified as shrubland. The most common types are Inter-Mountain Basins Big Sagebrush Shrubland (32%), Inter-Mountain Basins Big Sagebrush Steppe (28%), and Wyoming Basins Dwarf Sagebrush Shrubland and Steppe (20%). The remaining 20% of the project area is primarily Rocky Mountain Foothill Limber Pine-Juniper Woodland (8%) and Inter-Mountain Basins Active and Stabilized Dune (9%).

Inter-Mountain Basins Big Sagebrush shrubland is dominated by big sagebrush (*Artemisia tridentata*) with occasional component shrubs of rabbitbrush (*Chrysothamnus* spp.), antelope bitterbrush (*Purshia tridentata*), and winterfat (*Krascheninnikovia lanata*). Perennial herbaceous components typically make up less than 25% of the vegetative cover (CNHP 2005). The Inter-Mountain Basins Big Sagebrush Steppe is similar with the exception that the dominant species of sagebrush is silver sagebrush (*Artemisia cana*), and mountain sagebrush (*Artemisia tridentata* spp. *vaseyana*). Shrubs in this ecological system are usually less than 1.5 meters (5 feet) tall and the canopy cover is between 20% and 80% (CNHP 2005).

Of particular concern in the project area is the Rocky Mountain Foothill Limber Pine-Juniper Habitat. This habitat is home to numerous sensitive avian and mammal species. These areas are typically patchy woodland dominated by either limber pine (*Pinus flexilis*) or Rocky Mountain juniper (*Juniperus scopulorum*). A sparse shrub layer composed of skunkbush sumac (*Rhus trilobata*), mountain mahogany (*Cercocarpus montanus*), and wax currant (*Ribes cereum*) may be present. The herbaceous layers in these associations are generally sparse but may be

composed of various grasses such as blue grama (*Bouteloua gracilis*), Indian ricegrass (*Achnatherum hymenoides*), and Idaho fescue (*Festuca idahoensis*) (CNHP 2005).

### **3.5 WETLANDS AND RIPARIAN AREAS**

#### **3.5.1 Wetlands**

A field survey of wetlands will be performed during spring 2010.

The National Wetlands Inventory (NWI) was queried to determine the location of mapped wetlands in the project area. According to the NWI maps, one mapped wetland is located within the project area approximately 1.25 miles west of the northern end of line DJ-3 (Appendix A, Figure 3-1). However, GAP data indicates that there are several streams (ephemeral only) in the project area. As the project area takes place in an arid environment, these streams are of great importance to the local wildlife.

#### **3.5.2 Riparian Areas**

Riparian areas are defined as lands between open water and upland areas. Riparian areas in the project area are generally characterized by willow or cottonwood woody vegetation and are important wildlife habitat for many of the species present in the area. Riparian areas as mapped by GAP data are located along parts of West Spring Creek, but occur only sporadically along the ephemeral Krause Marsh Creek and the other seasonal or intermittent creeks running east to west into Flaming Gorge Reservoir that cross the project area (Appendix A, Map 3-2). These potential riparian areas were visited during field surveys conducted in June, 2010. The mapped riparian areas did not contain any characteristics of riparian areas including the presence or evidence of water or typical riparian vegetation. The existing vegetation in these areas was composed of sagebrush, rabbitbrush and various grasses and forbs.

In the late 1990s the BLM conducted Proper Functioning Condition (PFC) surveys near the project area. These surveys are used to determine how the physical processes of a riparian area are functioning. Within the project area, the two streams that were assessed for their PFC status were the West Spring Creek, which flows through the southeast portion of the project area, and Krause Marsh Creek in the northeastern corner of the project area. Neither of these two areas was determined to be properly functioning, though West Spring Creek was in an upward trend at the time (J. Henderson, BLM fisheries biologist, pers. comm., March 25, 2010).

### **3.6 INVASIVE AND NONNATIVE PLANT SPECIES**

The Sweetwater County Weed and Pest Control District has identified four weeds of concern in the county, including black henbane, foxtail barley, lady's bedstraw, and mountain thermopsis. Weeds have not been formally mapped in the project area. However, based on information for the general area, it is likely that cheatgrass, halogeton, and henbane are present in the project area. Other possible weed species potentially present in the project area include Canada thistle,

perennial pepperweed, Russian knapweed, musk thistle, and saltcedar (J. Glennon, BLM, March 29, 2010).

**Table 3-3. Invasive and Non-Native Plant Species Potentially Occurring in the Project Area.**

Common Name (Scientific Name)
Black henbane ( <i>Hyoscyamus niger</i> )
Foxtail barley ( <i>Hordeum jubatum</i> L.)
Lady's bedstraw ( <i>Galium verum</i> L.)
Mountain thermopsis ( <i>Thermopsis montana</i> Nutt)
Cheatgrass ( <i>Bromus tectorum</i> )
Halogeton ( <i>Halogeton glomeratus</i> )
Canada thistle ( <i>Cirsium arvense</i> )
Perennial pepperweed ( <i>Lepidium latifolium</i> )
Russian knapweed ( <i>Acroptilon repens</i> )
Musk thistle ( <i>Carduus nutans</i> )
Saltcedar ( <i>Tamarix</i> sp.)

Source: J. Glennon, BLM RSFO Botanist, pers.comm., with Neil Lynn, TEC Inc., March 29, 2010.

### 3.7 WILDLIFE AND FISHERIES

The wildlife within the project area are characteristic of the shrubland and sparsely forested habitat that occurs there. The most conspicuous wildlife are typically big game species though common smaller wildlife (e.g. rabbits, coyotes) are seen in the area. Numerous bird species also occur within the project area both during migration and year-long. Special status species are discussed in Section 3.8.

#### 3.7.1 Big Game Species

The term big game includes those large mammals that are typically hunted for recreational purposes and, in the project area, include elk, mule deer, pronghorn, and moose. Habitat for these species is typically defined by the ranges that are used seasonally, i.e. winter range, spring range, or summer/fall range.

##### **3.7.1.1 Big Game Migration Corridors**

Two big game migration routes have been mapped within the project area. An antelope migration path is located in the north-central portion of the project area and a mule deer migration route occurs near Highway 191 in the southern portion of the project area (Appendix A, Map 3-3). In both cases, big game use these migration routes to move from higher elevation to lower elevations in the fall and back again in the spring. Several mapped elk migration corridors exist outside of the project area to the south and southeast.

### **3.7.1.2 Elk**

Elk (*Cervus canadensis*) are common throughout the project area and are part of the South Rock Springs Herd. The WGFD considers this an interstate herd, with groups moving between Wyoming, Utah, and Colorado. According to a February 2008 population trend count the herd was over 1,500 animals, well above the WGFD objective of 1,000 animals (WGFD 2008). However, accurate population estimates and management in this area are problematic because the herd migrates out of state. The project area is located within Hunt Units 31 and 32 (WGFD 2008).

The WGFD has designated two elk ranges in the project area: yearlong elk range and crucial winter/yearlong elk range. In addition, a parturition area (an area with seasonally high concentrations of birthing animals) is located approximately 2 miles northeast of the project area and extending across Little Mountain. The peak calving period occurs between May 15 and June 15. The northwest portion of the project area overlies crucial winter/yearlong elk range (Appendix A, Map 3-4).

### **3.7.1.3 Mule Deer**

Mule deer (*Odocoileus hemionus*) are a common inhabitant of the project area, which is located entirely within crucial winter/yearlong mule deer range (Appendix A, Map 3-5). The mule deer population in the project area is designated by WGFD as the South Rock Springs Herd (Unit # 424 and Hunt Unit 102; Appendix A, Map 3-5). This herd is below the WGFD objective of 11,750 individuals, with an estimated population of 7,100 individuals in 2007 (WGFD 2008). The population is slowly increasing due to natural fires and BLM prescribed burns that are increasing the amount and availability of forage for mule deer (WGFD 2008). However, the recent drought has decreased fawn survival and mature buck recruitment.

### **3.7.1.4 Pronghorn**

Pronghorn (*Antilocapra americana*) occur in the southern portion of the project area. The WGFD (2008) has designated three ranges utilized by pronghorn antelope in the project area: winter/yearlong pronghorn range, summer or spring/summer/fall, and crucial winter/yearlong pronghorn range. Approximately 80% of the project area lies outside the mapped pronghorn range. (Appendix A, Map 3-6).

The pronghorn population in the project area is designated by WGFD as the South Rock Springs Herd (Herd Unit #412, Hunt Area #112). The project area occurs within the pronghorn hunt area (Appendix A, Map 3-6). The population size was estimated at 5,200 individuals in 2007, which is 20% below the WGFD objective of 6,500 individuals (WGFD 2008).

### **3.7.1.5 Moose**

Moose (*Alces alces*) occur in portions of the project area, although the WGFD has not yet designated any habitat for moose in the project area since moose have only recently pioneered this area. Due to the expanding range of these moose, Hunt Area 44 was added to the Uinta herd

(#MO415) which includes the project area (Appendix A, Map 3-7). The 2007 herd population was estimated at 925 individuals, which is slightly above the objective of 900. The population has remained relatively stable over the past several years (WGFD 2008).

### **3.7.2 Migratory Birds**

The presence of the gray flycatcher (*Empidonax wrightii*), juniper titmouse (*Baeolophus griseus*), Bewick's wren (*Thryomanes bewickii*), blue-gray gnatcatcher (*Poliophtila caerulea*), and black-throated gray warbler (*Dendroica nigrescens*) represents an assemblage typically associated with mature pinyon-juniper stands (Pavlacky and Anderson 2001; WYNDD 2009).

### **3.7.3 Fisheries**

No fisheries exist within the project area due to the lack of permanent water bodies (J. Henderson personal communication, March 25, 2010). Spring Creek and Krause March Creek are the nearest water bodies that may support a fishery, however both are intermittent for much of their length, and except near their confluence with the Flaming Gorge Reservoir where they are expected to be perennial, are not expected to support a fishery. These ephemeral and intermittent streams in the project area drain into Flaming Gorge Reservoir, approximately 5 miles to the west and south. Flaming Gorge Reservoir and larger streams outside of the project area support numerous fish species including rainbow trout (*Oncorhynchus mykiss*), cutthroat trout (*O. clarki*), brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*), kokanee salmon (*Oncorhynchus nerka*), mountain whitefish (*Prosopium williamsoni*), lake trout (*Salvelinus namaycush*), channel catfish (*Ictalurus punctatus*) and smallmouth bass (*Micropterus dolomieu*). Many of these fish species are used in recreational fishing that occurs in the vicinity of the project area.

## **3.8 SPECIAL STATUS SPECIES**

The BLM is required to protect and manage threatened, endangered, proposed, and sensitive species on lands administered by the agency. BLM also provides protection and manages for sensitive species jointly with the Wyoming Game and Fish Department (WGFD) and the U.S. Fish and Wildlife Service (USFWS). Table 3-4 lists the federally listed threatened and endangered species and BLM listed sensitive species that could potentially occur in the project area.

The Wyoming Natural Diversity Database (WYNDD) was queried to determine which of the above species have been identified within the project area. The only species listed as present include the peregrine falcon, greater sage grouse, sage thrasher, Brewer's sparrow, pygmy rabbit, and midget faded rattlesnake. These species are shown in bold in Table 3-4 below (species not shown in bold were determined not to be present in the project area).

**Table 3-4. Federally Listed and BLM Listed Sensitive Animal and Plant Species Potentially Occurring in the Project Area.**

Common Name ( <i>Scientific Name</i> )	Global Rank <sup>1</sup>	State Rank <sup>1</sup>	Federal Status	BLM Status
<i>Mammals</i>				
Black-footed ferret ( <i>Mustela nigripes</i> )	G1	S1	USFWS Endangered	Same as USFWS
<b>Pygmy rabbit (<i>Brachylagus idahoensis</i>)</b>	<b>G4</b>	<b>S1</b>	<b>USFWS petitioned for ESA listing</b>	<b>Sensitive</b>
Wyoming pocket gopher ( <i>Thomomys clusius</i> )	G2	S2	USFS R2 Sensitive	Sensitive
White-tailed prairie dog ( <i>Cynomys leucurus</i> )	G4	S3	USFS R2 Sensitive	Sensitive
Townsend’s big-eared bat ( <i>Corynorhinus townsendii</i> )	G4	S2	USFS R2 sensitive, USFS R4 Sensitive	Sensitive
Spotted bat ( <i>Euderma maculatum</i> )	G4	S3	USFS R2 Sensitive, USFS R4 Sensitive	Sensitive
Fringed myotis ( <i>Myotis thysanodes</i> )	G4G5	S2	USFS R2 Sensitive	Sensitive
<i>Birds</i>				
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	G5	S1	USFWS ESA Candidate, USFS R2 Sensitive	Sensitive
Long-billed curlew ( <i>Numenius americanus</i> )	G5	S3B	USFS R2 Sensitive	Sensitive
<b>Greater sage grouse (<i>Centrocercus urophasianus</i>)</b>	<b>G4</b>	<b>S4</b>	<b>USFWS ESA petitioned, USFS R2 Sensitive</b>	<b>Sensitive</b>
Sage sparrow ( <i>Amphispiza belli</i> )	G5	S3	USFS R2 Sensitive	Sensitive
<b>Brewer’s sparrow (<i>Spizella breweri</i>)</b>	<b>G5</b>	<b>S5</b>	<b>USFS R2 Sensitive</b>	<b>Sensitive</b>
Northern goshawk ( <i>Accipiter gentilis</i> )	G5	S3	USFS R2 Sensitive, USFS R4 Sensitive	Sensitive
Ferruginous hawk ( <i>Buteo regalis</i> )	G4	S4B	USFS R2 Sensitive	Sensitive
<b>American peregrine falcon (<i>Falco peregrinus anatum</i>)</b>	<b>G4</b>	<b>S2</b>	<b>USFWS delisted USFS R2</b>	<b>Sensitive</b>

Common Name ( <i>Scientific Name</i> )	Global Rank <sup>1</sup>	State Rank <sup>1</sup>	Federal Status	BLM Status
			<b>Sensitive, USFS R4 Sensitive</b>	
<b>Golden eagle (<i>Aquila chrysaetos</i>)</b>	<b>G5</b>	<b>S3B,S3N</b>	<b>N/A</b>	<b>N/A</b>
<b>Bald eagle (<i>Haliaeetus leucocephalus</i>)</b>	<b>G5</b>	<b>S3B,S5N</b>	<b>USFWS delisted</b>	<b>N/A</b>
Burrowing owl ( <i>Athene cunicularia</i> )	G4	S3	USFS R2 Sensitive	Sensitive
<b>Sage thrasher (<i>Oreoscoptes montanus</i>)</b>	<b>G5</b>	<b>S5</b>	<b>N/A</b>	<b>Sensitive</b>
<i>Fish</i>				
Colorado pikeminnow ( <i>Ptychocheilus lucius</i> )	G1	SX	USFWS Endangered	Same as USFWS
Razorback sucker ( <i>Xyrauchen texanus</i> )	G1	SX	USFWS Endangered	Same as USFWS
Humpback chub ( <i>Gila cypha</i> )	G1	SX	USFWS Endangered	Same as USFWS
Bonytail chub ( <i>Gila elegans</i> )	G3	S3	USFS R2 Sensitive	Sensitive
Roundtail chub ( <i>Gila robusta</i> )	G3	S3	N/A	Sensitive
Flannelmouth sucker ( <i>Catostomus latipinnis</i> )	G3G4	S3	USFS R2 Sensitive	Sensitive
Bluehead sucker ( <i>Catostomus discobolus</i> )	G4	S3	USFS R2 Sensitive	Sensitive
Colorado River cutthroat trout ( <i>Oncorhynchus clarki pleuriticus</i> )	G4/T2	S1	USFWS petitioned for ESA listing, USFS R2 Sensitive, USFS R4 Sensitive	Sensitive
<i>Reptiles and Amphibians</i>				
<b>Midget faded rattlesnake (<i>Crotalus concolor</i>)</b>	<b>G5/T3</b>	<b>S1</b>	<b>N/A</b>	<b>Sensitive</b>
Northern leopard frog ( <i>Rana pipiens</i> )	G5	S3	Under review	Sensitive
Great Basin Spadefoot toad ( <i>Spea intermontana</i> )	G5	S3	N/A	Sensitive
<i>Plants</i>				
Ute ladies'-tresses ( <i>Spiranthes diluvialis</i> )	G2	S1	USFWS Threatened	Same as USFWS
Blowout penstemon ( <i>Penstemon haydeni</i> )	G1	S1	USFWS Endangered	Same as USFWS
Ownbey's thistle ( <i>Cirsium ownbeyi</i> )	G3	S2	N/A	Sensitive

<sup>1</sup>**Heritage Rank: The Wyoming Natural Diversity Database (WYNDD)** uses a standardized ranking system originally developed by The Nature Conservancy and its network of natural heritage programs (now coordinated by Nature Serve [Arlington, Virginia]) to indicate the probability of extinction, at both the global and state scales, of each plant and animal taxon. The following letters denote the spatial scale at which a taxon's status is scored: G = Global rank: refers to the range-wide probability of extinction for a species; S = State rank: refers to probability of extinction from WY for a given species. These letters are each followed by a numeric, 1-5 score: 1 = Critically imperiled because of extreme rarity (often <5 extant occurrences) or because some factor makes it highly vulnerable to extinction; 2 = Imperiled because of rarity (often 6-20 extant occurrences) or because of factors making it vulnerable to extinction; 3 = Rare or local throughout its range or found locally in a restricted range (often 21-100 known occurrences); 4 = Apparently secure, although it may be quite rare in parts of its range, especially at the periphery; 5 = Demonstrably secure, although it may be rare in parts of its range, especially at the periphery.

**Source:** Wyoming Natural Diversity Database <http://uwadmnweb.uwyo.edu/wyndd/>

### **3.8.1 Federally Listed or Candidate Species**

Black-footed ferrets are nearly always associated with prairie dog towns, their primary food. Since no populations of prairie dogs occur in the project area no, ferrets would occur. The nearest populations of prairie dogs that are potentially large enough to support ferrets are located approximately 40 miles east of the project area, near Hiawatha. Ute ladies'-tresses and blowout penstemon have not been observed in or near the project area and are not believed to occur there. No populations of the four endangered Colorado River fish occur in the project area. The nearest waterbody that potentially has populations of these fish is the Green River downstream of the Green/Yampa River confluence, approximately 45 miles south of the project area.

#### **3.8.1.1 Greater Sage-grouse**

A status review by the USFWS was recently completed for the greater sage-grouse (*Centrocercus urophasianus*) to determine if it warrants listing under the ESA. The status review determined that the greater sage grouse (sage grouse) warrants protection under the ESA but was precluded from listing in favor of species that are more imperiled. It is currently listed as a candidate species as well as a BLM Sensitive Species. The project area is outside of mapped core habitat for this species.

The sage-grouse is highly dependent upon sagebrush-steppe habitat. It relies on sagebrush not only for forage but also for cover from predators, brood-rearing, and shelter from the elements year-round (Schroeder et al. 2004; Aldridge and Boyce 2007). The sage-grouse also requires open locations with high visibility and adequate escape cover for courtship and mating. Mating areas are referred to as "leks" (Connelly et al. 2000).

No leks occur within the project area though there are five leks outside of, but adjacent to, the project area. The closest is an unoccupied lek approximately 1.5 miles south of the project area. Two occupied leks occur to the northwest, and one occupied and one unoccupied lek occurs east of the project area. The project area is outside of the two mile buffer associated with the occupied leks.

#### **3.8.1.2 Pygmy Rabbit**

This species is currently listed as a BLM sensitive species. The pygmy rabbit inhabits dense, tall stands of big sagebrush, usually along streams or riparian areas in sagebrush-grasslands. This

species is highly dependent upon sagebrush, which comprises nearly all of its winter diet (99%) (WGFD 2005).

A survey for pygmy rabbits was conducted within the project area on March 4 and 6, 2010. The survey consisted of searching the three seismic lines and staging areas with a buffer of 100 meters (330 feet) to determine the presence or sign of pygmy rabbits (i.e. tracks, pellets, or burrows). In addition, habitat was mapped within a 0.25-mile buffer of the three proposed seismic lines. A total of 798 acres was surveyed within the 100 meter buffer of the seismic lines and staging area. Neither rabbits nor their sign were observed during the survey. All lagomorph (the order of rodent-like mammals comprised of hares, rabbits, and pikas) sign was identified as cottontail, jackrabbit, or snowshoe hare. A total of 472 acres of potential pygmy rabbit habitat was identified within the 0.25 mile buffer. However, the survey determined that the vegetative and soil components within the surveyed area are unsuitable for pygmy rabbits (Hayden-Wing 2010).

### **3.8.1.3 Wyoming Pocket Gopher**

The Wyoming pocket gopher is Wyoming's only endemic mammal, occurring in southwestern Wyoming. This species is listed as a BLM sensitive species. In August of 2007, the Wyoming pocket gopher was petitioned for listing under the ESA due to its limited range and potential threats from energy development. The USFWS made the determination that listing for this species was not warranted at this time. Current modeling by the WYNDD for this species shows that its range does not overlap with the project area and it is not thought to occur in the project area (Griscom et. al. 2010). As such, BLM determined that no survey for this species is needed.

## **3.8.2 BLM Sensitive Species**

### **3.8.2.1 Migratory Birds**

Sensitive migratory birds that may occur in the project area include the Hammond's flycatcher, western scrub jay, juniper titmouse, sage thrasher, Brewer's sparrow, and sage sparrow. Many of these species are juniper obligates. A survey of juniper obligate migratory birds was conducted in May 2010. This survey located several bushtits, scrub jays, and one juniper titmouse along the seismic lines. No nests for these species were observed along the lines.

### **3.8.2.2 Raptors**

The BLM and WGFD have mapped raptor nest sites in and around the project area. While not all of the raptors observed or thought to occur in the project area are listed as BLM sensitive species, they are include here due to their sensitivity to disturbance, especially during nesting.

Raptor species that have been observed within or near the project area include bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), red-tailed hawk (*Buteo jamaicensis*), peregrine falcon, and northern goshawk. Other raptors that have the potential to occur in or near the project area include ferruginous hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), and osprey. In addition to the Migratory Bird Treaty Act

(MBTA), bald and golden eagles are also protected under the Bald and Golden Eagle Act of 1962.

Many of these species are found in prairie shrublands, foothills, and along riparian areas. Nesting habitats for these species include cliffs, trees, and ledges. The osprey and bald eagle are most likely to be found nesting near waterbodies.

### **3.8.2.3 Mammals**

BLM sensitive mammal species that potentially occur in the project area include the white-tailed prairie dog, fringed myotis, Townsend's big-eared bat, and spotted bat.

While white-tailed prairie dogs are considered common in Wyoming, they are listed as a BLM sensitive species because their population status and trends are currently unknown (WGFD 2005). This species occurs in arid grasslands and shrub/grassland habitats, usually with slopes less than 12 percent to 15 percent. No populations of prairie dogs are known to occur in the project area and the nearest populations are approximately 4 miles west of the project area.

Fringed myotis is found in a wide variety of habitats including coniferous forests, woodlands, grasslands, and shrublands. It is most common in arid woodlands such as juniper habitats and typically forages over water or within forests and woodlands. This species utilizes a number of roosts including rock crevices, tree cavities, and caves (WGFD 2005). There are no known locations of this species within the project area (WYNDD 2009).

Townsend's big-eared bat is dependent upon caves or mine entrances for shelter (Sherwin et al. 2000). There is some evidence they may utilize trees as temporary day roosts (Miller et al. 2003). Within the project area, large diameter juniper or pinyon pine trees are most likely to provide such roosts. No sightings of Townsend's big eared bat are documented within the project area (WYNDD 2009).

Spotted bats are known to occur in a wide variety of habitats from desert scrub to coniferous forest, although it most often observed in low deserts and basins and juniper woodlands (WGFD 2005). It generally roosts in cracks and crevices on cliffs and canyons (Wai-Ping and Fenton 1989; WGFD 2005). Its distribution in Wyoming is still unknown, although it may occur throughout western Wyoming and perhaps statewide in suitable habitat (WGFD 2005). The steeper ridges near Little Mountain five miles northeast of the project area and scattered rock outcroppings in the project area may provide some, albeit marginal, habitat.

### **3.8.2.4 Reptiles and Amphibians**

#### ***Midget faded rattlesnake***

The midget faded rattlesnake (*Crotalus concolor*) (MFR) is a BLM Sensitive Species and Wyoming Special Status Species (WYNDD 2009), and is the smallest member of the nine western rattlesnakes. Though population densities are lower than other subspecies of the western rattlesnake, populations remain relatively dense around rock outcrops used for communal

denning sites (Parker and Anderson 2007). MFR were observed at approximately 25% of known Green River Basin sites containing rock outcrops (Parker and Anderson 2007). A study of the ecology and behavior of MFR in the Flaming Gorge area, approximately 4 miles west of the project area, was conducted from 2000 to 2002 and observed 13 den locations and over 400 snakes. The elevation range for the dens for this study was between 6,037 feet and 6,480 feet and snakes were located between 6,037 feet and 6,972 feet. Elevations in the project area range from approximately 6,550 feet to 7,400 feet.

A survey for the MFR was conducted in July, 2010. Despite suitable physical habitat present throughout the project area, no dens or individuals were located. This species is absent from the project area for two likely reasons: a low population of small reptiles (the MFR typical prey species), and the fact that the elevation of the project area occurs at the upper limit of this species range (Parker 2010). It is unlikely that this species occurs in the project area.

#### ***Northern leopard frog***

The northern leopard frog is a BLM sensitive species that has the potential to occur in or near the project area. Habitat for this species can be divided into three types; winter (lakes, streams, and ponds), summer (upland areas), and tadpole habitat (shallow breeding ponds). Within the project area habitat exists only for summer habitat as there are no permanent sources of surface water (Smith and Keinath 2004). There are no known occurrences of this species in the project area and the nearest known occurrence is approximately 3 miles west of the project area near the Flaming Gorge Reservoir (WYNND 2009).

#### ***Great Basin spadefoot toad***

The Great Basin spadefoot toad is a BLM sensitive species that has the potential to occur within or near the project area. This species is a xeric-adapted (dry land) amphibian but still requires sources of water for breeding and tadpole development. As there are no permanent sources of water within the project area habitat is limited to nonbreeding periods of the year (Buseck et al. 2005). There are no known occurrences of this species in the project area and the nearest known occurrence is approximately 3 miles west of the project area near the Flaming Gorge Reservoir (WYNND 2009).

#### **3.8.2.5 Fish Species**

The Colorado River Cutthroat Trout (CRCT) (*Oncorhynchus clarki pleuriticus*) is a BLM-listed Sensitive Species and a State Species of Special Concern (WYNDD 2008). None of the waterbodies that occurs within the project area contains populations of CRCT. The nearest waterbody known to contain CRCT is the Flaming Gorge Reservoir, approximately 5 miles west of the project area. CRCTC occur in Currant Creek north of the project area as well.

### **3.8.2.6 Sensitive Plant Species**

#### ***Ownbey's thistle***

Ownbey's thistle (*Cirsium ownbeyi*) is the only known sensitive plant species that occurs in the project area (J. Glennon, BLM RSFO Botanist. pers. comm.. with N. Lynn, TEC, Inc., March 15, 2010). Ownbey's thistle is often found at the base of shale cliffs, but can also be found along shale flats and rim tops at elevations ranging from 6,440 to 8,200 feet. It is frequently associated with soils consisting of loose shale and sandy clay soils covered by slate fragments, and in sparsely vegetated areas generally associated with desert shrub communities. It can also be found in areas along dirt two-track roads with loose shale soils. The population is thought to be stable, but long-term monitoring information is not available.

A focused survey for the Ownbey's thistle is scheduled to occur in the project area during May 2010. This survey will also include Cedar Rim thistle (*Cirsium aridum*) and stemless beardtongue (*Penstemon acaulis* var. *acaulis*), the other two sensitive plant species that have the potential to occur in the project area (J. Glennon, BLM Botanist, pers. comm., March 15, 2010).

### **3.9 NOISE**

Noise intensity (or loudness) is measured as sound pressure in units of decibels (dBAs). The decibel scale is logarithmic, not linear, because the range of sound that can be detected by the human ear is so great that it is convenient to compress the scale to encompass all the sounds that need to be measured. Each 20-unit increase in the decibel scale increases the sound loudness by a factor of 10.

The EPA established an average 24-hour, day-night sound level (Ldn) noise level of 55 dBA as a guideline for acceptable environmental noise (EPA 1974). This established EPA environmental noise level is used as a basis of evaluating noise effects when no other local, county, or state standard has been established. It is important to understand that this noise level was defined by scientific consensus, was developed without concern for economic and technological feasibility, and contained a margin of safety to ensure its protective value for the public health and welfare. Furthermore, this noise level is directed at sensitive receptors, where people would be exposed to an average noise level over a specific period of time. In this context, public health and welfare includes personal comfort and well-being, and the absence of mental anguish, disturbances, and annoyance as well as the absence of clinical symptoms, such as hearing loss or demonstrable physiological injury. Therefore, the 55 dBA noise level is recognized as a level below which there is no reason to suspect that the public health and welfare of the general population would be at risk from any of the identified effects of noise. Loud noises can negatively impact wildlife populations in many ways, causing some wildlife species to avoid otherwise functional habitats and reducing breeding success of some wildlife species that initiate courtship by using sounds.

Sound levels have been calculated for areas that exhibit typical land uses and population densities. In rural recreational areas, ambient sound levels are expected to be approximately 30

to 40 dBA (EPA 1974, Harris 1991). The project area is located in a rural, unpopulated area with few noise sources. Noise levels from human activity are mostly associated with vehicular traffic. Vehicle traffic on State Highway 191 (which crosses the southeast portion of the project area), county roads (e.g., Flaming Gorge Road, a maintained dirt road), and unnamed BLM roads in the project area contribute to noise levels, but this source is transient, produced primarily by vehicles passing through the area, recreationists (e.g., hunting), ranchers, and road maintenance. Vehicular noise includes ATV use, mainly by hunters and ranchers, on dirt roads throughout the area.

Overall, noise levels experienced by a receptor depend on the distance between the receptor and the equipment, the topography, vegetation, and meteorological conditions (e.g., wind speed and direction, temperature, humidity). Ambient noise levels within and near the project area are occasionally elevated above the typical levels for rural areas due to the presence of a state highway and ATV use. Loud noise may reduce a one's opportunity to enjoy solitude. Noise disturbance can annoy people to differing degrees, depending on their expectations, attitudes towards development activities, magnitude and duration of the noise, the activity they are pursuing, and the time of day. Sensitive noise receptors in the project area include wildlife, ranchers, livestock, recreationists (e.g., hunters).

Topography in the project area is characterized by variations of relatively level, open areas and gentle to steep sloping terrain. Vegetation is comprised primarily of low shrublands with some juniper stands. Due to the topography of the project area, ground generated noise would likely be contained locally, particularly in the lower elevations, whereas noise generated in the higher elevations would disperse to surrounding areas to some extent.

### **3.10 CULTURAL RESOURCES AND NATIVE AMERICAN CONCERNS**

#### **3.10.1 Introduction**

Refer to *North Dutch John 2D Seismic Project, Class III Cultural Resources* (TEC 2010) for a detailed description of the area's culture history.

#### **3.10.2 Affected Environment for Cultural Resources**

A file and literature review of the project area was conducted through Wyoming SHPO Cultural Resources Records Office (WYCRO) on October 7, 2009, and April 1 and May 7, 2010. Eleven surveys and one testing project have been conducted within the project area.

WYCRO records indicated that two cultural resource sites have been recorded previously within the file search area, both prehistoric in nature. The Fremont Lodge site (48SW6191) consists of an extensive scatter of lithic debitage and tools with a possible structure and associated ceramics of Fremont affiliation. The site was recommended as eligible for the National Register of Historic Places (Trusdale and Eckerle 1986) and the Wyoming State Historic Preservation Office (Wyoming SHPO) concurred. This site is located outside the current project area of potential

effect (APE), approximately 1,500 feet east of the south end of seismic line DJ-3 (Appendix A, Map 1-1) (Barclay 2010).

The second site (48SW4766) is a lithic scatter that was recorded in 1982 during inventory of a Class II sample block in Section 34. It is recommended as not eligible for the National Register and is located more than 0.5 mile from the north end of seismic line DJ-3 (Barclay 2010).

A Class III cultural resources inventory of the North Dutch John 2D Seismic Survey project area was completed in October of 2009 and May of 2010. A total of 313.4 acres comprising the Area of Potential Effect (APE) were surveyed for cultural resources, including 11.7 miles of seismic lines and walk-arounds, and 12.7 miles of access roads. Refer to *North Dutch John 2D Seismic Project, Class III Cultural Resources* (TEC 2010) for a detailed description of the survey methodology.

Three cultural resource sites (48SW17735, 48SW17736, 48SW17737) and seven isolated finds (NDJIF #s 1-7) were recorded during the inventory of the North Dutch John 2D Seismic survey project (please note that site numbers and information may change due to pending inventory). The sites consist of two prehistoric lithic scatters (48SW17735 and 48SW17737) and one historic wild horse trap (48SW17736). Site 48SW17736, which consists of a historic wild horse trap and associated coral, is recommended eligible for the National Register. 48SW17735, a prehistoric lithic scatter, is recommended not eligible for the National Register. 48SW17737, a prehistoric lithic scatter, is unevaluated for the National Register. Four of the isolated finds are prehistoric (NDJIF #s 1, 3, 5, and 7), two are historic (NDJIF #s 2 and 4), and one is multicomponent (NDJIF # 6). By definition, isolated finds are considered not eligible for the NRHP.

### **3.11 RECREATION (DISPERSED RECREATION, HUNTING, AND OHV)**

#### **3.11.1 Dispersed Recreation**

The general area which includes the project area provides a wide array of year-long, motorized and non-motorized dispersed recreation opportunities, although recreational opportunities within the project area itself are more limited. The most popular recreational pursuits include, but are not limited to: driving for pleasure, viewing scenery, wildlife viewing, Off Road Vehicle (ORV) riding, mountain bike riding, horseback riding, camping, hiking, hunting, and fishing. There are no developed recreation sites, such as campgrounds or picnic areas, within or in close proximity to the project area; rather, dispersed camping and picnicking are emphasized instead. The project area is a popular hunting area, and ORV use is prevalent (largely in association with hunting); these activities are described below. A portion of the project area borders State Highway 191, providing access to the area for recreationists.

There are no numeric data for recreation use in the project area.

**3.11.2 Hunting**

The project area occurs within the following herd units and hunt areas: South Rock Springs Elk Herd Unit 424 and Elk Hunt Areas 31 and 32 (Appendix A, Map 3-4); South Rock Springs Mule Deer Herd Unit 424 and Hunt Area 102 (Appendix A, Map 3-5); South Rock Springs Antelope Herd Unit 412 and Hunt Area 112 (Appendix A, Map 3-6); and Uinta Moose Herd Unit and Hunt Area 44 (Appendix A, Map 3-7); and Upland Game Hunt Unit 6 (Flaming Gorge). Rifle hunting season information, number of licenses, hunter success, and recreational days for each of the hunt areas are shown for 2008 in Table 3-5.

**Table 3-5. 2008 Harvest Data for Big Game in the Project Area.**

<b>Species/Hunt Area</b>	<b>Season Dates</b>	<b>Licenses Sold/ Hunters</b>	<b>Hunter Success (%)</b>	<b>Days/Harvest</b>	<b>Hunter- Days</b>
<b>Hunt Area</b>					
Pronghorn 112	Rifle: Sept. 20 – Oct. 14	178/176 (limited quota – any antelope)	84.1	4.6	685
	Bow: Opens August 15	78/51 (doe/fawn)	94.1	2.2	104
Elk 31	Rifle: Oct. 1 – 31 and Oct. 6 – Nov. 30	125/125 (limited quota – any elk) 220/216 (limited quota – antlerless elk only)	86.4	11.6	1,249
	Bow: Sept. 1 – 30		78.7	5.9	1,011
Elk 32	Rifle: Oct. 1 – 31 and Oct. 6 – Nov. 30	101/98 (limited quota – any elk) 100/95 (limited quota – antlerless elk only)	70.4	16.8	1,161
	Bow: Opens Aug. 15		42.1	13.6	545
Mule Deer 102	Rifle: Oct. 15 – 31 Bow: Sept. 1– 30	403/382 (limited quota – bucks only)	83.2	9.3	2,951
Moose 44	Rifle: Oct. 1 – Nov. 30 Bow: Sept. 1–30	5/5 (limited quota – any moose, except cow with calf)	100.0	3.0	6

Source: WGFD 2009a

During the 2008 season, a total of 1,148 hunters spent 7,712 hunter-days, averaging about 6.7 hunter-days for all species hunted in the hunt units associated with the project area. During this same season, 1,210 licenses were issued for all big game species, and only 5.1% went unused (WGFD 2009a). The popularity of hunting for pronghorn, moose, elk, and mule deer in these hunt units is largely due to the high hunter success. Because of the very high demand for and very limited number of licenses available in the respective hunt areas, licenses rarely go un-issued, and successful license lottery recipients are unlikely to forego the opportunity to hunt in these areas.

The hunting seasons for upland game birds generally begin in September (blue grouse, sage grouse, and ruffed grouse) and depending on the species may extend to December (roughed grouse) or January (chukar and gray partridge) (Table 3-6). Sage grouse hunting is the shortest game bird season, extending 11 days from September 20-30.

**Table 3-6. 2008 Upland Game Bird Hunting Seasons by Species.**

Species	Hunting Season
Chukar	October 1 – January 31
Gray partridge	October 1 – January 31
Blue Grouse	September 1 – November 30
Sage grouse	September 20 - 30
Ruffed grouse	September 1 – November 30

### 3.11.3 Off-Highway Vehicle (OHV) Management

OHV travel within the project area is generally limited to designated roads and trails by the Green River RMP [see RMP Table 13 (BLM 1997)]. This limitation applies to all activities involving motorized vehicles. Designated roads and trails are those that are depicted on the current BLM land status map for the area. County Road 33 (also known as Flaming Gorge Road), is a maintained dirt road, that crosses the southern and eastern portions of the project area. County Road 33 connects with Iron Mountain Road, another maintained dirt road, in the western portion of the project area. Iron Mountain Road travels east-west through the project area. Several unnamed, unmaintained dirt roads and two tracks cross the project area and are regularly used by local ranchers and hunters. Most OHV use in the area occurs in late summer and throughout the fall during hunting season.

There are no seasonal OHV use restrictions in the area. Generally, over-the-snow vehicle use is subject to the restrictions above unless a site specific analysis determines that exceptions can be allowed. Snowmobile use is very sporadic due to limited snow cover. No BLM transportation planning has been done for the area.

### 3.12 VISUAL RESOURCES

The Green River RMP (BLM 1997) states that all surface disturbing actions, regardless of the visual resource management class, is required to be mitigated to reduce visual impacts, and identifies the entire project area as a Class III area. The landscape of the project area is a rural, unpopulated area in the Green River Basin within the Wyoming Basin physiographic region. The region comprises rolling hills interspersed with drainages and rocky outcrops, with dramatic views of Little Mountain to the northwest, the Uinta Mountains to the southwest, and Flaming Gorge Reservoir to the west. The project area is representative of the surrounding region and is characterized by variations of relatively level, open areas and gentle to steep sloping terrain, with

occasional rocky outcrops. Vegetation is comprised primarily of low shrublands with occasional juniper and pinyon pine stands.

Human modifications within the project area consist of four abandoned oil and gas wells (including the proposed staging area, which was graded and leveled in 1965), livestock fences, a few cultural sites (see Section 3.10), U.S. Highway 191 (which intersects the southeast corner of the project area, unpaved County Road 33 (Flaming Gorge Road), Iron Mountain Road, several other unnamed dirt roads and two tracks, and a transmission line. Views of the project area are available primarily to motorists traveling through the area on Highway 191 and Flaming Gorge Road, as well as recreationists (e.g., hunters) and ranchers utilizing the project area.

### **3.13 SPECIAL DESIGNATIONS**

#### **3.13.1 Sugarloaf Basin SMA**

The Sugarloaf Basin SMA consists of 85,880 acres of BLM-administered public lands located west of the Flaming Gorge National Recreation Area and north of the boundary with Utah. The project area overlies approximately 7,677 acres of the Sugarloaf Basin SMA. The Sugarloaf Basin SMA was evaluated to determine whether it meets criteria as an Area of Critical Environmental Concern (ACEC) since it is interconnected with watershed resources of the Greater Red Creek ACEC; however, BLM determined that it does not meet the required ACEC criteria for watershed, scenic, and wildlife resources (BLM 1997).

The area is open to mineral leasing and related exploration and development activities with appropriate mitigation requirements applied to protect all other resource values. Restrictions for protection of raptors, big game crucial winter range, and big game calving/fawning areas are applied to activities in the area. Aquifer recharge zones in the area are managed to protect groundwater quality and aquifer function. Protection includes limiting road density, surface disturbing activities, and surface occupancy in identified recharge zones to maintain them in a healthy and functioning condition.

The Green River RMP also states that the Sugarloaf Basin SMA is open to consideration of activities that conform to its objectives. Control measures placed on activities may include limiting the number of roads and other construction or other surface disturbing activities or deferring activities or development in some areas until other areas have been reclaimed and restored to previous uses.

### **3.14 RANGE RESOURCES**

The project area is located within two grazing allotments administered by BLM. The proposed seismic lines lie entirely within the Spring Creek Allotment, along with the majority of the encompassing federal minerals lease. A small portion of the federal minerals lease containing the 2D seismic survey lines lies within the Sugarloaf Allotment. These grazing allotments are managed under the direction of the following documents:

- Green River Resource Management Plan (BLM 1997)
- Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for the Public Lands Administered by the BLM in the State of Wyoming (BLM 2008)
- Allotment Management Plan (AMP).

The grazing allotments (Appendix A, Map 3-8) are described in the following sections.

### **3.14.1 Spring Creek Allotment**

The Spring Creek Allotment is 45,472 acres, of which approximately 7,475 acres are within the project area. This allotment consists of five pastures (North, Central, South, Gathering, and Winter). A sixth pasture, the Iron Mountain Pasture, was part of the Winter Pasture at the time of the AMP but was fenced after a wildfire (personal communication, Jonathon Sheeler, BLM Rock Springs Rangeland Management Specialist, and A. Parrish, TEC Inc., April 5, 2010). The proposed seismic lines are located within the North, Iron Mountain, and Winter Pastures. The Spring Creek Allotment contains 3,314 Active AUMs. One permit comprises 3,000 AUMs for the period of March 10 to February 28 of the following year, and the other permit comprises 314 AUMs for the period of May 16 to October 31. Grazing in 2010 began in the Winter Pasture, and on June 1 will relocate to the Gathering Pasture. Cattle will be moved to the South Pasture on June 25. From July 15 to August 14 the cattle will be located in the Central Pasture, and on August 15 the cattle will move to the North Pasture (Little Mountain). In September, the cattle will move into the Iron Mountain and Winter Pastures.

Several range improvement projects exist within this allotment. There are three springs, one of which supplies water to the Iron Mountain Pipeline. The Iron Mountain Pipeline is present within the Spring Creek Allotment in the vicinity of but outside the project area. This pipeline runs southwest along the north side of an unnamed drainage.

### **3.14.2 Sugarloaf Allotment**

The project area encompasses approximately 201 acres of the 91,985-acre Sugarloaf Allotment, which contains 4,172 Active AUMs. This allotment consists of seven pastures: Big Ridge, Sand Knoll, Jarvies, Janes Meadow, Upper Currant Creek, Middle Marsh Creek, and Winter Pasture.

One permit comprises 2,177 AUMs, and the other permit comprises 1,995 AUMs, both for the period of May 15 to February 28 of the following year. The main pastures for the growing season are the Big Ridge on the North, Sand Knoll in the middle, and Jarvies, which is fenced-in with the North Pasture of the Spring Creek Allotment, on the south. Grazing in 2010 started in the Sand Knoll Pasture. From July 15 to September 30, cattle will be located in the Big Ridge Pasture. From August 15 through September 30, cattle will be in the Jarvies Pasture, during which time they will commingle with cattle from the North Pasture of the Spring Creek Allotment. From October 1 to February 28, the cattle will be in the Winter Pasture. The Janes Meadow and Upper Currant Creek Pastures are Special Use Riparian Pastures that are not

scheduled for use in 2010. Middle Marsh Creek Pasture is used as a gathering pasture in the spring and the fall.

The Little Mountain Pipeline is present within the Sugarloaf Allotment in the general region of the project area, although it is not located within the project area boundaries. The Little Mountain Pipeline consists of a well and solar pump with a storage tank at the wellhead and carries water for use by livestock.

The Ramsay Pipeline Little Mountain Well project is located within the Sugarloaf Allotment in the general region of the project area, although it is not located within the project area boundaries. The project is located east of Currant Creek.

### **3.15 HAZARDOUS AND SOLID WASTES**

There are no known hazardous waste sites within the project area.

Reserve pits associated with plugged and abandoned wells are required to be buried. It is assumed that the reserve pits associated with the four plugged and abandoned wells in the project area were buried. These wastes are classified by the EPA as exempt non-hazardous and are not regulated under the Resource Conservation and Recovery Act (40 CFR 261.4) (RCRA). Disposal of these materials is regulated by the Wyoming Oil and Gas Conservation Commission and the BLM.

## 4.0 ENVIRONMENTAL CONSEQUENCES

### 4.1 INTRODUCTION

Chapter 4 describes the potential direct and indirect effects on the affected environment (Chapter 3) that would result from implementation of each of the project alternatives.

The alternatives are analyzed in terms of short-term and long-term effects, as described below:

- Long-term impacts result from seismic activities that would extend beyond the life of the project. The life of the project is estimated to extend up to approximately 30 days, although work would not be continuous during this time (total days for the three project phases is anticipated to be approximately 12 days).
- Short-term impacts include temporary disturbances occurring during the life of the project including staging areas, and other impacts that would be limited to shot-hole drilling and recording activities.
- The effect of a particular project activity may have short-term or long-term effects depending on the specific natural resource addressed; therefore, the duration of impacts are evaluated on a resource basis and specifically defined where they differ from the durations described above.

### 4.2 SOILS

#### 4.2.1 Alternative 1 – Proposed Action

Potential impacts to soils would be associated primarily with off-road travel by the buggy drill as well as drilling of shot holes. Most project activities (e.g., initial survey, laying and collecting of source and receiver lines, etc.) would be conducted on foot and therefore would result in negligible impacts to soils. A maximum of approximately 16.5 acres of soils would be temporarily disturbed by project activities. This maximum is based on the following: 12.4 acres from off-road operation of the buggy drill along the three seismic lines (10.2 linear miles times a 10-foot corridor); 4 acres associated with the staging area; and 0.08 acre for shot holes (assuming a 3-foot diameter multiplied by 125 shot holes). The actual amount of temporary disturbance would likely be less than 16.5 acres, as there would be numerous areas where shot holes and the buggy drill will not be allowed due to sensitive setbacks and steep slopes.

Off road travel by buggy drills along the seismic lines and seismic line routes would potentially impact soils in the form of soil compaction and subsequent erosion. Compaction reduces the capacity for soils to absorb moisture and can also reduce soil productivity due to structural changes, increase the risk of erosion, and reduce infiltration capacity. These changes could result in reduced seed germination and root expansion and growth. For the Proposed Action, however, soil compaction and erosion from vehicular traffic would be minor because off-road travel would be limited to two trips (out and back) by the buggy drill in areas outside existing

roads. In addition, the use of smooth tread tires would also reduce potential impacts to soils associated with the buggy drill.

Minor amounts of soil compaction would occur at the staging area due to parking of vehicles and other equipment in the area. Impacts to soils may also occur as a result of surface rutting caused by vehicle operations on wet soils, but this impact would be limited by saturated soil travel restrictions.

Soil loss from shot hole drilling would generally be higher on sloped surfaces and sparsely vegetated slopes. However, BLM standards prohibit surface disturbance on slopes greater than 25%, and no drilling of shot holes is proposed on slopes 25% or greater.

Potential soil impacts from shot hole drilling would include uprooting of vegetation in the 3-foot radius of the drill hole, which would also expose soils until vegetation becomes reestablished. Some negligible mixing of the soil horizons can occur when shot holes are back-filled with the soil cuttings. Blowouts of drill holes have a low probability of occurrence. While adherence to regulatory requirements reduces the possibility of a fuel or other fluid spill, there would still be a small risk of soils becoming contaminated from an accidental spill (see Section 4.15 for additional information).

#### **4.2.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Potential impacts to soils from the drilling operations are similar to those described under the Proposed Action, although they would be reduced considerably due to the use of heli-portable drills instead of buggy-mounted drills.

Under Alternative 2 there would not be any off-road vehicle use. As a result, the potential for soil compaction is limited to shot hole locations and the staging area (approximately 4.1 acres). A heli-portable drill weighs approximately 1,500 pounds and would result in only negligible soil compaction as well as increased potential for erosion while drilling a shot hole. Although foot traffic by project personnel would be increased under this alternative during the shot hole drilling phase, this would result in negligible impacts to soils.

#### **4.2.3 No Action Alternative**

Under the No Action Alternative, the proposed seismic survey would not be conducted. Therefore, no change to current conditions would result and no additional impacts to soil resources would occur.

### **4.3 WATER RESOURCES**

#### **4.3.1 Alternative 1 – Proposed Action**

##### **4.3.1.1 Surface Water**

Potential impacts to surface water resources from the Proposed Action would result from off-road vehicle use and accidental spills of fluids and/or fuel.

Increases in erosion could occur as a result of off-road vehicle use, temporary ground disturbance at the staging area, and shot hole drilling. For example, soil compaction by the drill buggy on a hill slope could reduce ground filtration by rain, increasing surface runoff. The surface runoff could carry soil with it that may enter nearby surface water bodies. However, with implementation of the design features (Section 2.1.2) the risk of erosion resulting from the proposed project is small.

There is a small potential for contamination of surface water resources from spills or discharges of fuels or other chemicals from equipment and vehicles used in the seismic operations. The risk of spills would exist throughout project activities, although the risk of an uncontrolled spill reaching surface water exists is small. The risk is considered small due to the small size and short duration of the project, distance of project activities from surface water resources, implementation of standard fuel handling practices by seismic contractors, routine vehicle and equipment management, and spill response procedures in place should a spill occur. In addition, the watercourses in the project area are ephemeral and flow for limited periods.

#### **4.3.1.2 Groundwater**

Potential impacts to groundwater resources from the proposed action would include groundwater recharge, contamination, and alteration of groundwater seeps and springs.

As stated above, off-road travel of the buggy drill would result in minor impacts due to soil compaction, which could slightly reduce infiltration of water. However, due to the small magnitude of the project as well as the minor and temporary nature of the impacts, impacts to groundwater recharge would likely be negligible.

Spills or leaks from project vehicles and equipment or from fuel tanks could result in contamination of area groundwater resources; however, the risk of an uncontrolled spill reaching groundwater resources is small. Factors that contribute to this determination include the short duration of the project, implementation of standard fuel handling practices by seismic contractors, routine vehicle and equipment management, small quantities of fuel used, and spill response procedures in place should a spill occur.

The Sugarloaf Basin SMA was established to protect important groundwater recharge, as well as water quality. The groundwater resources of most concern are the springs draining off Little Mountain. Detonation of shot holes in close proximity to springs/seeps could change the flow of the spring/seep. However, no springs or seeps have been identified within the project area and the nearest one to the project area is approximately 3.5 miles upslope to the northeast. As such, no impacts to seeps or springs would occur.

#### **4.3.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Potential impacts to surface and groundwater resources from the drilling operations are less than those under the Proposed Action. Under Alternative 2 there would be no off-road vehicle use.

As a result, the potential for soil erosion, compaction, and fuel spills would be limited to the area where the drill and compressor are placed.

As part of the staging operations, helicopter fueling and fuel storage could result in an increased potential for a fuel spill. Given the fuel handling requirements under Alternative 2, the chance of a spill reaching surface or groundwater resources is limited.

#### **4.3.3 No Action Alternative**

Under the No Action Alternative, the proposed seismic survey would not be conducted. Therefore, no change to current conditions would result and no additional impacts to surface and groundwater resources would occur.

### **4.4 VEGETATION**

#### **4.4.1 Alternative 1 – Proposed Action**

Impacts to vegetation would generally be limited to temporary impacts associated with off-road travel by the buggy drill, shot-hole drilling and, to a lesser extent, by cross-country foot travel by project personnel.

Cross country travel on foot by project personnel would occur during various stages of the Proposed Action. These activities would result in temporary, negligible impacts to vegetation. Assuming that the buggy drill would travel along a 10-foot wide path in off road areas, there would be a maximum of 12.4 acres (0.2% of the project area) of temporary impacts to vegetation along the seismic lines. This area would likely be less than 12.4 acres given the number of avoidance areas (e.g., junipers and slopes greater than 25%) as well as buffer areas for sensitive resources. The buggy drills would make a maximum of two passes (out and back) along seismic lines and off-road access routes. The use of smooth tread, wide profile tires on the buggy drills would also serve to reduce impacts to vegetation.

The ability of vegetation to recover from tire damage from the buggy drill is dependent on many variables such as the plant type, age, height, growing season, subsequent impacts, etc. Younger, more flexible species would likely spring back after a relatively short period (within 1-2 growing seasons) (personal communication, Jim Glennon, BLM RSFO and Neil Lynn, TEC, on April 13, 2010). Older, more woody vegetation (e.g., shrubs), could take 3-5 growing seasons (personal communication, Jim Glennon, BLM RSFO and Neil Lynn, TEC, on April 13, 2010). Because buggy drills would avoid making more than two passes in off road areas, this would reduce potential impacts to vegetation and allow for more rapid recovery. Junipers would be avoided. Barriers (e.g., logs or fence posts) and signs would be placed at the junction of the existing roads and the off-road locations of the seismic lines to prevent access to recently reclaimed areas by other area users (e.g., hunters, ranchers) (personal communication, Jim Glennon, BLM RSFO and Neil Lynn, TEC, on April 13, 2010).

Assuming that each shot hole would result in a disturbance of approximately 3 foot radius from the shot hole, there would be a maximum of 0.08 acres of disturbance to vegetation from the shot

holes. These measures would result in removal of some vegetation from the shot hole. These impacts are expected to be temporary in nature, and the vegetation would generally recover in one to two growing seasons.

#### **4.4.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Under Alternative 2, impacts to vegetation within the project area would be similar to those described under the Proposed Action. The only difference is that the buggy drill would be replaced with a helicopter, thereby reducing direct impacts to vegetation from the buggy drill. Alternative 2 would require more people on the ground (15 vs. 2 under the Proposed Action) to operate the heli-portable drills. However, these impacts would only be slightly higher than those described for the Proposed Action and impacts to vegetation from tramping due to foot traffic would be negligible. Operation of the helicopter would potentially impact vegetation during the transportation of each drill. Hovering of the helicopter close to ground level could break off portions of the woody vegetation in the area. Operation of the helicopter would raise dust which would then settle on nearby plants and inhibit photosynthesis. This would likely occur near the staging area during landing and take-off of the helicopter. However, overall impacts to vegetation from helicopter operations would be negligible.

#### **4.4.3 No Action Alternative**

Under the No Action Alternative, the proposed seismic survey would not be conducted. Therefore, no change to current conditions would result and no additional impacts to vegetation would occur.

### **4.5 WETLANDS AND RIPARIAN AREAS**

#### **4.5.1 Alternative 1 – Proposed Action**

No mapped wetlands have the potential to be affected by project activities (the only mapped wetland in the project area is over 1 mile from the nearest portion of a seismic line). Under Alternative 1, there would be no impacts to riparian areas as the GAP-mapped riparian areas were determined to not contain any riparian vegetation or characteristics. No shot holes would be drilled within 500 feet of any riparian areas or within 100 feet of any drainages or ephemeral streams, and buggy drill travel would not occur in these areas, which would further limit potential impacts.

Several of the roads and two tracks in the proposed project area cross drainages and ephemeral streams. While the restriction of avoiding these areas when flowing water is present would limit the adverse impacts to these areas, operation of vehicles when these drainages are dry would potentially have short-term, minor impacts. Erosion due to project activities (e.g., off-road vehicle travel, shot-hole drilling) may settle in the drainages, increasing the sediment load the next time water is flowing. However, as there would be a small number of vehicles associated with the Proposed Action, the overall impacts to drainages would be minor.

As there are no wetlands in the area, there would be no impacts to these resources.

#### **4.5.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Impacts to the wetlands and riparian areas would be similar to those described under the Proposed Action. The use of a helicopter would potentially result in slightly higher levels of sediment load to the drainages and ephemeral streams due to hovering at low elevations while drilling the shot holes. However, this impact would be temporary, localized, and negligible.

#### **4.5.3 No Action Alternative**

Under the No Action Alternative, the proposed seismic survey would not be conducted. Therefore, no change to current conditions would result and no additional impacts to wetlands and riparian areas would occur.

### **4.6 INVASIVE AND NONNATIVE PLANT SPECIES**

#### **4.6.1 Alternative 1 – Proposed Action**

There is a potential for project activities (e.g., temporary surface disturbance, foot traffic, and vehicle travel) to spread invasive nonnative plants within the project area. As stated in Section 3.6, several weed species are known to occur in the general area and are likely present within the project area. Project activities could introduce weeds from outside areas or spread currently established weeds to presently undisturbed areas. While the potential to spread invasive nonnative plants is low due to the small amount of disturbance associated with the project, should any weeds become established in new areas those impacts would likely be long term as it is difficult to remove invasive plants once they are established. Introduction of noxious weeds would displace native vegetation that wildlife species may potentially use as forage. Design features, such as washing vehicles prior to entering the project area and treating any existing infestations, would reduce potential impacts associated with invasive nonnative species.

#### **4.6.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Impacts associated with invasive nonnative plant species would be similar to those described under the Proposed Action. The potential for the spread of invasive nonnative plant species would be somewhat lower due to the lower amount of temporary surface disturbance associated with the use of helicopters, although there would be a slight potential for the helicopter to transport seeds of weed species when flying low or hovering over currently weed-infested areas. Implementation of the design features described under the Proposed Action would reduce these impacts.

#### **4.6.3 No Action Alternative**

Under the No Action Alternative, the proposed seismic survey would not be conducted. Therefore, no change to current conditions would result and no additional impacts to vegetation would occur.

## 4.7 WILDLIFE AND FISHERIES

### 4.7.1 Alternative 1 – Proposed Action

The Proposed Action would result in an estimated total of 16.5 acres (or 0.2% of the project area) of surface impacts to wildlife habitat, although these impacts would be reduced through reclamation, natural vegetation recovery, and design features, including the use of smooth tread, wide-profile tires on the buggy drills. Animal/vehicle collisions could potentially increase during project activities due to project-related vehicle traffic, although this potential would be low given the short duration and limited number of vehicles that would be in operation. Implementation of speed limits within the project area would minimize this risk. The potential for direct impacts to wildlife (e.g., mortality) and their habitat (e.g., crushing of burrows) would also exist from off-road buggy drill travel.

#### 4.7.1.1 Big Game Migration Corridors

Operation of the buggy drill would have the potential to damage vegetation where the seismic lines intersect migration corridors for elk, mule deer, and pronghorn (Appendix A, Map 3-3). However, given the small magnitude and temporary nature of potential impacts to vegetation, impacts to migration corridors would be minor. Additionally, as migration for big game species typically occurs in the late fall and early spring (Petersburg et al 2000), no migration would occur during scheduled seismic activities (i.e., July and August). The Proposed Action would be completed no later than August 31, 2010. As such, impacts to big game migration corridors would be negligible.

#### 4.7.1.2 Big Game

As the big game species that occur in the project area are typically nocturnal or crepuscular (i.e., active at dawn and dusk), surveyors would have the potential to displace resting big game in the project area (Fitzgerald et al 1994). Taylor and Knight (2003) determined that there is a 200-meter (656-foot) zone of influence around hikers that causes big game to be displaced. Applying this 200-meter buffer to the entire 10.2 miles of the seismic lines, approximately 21% of big game habitat within the project area potentially could be subject to impacts. However, this is a conservative estimate and the actual area that could be disturbed by the buggy drill and foot travel would be considerably lower due to sensitive areas and steep slopes, as well as the short duration of project activities (i.e., project activities would typically be concentrated in specific portions of the project area at one time, so most areas would not be affected by human activities).

Operation of light vehicles to transport project personnel during various stages of the project to access points along the seismic lines would also have the potential to displace big game that occur along the existing roads and two tracks in the area.

Operation of the buggy drill and associated noise would likely cause the greatest disturbance to big game in the area and potentially result in the displacement of big game. The extent of

impacts to big game would depend on the species, individual, time of year, and the distance to cover (Ream 1979). Noise effects are described in greater detail in Section 4.9.

With the exception of residual, minor impacts to vegetation there would be no direct impact to big game crucial winter ranges as the proposed action would be completed during summer. Removal of shrubs preferred by big game (e.g., mountain mahogany) would be avoided to prevent loss of forage.

#### **4.7.1.3 Migratory Birds**

Impacts to migratory birds would be similar to those described in Section 4.7.1. Migratory birds would likely flee the immediate area during project activities and would return once activities in that area are complete. Since junipers and mountain mahogany would not be removed, this would limit impacts to habitat for migratory birds. Since project activities would occur outside of the breeding season (early April – July 15), impacts to nesting migratory birds would not occur.

#### **4.7.1.4 Fisheries**

As there are no fisheries within the project area, there would be no direct impacts to fish under the Proposed Action. However, indirect impacts could potentially occur. Soil and vegetation disturbance could result in increased erosion which would potentially increase sedimentation of nearby waterbodies (refer to Section 4.3.1.1). However, since the nearest perennial water body that supports fisheries (Spring Creek) is approximately 1.2 miles south of the southern terminus of line DJ-3, potential impacts would be negligible. Similarly, any fuel spills would not likely impact fisheries due to the distance between potential spills and fish-bearing streams.

#### **4.7.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Impacts to wildlife under Alternative 2 would be similar to those described under the Proposed Action. However, the use of a helicopter instead of a buggy drill would reduce the amount of habitat disturbance but would likely increase noise impacts. A maximum of 4.1 acres (4 acres for the staging area and 0.08 acres for shot holes) of wildlife habitat would be temporarily disturbed under this alternative. These impacts would be reduced through reclamation, natural vegetation recovery, and implementation of design features (Section 2.1.2). Overall impacts to habitat would be minimal due to the small amount of habitat disturbed.

Noise produced by the helicopter flying at an altitude of a few hundred feet would have the potential to travel over a greater distance than the noise produced by vehicles on the ground, where the noise would be muted by trees and shrubs. This in turn would potentially lead to increased disturbance from noise on wildlife. This potential impact would be temporary and only last for the 5 days that the helicopter is in operation. Noise impacts are discussed in more detail in Section 4.9, as well as below with regard to impacts to specific wildlife.

Use of the helicopter and heli-portable drills would require more workers than under the Proposed Action (Table 2-2). The additional crew in the field for the 5-day period when drilling

operations are ongoing would result in an increase in the amount of disturbance to wildlife in the area.

#### **4.7.2.1 Big Game Migration Corridors**

Impacts to big game migration corridors would be limited to minor, temporary impacts to vegetation within these corridors. Use of the helicopter would limit these impacts to those associated only with the shot holes (the staging area is located outside of any migration corridors). Since project activities are scheduled outside of big game migration periods, migrating game would not be affected.

#### **4.7.2.2 Big Game**

Impacts to big game would be similar to those described under the Proposed Action. While temporary ground disturbance would be lower, there would be an increase in the number of vehicles and personnel in the area, resulting in higher, though minor, impacts to big game and their habitat.

The primary impact to big game under Alternative 2 would be from helicopter noise. Telemetry and heart monitor studies indicate that helicopter noise is stressful to big game (Larkin 1996), and is likely to be startling to big game, resulting in avoidance and displacement behaviors (Gunn 1983, Krausman et al 1986, McKenehnie and Gladwinn 1994). Such avoidance and displacement also reduces foraging effectiveness (Stockwell et al 1991). Studies have demonstrated that the distance that big game have fled from aircraft noise is variable, often dependant on the type, size, intensity, and duration of the disturbance as well as the sex, age, season, and experience of the animal, and terrain, topography and wind conditions (Luz and Smith 1976, Bleich et al 1990, Harrington and Veitch 1992). Physiological adaptations to helicopter noise appear to be unlikely for short-term exposure (helicopter operations would occur for approximately 5 days) (Larkin 1996). Any individuals or small groups of pronghorn, elk, deer, and moose present in the area would likely be disturbed and temporarily displaced during helicopter use, but suitable habitat exists throughout and adjacent to the project area for these species to utilize during disturbance. Therefore, impacts on big game species would be short-term and minor. Big game species disturbed by the helicopter noise would likely return to the area following completion of the seismic survey.

Impacts to seasonal ranges (e.g., winter range) for big game species would be similar to those impacts discussed under the Proposed Action. As there would be less temporary ground disturbance, there would be fewer indirect impacts to these seasonally important areas.

#### **4.7.2.3 Migratory Birds**

Impacts to migratory birds under Alternative 2 would be the same as those described under the Proposed Action. Migratory birds would potentially be impacted from the use of the helicopter during drilling operations. The helicopter would potentially result in flushing migratory birds

and cause them to disperse from the area. Migratory birds occurring near the staging area during take-off and landing of the helicopter would be the most heavily impacted.

Use of the helicopter would reduce the amount of surface disturbance that would occur during project activities as described in Section 4.7.2. Given the relatively small area that would be potentially disturbed, the short time period of disturbance, and the reclamation activities at the completion of the project, the impacts to migratory birds would be minor and short-term.

#### **4.7.2.4 Fisheries**

As there are no fisheries existing in the project area, there would be no direct impacts to fisheries from the implementation of Alternative 2. Indirect impacts would be similar to those discussed under the Proposed Action. However, the presence of additional light vehicles required under this alternative would potentially result in greater erosion. This, in turn, would potentially result in greater sedimentation rates of nearby waterbodies. While loud noises have been shown to cause some effects in various species of fish, the nearest fish population occurs in Spring Creek, approximately 1.2 miles south of the proposed project area. Overall, the impacts to fisheries surrounding the proposed project area would be minimal.

#### **4.7.3 No Action Alternative**

Under the No Action Alternative the seismic survey would not occur. As such, impacts to the wildlife in the project area would continue to occur from existing uses.

### **4.8 SPECIAL STATUS SPECIES**

#### **4.8.1 Alternative 1 – Proposed Action**

##### **4.8.1.1 Federally Listed or Candidate Species**

###### ***Black Footed Ferret***

The black-footed ferret is not present within the project area, since no white-tailed prairie dog complexes are present. Therefore, the Proposed Action would have no impacts on the black-footed ferret. The actions proposed under the Proposed Action would not preclude future colonization by prairie dogs.

###### ***Ute Ladies'-tresses***

The Ute ladies'-tresses are not present within the project area. Therefore, Alternative 1 would have no impacts on this species.

###### ***Blowout Penstemon***

Blowout penstemon is not known to occur within or near the project area. As no habitat for this species occurs within the project area, implementation of the Proposed Action would have no effect on this species.

### ***Colorado River Fish***

The four endangered species of Colorado River fish, the Colorado pike minnow, razorback sucker, humpback chub, and bonytail chub have the potential to occur approximately 5 miles west of the proposed project area in the Green River and Flaming Gorge Reservoir. The Proposed Action would not result in any water depleting activities and no sedimentation is anticipated to occur in the Green River or Flaming Gorge Reservoir as a result of the proposed action. Therefore, no impacts from the Proposed Action would occur to these endangered species.

### ***Greater Sage-grouse***

As described in section 3.8.1.1, no greater sage-grouse leks occur within the project area. An unoccupied lek occurs 1.5 miles south of the project area. Occupied leks occur northwest and east of the project area. Recent Wyoming BLM guidance states that effects analysis should extend out to 4 miles for small projects as recent research has shown that leks have been extirpated within 4 miles as a result of projects (BLM 2010). Occupied leks are greater than 4 miles from the project area and therefore not likely to be impacted by the Proposed Action.

The recent guidance also states that surface disturbing and/or disruptive activities are prohibited from March 15-July 15 in suitable sage-grouse nesting and early brood-rearing habitat within mapped habitat important for connectivity or within 2 miles of any occupied or undetermined lek (BLM 2010). No occupied or undetermined leks occur within 2 miles of the project area and the Proposed Action would take place after July 15, so no impacts would occur to nesting or early brood-rearing habitat.

### ***Pygmy Rabbit***

The project area occurs within the range of the pygmy rabbit. Therefore, a pygmy rabbit survey was conducted in March 2010 to determine the presence of this species in the project area (Hayden-Wing 2010). The survey found no evidence pygmy rabbits in the project area and determined that the vegetative and soil characteristics of the area were unsuitable for this species (Hayden-Wing 2010). As such, implementation of this project would have no adverse impacts on this species.

### ***Wyoming Pocket Gopher***

As the project area is outside of the modeled range for the Wyoming pocket gopher, no impacts would occur to this species under the Proposed Action.

#### **4.8.1.1 BLM Sensitive Species**

### ***Migratory Passerine Birds***

Sensitive migratory bird species (i.e., juniper obligates) are likely to occur and nest within the project area. The shot hole/receiver survey may occur as early as late July, but since it would be conducted on foot, this would result in minimal impacts to migratory birds. As shot hole drilling

and recording would occur in August, outside of the nesting period for these species, there would be no impacts to nesting activities. However, potential impacts could occur to juvenile birds and adults that would remain until fall migration. The presence of people and the buggy drill would potentially flush individuals, although these impacts would be minimal and short-term. As stands of junipers would be avoided, no direct impacts to juniper obligate species are expected.

Due to the overall small percentage of the entire proposed project area (0.2 percent) that would be disturbed under the Proposed Action and the short time period that seismic operations would occur (i.e., 12 days), the adverse impacts to migratory passerine birds species would be short-term and minimal.

### ***Raptors***

The BLM requires that project activities avoid active raptor nests by 0.5 to 1 mile, depending on species, during the nesting season from February 1 to July 31. While raptor nests are assumed to occur within the project area, shot hole drilling and recording would not occur until August 1 in order to avoid impacts to nesting raptors. The shot hole/receiver survey may occur as early as July, but since it would be conducted on foot, this would result in minimal impacts to nesting raptors. Therefore, no impacts would occur to nesting raptors.

### ***White-tailed Prairie Dog***

As white-tailed prairie dogs do not occur within the project area, there would be no impacts to this species from the implementation of the Proposed Action.

### ***Fringed Myotis, Townsend's Big-eared Bat, Spotted Bat***

Impacts to the special status bat species that potentially occur in the area (fringed myotis, Townsend's big-eared bat, and spotted bat) would be minimal. These three species feed on airborne insects. The temporary loss of a maximum of 16.5 acres of vegetation would not measurably impact these species. The presence of people and equipment during the implementation of the Proposed Action could result in some of these species being flushed from roosting habitats. These impacts would be short-term and the individuals would move back to the roosting sites after the activities. No roosting habitat would be permanently lost as juniper stands and rocky outcrops would be avoided. As the proposed project would take place in July and August, there would be no impacts to maternity colonies or hibernating bats.

### ***Midget Faded Rattlesnake***

A survey for MFR was conducted by Dr. Joshua Parker in July, 2010. No individuals or dens were observed and it is unlikely any MFR will occur in the project area (Parker 2010). Therefore, there would be no impacts to MFR from the Proposed Action.

***Colorado River Cutthroat Trout***

As there are no populations of the Colorado River cutthroat trout occurring in the proposed project area, there would be no direct impacts to this species from the Proposed Action. Indirect impacts would still potentially occur from the possible sedimentation of fish bearing streams outside of the project area. These impacts would be minimal as there would be a 500 foot buffer around riparian areas and 100 foot buffers around drainages. Overall, the impacts would be minimal and short-term.

***Ownbey's Thistle***

Suitable habitat for the Ownbey's thistle may occur in the project area. Field surveys were conducted at the end of May to determine the presence of this species. No individuals of this species were observed therefore, there would be no impacts to this species by the Proposed Action. Therefore, the project would not contribute to future federal listing under the ESA.

**4.8.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

**4.8.2.1 Federally Listed or Candidate Species**

***Black Footed Ferret –***

No impacts would occur to the black-footed ferret as discussed under the Proposed Action.

***Ute-Ladies Tresses***

No impacts would occur to Ute ladies'-tresses, as discussed under the Proposed Action.

***Blowout Penstemon***

No impacts would occur to blowout penstemon, as discussed under the Proposed Action.

***Colorado River Fish –***

No impacts would occur to the four species of Colorado River fish, as discussed under the Proposed Action.

***Greater Sage-Grouse***

Since no greater sage-grouse leks or nesting habitat are located within two miles of the project area, it is unlikely that Alternative 2 would result in impacts to the sage-grouse.

***Pygmy Rabbit –***

As described under the Proposed Action, suitable pygmy rabbit habitat is not present in the project area. Therefore, no impacts would occur to this species under Alternative 2.

***Wyoming Pocket Gopher –***

As the project area is outside of the modeled range for the Wyoming pocket gopher, no impacts would occur to this species under Alternative 2.

#### **4.8.2.2 BLM Sensitive Species**

##### ***Migratory Passerine Birds***

Impacts from personnel on the ground would have similar impacts to migratory passerine birds as described under the Proposed Action. Use of helicopter has the potential to disrupt individuals over a larger area than vehicles on the ground, as there would not be any sound buffers (e.g., trees) to reduce the noise from the helicopter. This impact would be short term, since the helicopter would be used for 5 days.

##### ***Raptors***

As with the Proposed Action, there would be no impacts to nesting raptor species as the project would occur outside of the nesting period. Use of the helicopter would have the potential to disturb raptors over a larger area than vehicles on the ground as there would be no screening of the noise produced. This impact would likely be minimal and raptors would move back into the area after the helicopter operations have been completed.

##### ***White-tailed Prairie Dog***

Since white-tailed prairie dogs do not occur in the project area, there would be no impacts to prairie dogs from Alternative 2.

##### ***Fringed Myotis, Townsend's Big-eared Bat, Spotted Bat***

Impacts to the three bat species would be similar to those discussed under the Proposed Action. Helicopter activities would only occur during daylight hours, so there would be no direct impact on foraging activities for these species. Overall, impacts to these bats would be short term and minimal.

##### ***Midget Faded Rattlesnake***

As with the Proposed Action, there would be no impact to MFR since this species is not present in the project area.

##### ***Colorado River Cutthroat Trout***

As there are no populations of Colorado River cutthroat trout in the project area, there would be no direct impacts to this species from Alternative 2.

##### ***Ownbey's Thistle***

As no individuals of this species were observed during field surveys, Alternative 2 would have no impacts on Ownbey's thistle.

### **4.8.3 No Action Alternative**

Under the No Action Alternative there would be no change to the existing conditions and no new impacts to the special status species would occur.

### **4.8.4 Additional Mitigation Measures**

No sensitive plants or midget faded rattlesnakes were observed during field surveys conducted in May and July 2010. No additional mitigation measures are required as these species do not occur in the project area.

## **4.9 NOISE**

### **4.9.1 Alternative 1 – Proposed Action**

The primary noise concern during project activities would occur from operation of the buggy mounted drill. Drill noise would occur from the engine of the buggy as well as the operation of the drill itself, which has a noise level of about 100 dB at full operating load at a distance of 4 meters (13 feet). Noise produced by the drill would be intermittent (i.e., it would only operate while drilling the shot holes) and loudest near the rig and would attenuate (i.e., become less perceptible) further away from the drill. Depending on local geographical factors, this noise would likely become relatively imperceptible compared to ambient noise levels within 1,500 to 2,000 feet away. As there would only be one buggy drill in operation, the noise generated within the proposed project area would be highly localized and transient in nature.

Throughout the project duration, light vehicles would be restricted to existing roads and two tracks in the project area and therefore, noise generated by these vehicles would be concentrated along these routes and would likely not be detectable for more than several hundred feet away.

Human related noise concerns are primarily associated with recreationists in and near the project area. Relative to background noise levels, noise produced from drilling operations is likely to lead to a loss of a sense of solitude and remoteness that some recreationists seek. As stated above, project generated noise would be highly localized and would generally be imperceptible from a few hundred to a few thousand feet away, depending on the nature of activities (i.e., surveying, drilling shot holes, or recording).

Overall there would be a temporary increase in noise levels during project activities. This increase would generally be localized in nature, and the highest noise levels (associated with the shot hole drill) would be intermittent. The presence of varying topography and juniper stands throughout the project area would further reduce noise impacts on adjacent areas. Noise impacts on wildlife and other specific resource values in the project area are discussed in those resource sections in Chapter 4. Following project activities, noise levels would return to existing levels.

### **4.9.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Impacts from noise under Alternative 2 would be similar to those discussed for the Proposed Action, except as described below. Use of a helicopter over the 5 day shot hole drilling phase is

anticipated to result in somewhat higher noise impacts as compared to the use of a buggy drill. Noise from helicopters is complex, consisting primarily of engine noise (usually turbine), gearbox noise, blade loading noise, and a host of interaction noises. Helicopter noise associated with Alternative 2 would last for approximately 5 days. Noise levels associated with the helicopter proposed for use under this alternative is estimated at 100 dB at 4 meters (13 feet). Tests by the FAA on helicopters comparable to the ones used for seismic operations indicate 70-80 dBA levels at typical air speeds and 1,500-foot flyover altitudes directly beneath the helicopter (BLM 2005). Helicopter noise would likely have impacts over much of the project area as well as adjacent areas due to the altitude at which it would operate (generally 150 feet above ground level). Because there are few or no noise barriers (e.g., vegetation, topography) to noise movement generated above ground level, this noise would attenuate more slowly than noise generated at ground level.

At any given time four drills would be in operation while the fifth was in transport to its new location. This would introduce multiple simultaneous noise generation sources in addition to the noise produced by the helicopter. (The portable drill rigs would produce noise from the diesel engine that powers the compressor, the compressor itself, and the sound from the rotary drill.)

Although noise levels under Alternative 2 would be greater than under the Proposed Action, these impacts would still be temporary in nature.

#### **4.9.3 No Action Alternative**

Under the No Action Alternative there would be no change to the existing conditions and no new impacts to the noise would occur

### **4.10 CULTURAL RESOURCES AND NATIVE AMERICAN CONCERNS**

#### **4.10.1 Alternative 1 – Proposed Action**

The Proposed Action has been developed and modified to avoid potential impacts to cultural resources, and as such, the Proposed Action would have no direct or indirect impacts upon the cultural resources known to exist within the project area. Site numbers and information may change due to pending inventory.

An existing two-track access road crosses site 48SW17736, a historic wild horse trap that has been recommended eligible for the NRHP under Criterion C (Barclay 2010). However, the portion of the site crossed by the road does not contribute to the potential eligibility of the site to the NRHP because it is known to not contain any intact cultural remains that would be impacted by the Proposed Action. A second site, 48SW17735, a prehistoric lithic scatter, is bordered by a two-track access road but this site has been recommended not eligible for the NRHP (Barclay 2010). A third site, 48SW17737, a prehistoric lithic scatter, is unevaluated for the NRHP (Barclay 2010). This site is bisected by the proposed DJ-2 seismic line but would not be impacted by the Proposed Action as the site would be avoided by a walk-around that leaves the

line 100 feet northeast of the site and proceeds around the steep slope below the site to a point on the seismic line in the adjacent drainage 100 feet southwest of the site (Appendix A, Map 2-1).

In order to avoid impacting adjacent portions of the sites that are considered contributing portions along any proposed access roads, all travel along the access roads would be single-file and restricted to the existing two-track road. No road improvements are planned, and the access roads would be used as they exist in their current state. As a result, sites crossed or bordered by two-track access roads would not be impacted by project-related use of those roads. Sites crossed or bordered by proposed seismic lines would be avoided using 100 foot walk-around buffers, and therefore would not be impacted by the Proposed Action. As all of the sites found would be avoided, the project is not expected to have any direct or indirect impacts to known cultural resources.

Although the Proposed Action is not expected to impact cultural resources, in the event that there is an inadvertent discovery during exploration activities, Azalea would immediately cease surface disturbance activities and notify the BLM Archaeologist. The cultural property would be secured and protected from natural elements. The site(s) would be evaluated, and a determination made by the BLM Archaeologist regarding the implementation of mitigation measures for the site(s). Additional ground disturbance by Azalea at the site(s) would not occur until the evaluation and determination process is completed, and agreement reached regarding necessary avoidance, protection, and/or mitigation measures.

#### **4.10.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Impacts to cultural resources under Alternative 2 would be similar to those described under the Proposed Action. The use of a helicopter instead of a buggy drill would not affect the potential for impacts to cultural resources.

#### **4.10.3 No Action Alternative**

Under the No Action Alternative, the BLM would not select the Proposed Action or Alternative 2. Because there would be no seismic exploration activities, no impacts to cultural resources would occur.

#### **4.10.4 Additional Mitigation Measures**

If human remains are inadvertently discovered during seismic survey activities, all activity would cease and the BLM Archaeologist would be contacted to determine the appropriate course of action.

## 4.11 RECREATION

### 4.11.1 Alternative 1 – Proposed Action

#### **4.11.1.1 Dispersed Recreation**

The Proposed Action would have minor impacts on recreation opportunities in and near the project area. Human related noise concerns are primarily associated with recreationists in and near the project area. Relative to background noise levels, noise produced from drilling operations is likely to lead to a loss of a sense of solitude and remoteness that some recreationists seek. As stated above, project generated noise would be highly localized and would generally be imperceptible from a few hundred to a few thousand feet away, depending on the nature of activities (i.e., surveying, drilling shot holes, or recording). These minor impacts would be short term due to the time period needed to conduct the seismic exploration activities. The potential impacts from the Proposed Action on most recreation activities would consist mainly of reduced recreation opportunities or experiences in the project area or portions of the project area due to project activities, although public use would not be restricted except during shot hole detonations. The visual and audio impacts from seismic survey activities would result in a short-term, minor impact to recreationists only in the immediate vicinity of the staging area and drill-mounted buggy.

#### **4.11.1.2 Hunting**

As the Proposed Action would occur in late July (shot hole/receiver survey only) and August of 2010, it would potentially occur during the start of the bow hunting season for pronghorn (which starts August 15) and would end immediately prior to rifle hunting seasons (and bow hunting seasons for all other big game), impacts could include displacement of big game and upland bird species from the immediate vicinity of the project area. Due to the overlap in the timing of bow hunting and seismic activities, the August bow hunting season would be directly impacted within the project area. The distance and duration of displacement depends largely on the animal species, individual animal, and type, duration, and intensity of disturbance (see Section 4.7 for additional information on wildlife displacement). As game species are displaced, a loss of hunting opportunities may also occur.

The WGFD believes that because area elk in the South Rock Springs Elk Herd (Unit 424) is an interstate herd, some animals could be displaced to more secure areas in Colorado (TEC Inc. 2008). Pronghorn from South Rock Springs Herd (Unit 412) and mule deer from the South Rock Springs Herd (Unit 424) would also temporarily disperse to other areas outside the project area. Some hunters in the area could benefit from project activities if game were displaced to areas with less security and cover, but with increased animal density due to displacement. Hunters who hunt areas outside the project area may also benefit if animals disperse from the project area to find security and cover. Depending on the area hunted, some hunters would not benefit from animals dispersing to other areas because game would be scarcer than under current conditions (i.e., the project area).

Overall, impacts to big game and upland bird hunting from the Proposed Action would be short-term and temporary, as seismic activities would occur during bow hunting season and conclude before rifle hunting seasons begin on September 1 for most big game species and upland bird species. However, direct impacts to hunting in the project area are plausible for portions of the bow hunting season and if animals do not return to the area during the 2010 hunting season and hunters are subsequently unsuccessful in harvesting game. Additionally, impacts could be more long-term for unsuccessful hunters if they are unable to obtain annual license draws in 2011 and subsequent years, due to the extremely high demand and low odds for obtaining a license. The WGFD has no mechanism to compensate 2010 hunters (e.g., reissue another license in another hunt area, increased preference points for licenses) impacted by the Proposed Action.

#### **4.11.1.3 OHV**

Impacts to OHV use would be similar to those identified for dispersed recreation. The direct impacts of the Proposed Action would be minor on OHV use in the vicinity of the project area. As well, because seismic survey activities are expected to take place on 12 days, impacts on OHV use would be short-term and temporary. Motorized travel for the public, including OHV travel, is limited to designated roads and trails which are depicted on the current BLM land status map for the area (BLM 1997). The Proposed Action would impact these roads or trails only during equipment mobilization, shot hole and geophone placement, and seismic data collection. The sights and sounds of the seismic survey would not be highly visible or audible to OHV recreationists due to the mostly continuous movement and sounds of the OHVs. There would be a minor increase in traffic on those existing roads used to access the project area, but public use would not be restricted except during shot hole detonations.

#### **4.11.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

##### **4.11.2.10 Dispersed Recreation**

Impacts on dispersed recreation under Alternative 2 would be similar to the minor, short-term impacts described under the Proposed Action, with the added impact of helicopter operations. Impacts from the use of helicopters under Alternative 2 could include an increased diminished recreational experience (compared to the Proposed Action) for persons in or near the project area due to the sights and noise of helicopter flights over the project area.

##### **4.11.2.2 Hunting**

Impacts of Alternative 2 on hunting would be similar to the minor, short-term impacts of the Proposed Action, with the added impact of helicopter operations. Impacts from the use of helicopters under Alternative 2 could include displacement of big game and upland bird species from the immediate vicinity of the project area as a result of the sights and/or sounds of helicopter flights. The distance and duration of displacement depends largely on the animal species, individual animal, and type, duration, and intensity of disturbance (see Section 4.7 and 4.9 for additional discussion of wildlife displacement and helicopter noise). As game species are displaced, lost hunting opportunities would also occur. Overall impacts to big game and upland

bird hunting from Alternative 2 would likely be short-term and temporary, as helicopter flights related to seismic activities would be completed before rifle seasons begin for most upland bird and big game species. It is possible that increased noise impacts from helicopter operations would displace game animals farther from the project area and/or for a longer duration than the Proposed Action.

#### **4.11.2.3 OHV**

Impacts of Alternative 2 on OHV recreation would be similar to those identified for dispersed recreation under the Proposed Action. Impacts from the use of helicopters under Alternative 2 would be minor and short-term, and would include a diminished recreational experience for OHV recreationists in or near the project area due to the sights and noise of helicopter flights over the project area; however, helicopter flights associated with seismic survey activities would likely not be highly visible or audible to OHV recreationists due to the mostly continuous movement and sounds of the OHVs. As such any impacts of Alternative 2 on OHV use would be minor

#### **4.11.3 No Action Alternative**

Under the No Action Alternative, the BLM would not select the Proposed Action or Alternative 2. Because there would be no seismic exploration activities, no impacts to recreation would occur.

#### **4.11.4 Additional Mitigation Measures**

Project Design Features would include the cessation of helicopter flights and detonation of shot holes by August 31, 2010 to reduce impacts to hunting and the displacement of game species. Project Design Features (Chapter 2, Section 2.1.2), and COAs (Appendix D) that have been incorporated into the Proposed Action for other resources would further reduce potential impacts to recreation resources and opportunities.

### **4.12 VISUAL RESOURCES**

#### **4.12.1 Alternative 1 – Proposed Action**

The Proposed Action would consist of a temporary and minor impact to visual resources in the project area. This would include an increase in human activity (trucks, equipment, and workers) in the area over the short term, as well as temporary impacts to vegetation and soil disturbance over a longer period.

Human activities associated with the Proposed Action would occur for a total of approximately 12 days during July and August. Project activities would be spread out over three phases, with no more than approximately six trucks operating in the area at one time (during the recording phase). Views of project activities would predominantly be limited to travelers on U.S. Highway 191 or County Road 33, but these views would be limited to short durations and limited portions of the project area (e.g., the southern portion of line DJ-3). People utilizing the project area and

vicinity (e.g., ranchers and hunters) would also have views of project activities, although the level of activity in the area would not likely be noticeable on a broad scale.

Temporary disturbance to vegetation and soils associated with the Proposed Action would be evident for a longer period than project activities, although these impacts would gradually become less evident over one to five growing seasons and are still considered temporary. Impacts to vegetation and soils would result in a weak contrast to texture and temporarily create lines of weak contrast on the landscape. These impacts to vegetation (other than the juniper stands and mountain mahogany that would be avoided) would consist of flattening and crushing associated with use of the buggy drill (and, to a much smaller extent, from trampling by foot traffic) outside of existing roads for an approximate 10-foot-wide swath (a maximum of 10.2 miles of seismic line). Impacts to soils would primarily result from drilling of shot hole locations. Impacts to vegetation and soils at the staging area could also contribute to visual impacts (although, given the disturbed state of this area, these impacts may not be noticeable compared to existing conditions). These would affect an area of approximately 16.5 acres, or roughly 0.2% of the project area. These minor impacts to vegetation and soils would be obscured in most cases by intervening topography and surrounding vegetation and therefore would likely not be visible from most of the surrounding area. It is possible that these impacts could be exacerbated due to other area users (e.g., hunters or ranchers using ATVs or trucks) utilizing the same routes as the buggy drill and thus creating additional two tracks in the area. These impacts would be reduced through measures such as blocking access to disturbed areas with logs and/or signage. This would prevent motorized access and allow the vegetation to return to its natural state.

Since moderate impacts (or in this case, minor, short-term impacts) to the visual landscape conform to the management objective for VRM Class III, the Proposed Action conforms to visual resource objectives for the project area.

#### **4.12.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Impacts to visual resource under Alternative 2 would be similar to those described for the Proposed Action. Minor differences in impacts include less temporary impacts to vegetation and soils, but slightly increased human activity (including the helicopter). Overall, these impacts would still result in minor, temporary impacts which would conform to visual resource objectives for the area.

#### **4.12.3 No Action Alternative**

Under the No Action Alternative, the BLM would not select the Proposed Action or Alternative 2. Since no drilling operations or other seismic survey activities would occur, there would be no change from current conditions; therefore, no impacts or contrasts would occur to visual resources.

### **4.13 SPECIAL DESIGNATIONS**

#### **4.13.1 Alternative 1 – Proposed Action**

The primary concerns with regard to the Proposed Action within the Sugarloaf Basin SMA are vehicle travel outside of designated roads and impacts to water resources and riparian areas. The SMA is open to oil and gas exploration and production. The Proposed Action includes design features (Section 2.1.2) developed in consideration of the objectives of the Sugarloaf Basin SMA. These design features include limiting vehicle travel outside designated roads for vehicles other than the buggy drills, specified seismic drilling setbacks for water resources and riparian areas, and a schedule which would avoid interruptions to most recreation users (e.g., hunters).

Cross-country travel would be limited to the use of buggy drills along the seismic lines and some access routes to the seismic lines. This off road use would result in temporary impacts to vegetation as well as the potential to create new two tracks in the area, although these impacts would be reduced by several design features (see Section 4.4), including reclamation and implementation of specific protocols in the Transportation Plan (Appendix E) to minimize off-road travel. Impacts to water resources and riparian areas are expected to be negligible (see Sections 4.3 and 4.5). As stated on p. 41 of the 1997 Green River RMP, “Any actions proposed in the Sugarloaf Basin area will be considered and analyzed on case-by-case basis. Controls may be placed on the amount, sequence, timing, or level of activity or development that may occur to assure that the actions will be consistent with or help to meet the management objectives for the area” (BLM 1997, p .41). BLM has determined that appropriate controls have been implemented and that potential impacts within the SMA would be minor and therefore would not interfere with the objectives of the Sugarloaf Basin SMA.

#### **4.13.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Using Heli-portable Drills Alternative 2 would also result in negligible impacts to water resources and riparian areas. However, there would be no vehicle travel outside of designated roads due to the use of a helicopter for shot hole drilling. Therefore, any potential conflicts with the management objectives of the SMA would be negligible.

#### **4.13.3 No Action Alternative**

Under the No Action Alternative, the BLM would not select Alternative 1 or Alternative 2. Therefore, no direct or indirect effects on SMAs would occur.

### **4.14 RANGE RESOURCES**

#### **4.14.1 Alternative 1 – Proposed Action**

Impacts of the Proposed Action on range resources would be minor and short-term. The Proposed Action would result in a short-term loss of a maximum 16.5 acres of forage for grazing due to temporary vegetation impacts resulting from shot hole drilling, compaction by the buggy, and use of the proposed staging area. In addition, cattle are scheduled to be utilizing portions of

the grazing allotments within the project area during seismic activities. As such, other potential impacts could include an increased risk of cattle/vehicle collisions, temporary displacement of cattle during project activities, and increased potential for invasion of forage by nonnative plant species. These impacts would be mitigated through reclamation (Section 2.1.1.4) and coordination between the Proponent and grazing permittees (e.g., disclosing a detailed project schedule so cattle can be moved to nearby areas during periods of high project activity). It is anticipated that impacts to vegetation would dissipate (i.e., return to current conditions) within 1-5 growing seasons.

#### **4.14.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Impacts of Alternative 2 on range resources would be similar to the minor, short-term impacts of the Proposed Action, with the added impact of helicopter operations. Impacts from the use of helicopters under Alternative 2 would be short-term and minor, potentially resulting in a higher level of noise and associated temporary displacement of cattle from the project area. However, impacts to forage would be lower under Alternative 2.

#### **4.14.3 No Action Alternative**

Under the No Action Alternative, the BLM would not select the Proposed Action or Alternative 2. Because there would be no seismic exploration activities, no impacts to range resources would occur.

#### **4.14.4 Additional Mitigation Measures**

The following are additional mitigation measures to protect livestock and rangeland under the Proposed Action:

- Coordinate with livestock permittees on shot hole drilling and detonation schedule to reduce or eliminate interactions with cattle (e.g., develop grazing schedule to defer the areas until seismic activities are complete).
- Locate and mark range improvements such as stock waterlines and tanks that may be in proximity to shot holes to alert permittees using the area. A 250-foot buffer on all stock waterlines would be implemented for shot holes.
- Complete reclamation activities immediately to reduce potential for invasive nonnative species and to restore forage on the sites.
- Carpool crews to the area to reduce traffic and potential for collisions with cattle.
- Strictly enforce speed limits.

## **4.15 HAZARDOUS AND SOLID WASTES**

### **4.15.1 Alternative 1 – Proposed Action**

The principal hazardous materials that would be used under the proposed action would be explosives and fuel. Other potential hazardous materials would include petroleum-based lubricants for drilling rigs, cleaners and solvents, and spray paint. No hazardous wastes would be generated by the Proposed Action. Field personnel would be required to follow safe handling, transportation, and storage procedures enforced through the EPA, BLM, and the State of Wyoming.

Licensed personnel would handle explosives and ensure their proper use and storage. While there is always inherent risk associated with the use of explosives, the potential impacts to human health and the environment would be negligible with adherence to federal and state regulations.

There would be limited fuel storage and fueling operations associated with the proposed action. Diesel fuel would be stored and transported on pickup trucks. Fueling of the buggy drill would be carried out at the staging area. Even with the application of design features, there remains a risk of fuel spills as a result of transport, storage, and fueling operations. However, any potential impacts to human health and the environment would be negligible given the limited quantities and short duration of project activities in the area.

Field personnel would be required to remove any human or other project-generated trash. This includes removal of all pin flags, lath, flagging, and extra wire. Adherence to established procedures would preclude impacts from solid waste.

### **4.15.2 Alternative 2 – Shot-Hole Drilling Using Heli-Portable Drills**

Potential impacts would be similar to those described under Alternative 1, including potential impacts related to use of explosives. The primary difference would involve the amounts of fuel used and stored in association with helicopter. During helicopter operations (5 days), a commercial size fuel truck would transport fuel to the project area and would park at the staging area where helicopter fueling would occur. Application of proper fuel storage and handling procedures would minimize the potential for an uncontrolled spill to occur.

### **4.15.3 No Action Alternative**

Under the No Action Alternative, the Proposed Action and Alternative 2 would not be selected, and no explosives or other hazardous materials would be used. Therefore, there would be no change to existing conditions, and no new impacts to the proposed Project Area.

## 5.0 CUMULATIVE IMPACTS ANALYSIS

This chapter discusses cumulative impacts as the incremental effect to specific resources or issues that would occur under Alternative 1 or 2 in conjunction with other cumulative actions. The Cumulative Impact Analysis Area (CIAA) is the area that is examined for potential cumulative impacts for each resource. For most resources discussed below, the CIAA is the Little Mountain Ecosystem which is defined for the purposes of this analysis as all lands bounded by Interstate Highway 80 on the north, Wyoming Highway 430 on the east, the Wyoming state line on the south, and the Flaming Gorge Reservoir on the west. This definition of the Little Mountain Ecosystem was provided by the WGFD in a letter to Wyoming Governor Freudenthal on November 12, 2008. The Little Mountain Ecosystem comprises 799,044 acres located within the BLM RSFO. Some resources may have a different CIAA dependent on the potential cumulative impacts.

### 5.1 PAST, PRESENT, AND REASONABLY FORESEEABLE PROJECTS

Although the cumulative impacts analysis is primarily forward looking, it must examine actions that have taken place in the past, present, and reasonably foreseeable future. This section discusses those activities.

Energy development has occurred in the CIAA in the past and is expected to continue into the future. To the present, 71 wells have been drilled within the Little Mountain Ecosystem with 4 of those wells occurring within the project area itself. Of these 71 wells, 62 have since been plugged and abandoned including the 4 within the project area. Within the entire Little Mountain Ecosystem, there are 9 wells that are currently in operation and producing oil and/or gas.

An application for permit to drill (APD) that was originally submitted by the Questar Company for a proposed well within the CIAA was approved by the BLM and subsequently transferred to Azalea. Azalea has since withdrawn the APD and this well will not be drilled. Two additional wells within the CIAA were approved in the Baxter EA. Drilling of one of the wells has been initiated, while the other has not.

Several other seismic surveys have been either completed or initiated within the Little Mountain Ecosystem. The Rubicon 3D seismic survey is approximately 28,000 acres and overlaps the northeast corner of the project area. Work began on this seismic survey in 2009 and was originally slated to end in 2010, but has since been postponed. The survey is anticipated to resume in 2011 or 2012, and therefore would not occur simultaneously with the NDJ 2D seismic project. The eastside of the Horseshoe Basin 3D seismic survey was initiated in an area approximately 28 miles east of the project area. This survey was approximately 15,800 acres and was conducted in July and August 2008. This 3D seismic survey was not completed and it is not known if or when it will resume. For the purposes of this cumulative impacts discussion, however, it is assumed that all of these projects would occur within the foreseeable future. The

results of these seismic surveys would influence the level of future oil and gas development that could occur in the CIAA. However, well development will be subject to separate NEPA review and, since future oil and gas development associated with these projects is considered speculative at this time (i.e., no formal proposals have been submitted to BLM), it will not be considered in this cumulative analysis.

Several other activities have historically and continue to occur within the CIAA. These include recreation (e.g., hunting, fishing, and OHV use), livestock grazing, and fire management. In addition, motorized transportation on the existing road network (e.g., State Highway 191, Flaming Gorge Road, etc.) occurs throughout the area. These activities and structures have influenced the CIAA and will continue to do so.

## **5.2 CUMULATIVE IMPACTS**

This section discloses the impacts expected when Alternative 1 or 2 are added to the past, present, and reasonably foreseeable actions. As discussed above, the CIAA for each resource may vary depending on that resource. Except where noted, the description of cumulative impacts is applicable to either Alternative 1 or 2 as described in this EA.

### **5.2.1 Soil Resources**

The CIAA for soils resource is the Little Mountain Ecosystem. The proposed project would contribute slightly but potentially may add to incremental regional erosion and soil compaction as described in Section 4.2. Off road vehicle travel is generally restricted on BLM-administered lands within the CIAA, which limits the amount of soil impacts which occur. However, it is likely that unauthorized off road travel does occur in conjunction with other activities (e.g., recreation). Oil and gas well development, livestock grazing, and other ongoing activities would continue to result in soils impacts in the CIAA. Soil erosion in the Little Mountain Ecosystem has been documented and erosion control projects have been undertaken by the WGFD and others. Since 1990, the greater Little Mountain area has benefited from more than \$2 million in habitat restoration projects, including projects to recover riparian areas where grazing damage has occurred. These efforts have beneficially contributed to the cumulative impacts to area soil resources.

### **5.2.2 Water Resources**

The CIAA for water resources comprises a small portion of the Upper Green – Flaming Gorge Reservoir Watershed. The CIAA is defined as the drainages that emanate from the Little Mountain area. These include Sage Creek and Currant Creek portions of the Greater Red Creek ACEC, Marsh Creek, Krause Marsh Creek, and Spring Creek. The western border is the Green River and Flaming Gorge Reservoir while to the east and south the area include the drainages that flow off of Little Mountain and enter Red Creek. As described in Section 4.3, potential impacts to water resources include erosion or fuel spills. Erosion from the proposed project would potentially result in increased sediment loads of the waterbodies in the CIAA. Erosion is

the CIAA is currently caused by various recreational activities and by the presence of livestock. The small amount of off-road activity under Alternative 1 is not expected to result in substantial erosion so the cumulative impact on water quality would be negligible.

The Proposed Action and alternatives would result in a slight increase in erosion rates and sediment yield. If reclamation and mitigation measures are not successful, additional sedimentation and turbidity of surface water, including that in the White River, could persist.

### **5.2.3 Vegetation**

The CIAA for vegetation is the Little Mountain Ecosystem. Cumulative impacts to vegetation in the CIAA are primarily a result of energy development, livestock grazing, and recreational activities. The impacts from these activities include vegetation removal and erosion (long term disturbance) as well as damage to vegetation (temporary disturbance). Given that the proposed project would involve only temporary disturbance, most vegetation would recover within about 1-5 years following project activities from natural regeneration, and reclamation. Long-term impacts to vegetation would be associated with development of oil and gas wells, livestock grazing, recreational activities, as well as unauthorized ORV use. Overall, the proposed project would incrementally add to past, present, and reasonably foreseeable vegetation disturbance within the CIAA.

### **5.2.4 Wetlands and Riparian Areas**

The CIAA for wetlands and riparian areas is the Little Mountain Ecosystem. Impacts to wetlands and riparian areas in the CIAA occur from energy development, livestock grazing and recreational activities. As described in Section 4.5, the proposed project is not anticipated to have impacts to wetlands and riparian areas, since these areas would have setbacks in place and would be avoided. As such, the proposed project would not contribute to cumulative impacts to wetlands and riparian areas. Cumulative impacts would continue to occur from ongoing activities within the CIAA.

### **5.2.5 Invasive and Nonnative Plant Species**

The CIAA for invasive and nonnative plant species is the Little Mountain Ecosystem. Activities that would potentially increase the spread of invasive and nonnative plant species include surface disturbance from energy development, recreational activities, and livestock grazing. Since invasive and nonnative species are well established within the CIAA, they would likely continue to spread unless controlled. As described in Section 4.6, the proposed project would have a small potential to introduce invasive and nonnative plant species into the area. Implementation of design features (Section 2.1.2) and reclamation of the staging area would limit the potential for invasive and nonnative species to spread within the CIAA. Any increase in the weeds from the implementation of the proposed project would incrementally add to past, present, and reasonably foreseeable weed infestations within the CIAA.

### **5.2.6 Wildlife and Fisheries**

The CIAA for wildlife is the Little Mountain Ecosystem. Impacts to wildlife include habitat disturbance from oil and gas activities, livestock grazing, recreational activities, and existing roads (i.e., fragmentation). Vehicle traffic is likely the primary cause of direct impacts to wildlife due to collisions. The proposed project would result in short-term, negligible losses of habitat resulting from temporary disturbance of some habitat in the area, as described in Section 4.7. Implementation of reclamation activities would further reduce the amount of temporary habitat disturbance and long-term impacts are not anticipated. The proposed project activities have the potential to displace wildlife species, although these would be negligible due to the small magnitude of the project and short duration. Overall, the proposed project would cumulatively add to the impacts resulting from past projects in the CIAA, including the Rubicon 3D, Horseshoe Basin 3D, and the Baxter projects, as well as reasonably foreseeable projects in the CIAA.

The CIAA for fisheries is the Little Mountain Ecosystem. Activities contributing to cumulative impacts to fisheries include energy development, recreation, and livestock grazing. The proposed project would contribute incrementally to cumulative impacts to regional fisheries by increasing the potential for sedimentation to occur, although the project's contribution to cumulative impacts would be negligible.

### **5.2.7 Special Status Species**

The CIAA for special status species is the Little Mountain Ecosystem. Activities in the CIAA that have the potential to impact special status species include energy development, recreation, livestock grazing, and unauthorized ORV use. Implementation of the proposed project would mainly result in habitat displacement from noise and human presence, potential mortality from collision with vehicles, and loss of forage for the special status species. However, no project activity would occur during sensitive periods (e.g., breeding and nesting) of the special status species. Overall, the proposed project would incrementally add to the impacts to special status species from past, present, and reasonably foreseeable activities within the CIAA.

### **5.2.8 Noise**

The CIAA for noise impacts is the Little Mountain Ecosystem. Activities that contribute to noise levels in the CIAA include traffic on existing roads, energy development, livestock operations, and recreational activities. However, noise levels within the CIAA are generally low and typical of a rural area. The proposed project would result in a short term increase in noise levels in the CIAA. As described in Section 4.9, noise impacts would be temporary and last only during the duration of the project. Noise produced by the project would be greatest in the immediate vicinity and attenuate rapidly as distance increased. Primary noise sources from the project include helicopter operations (Alternative 2 only), buggy operations (Alternative 1 only), and shot hole drilling. Noise impacts are anticipated to be highest during helicopter operations

because of the height at which the helicopter would operate. However, under either alternative noise impacts would be minor.

Noise impacts would primarily affect wildlife and recreationists in the immediate vicinity. Due to the lack of other, simultaneous projects or substantial noise sources in the CIAA, it is anticipated that noise impacts would continue to be minor on cumulative level.

### **5.2.9 Cultural Resources and Native American Concerns**

The CIAA for cultural resources is the buffered project area plus a 1 mile buffer. Cumulative impacts to cultural resources would primarily result from activities associated with surface disturbance such as energy development. As described in section 4.10, known cultural sites would be avoided during project activities so the proposed project is not likely to contribute to cumulative impacts to known cultural resources in the CIAA. The proposed project does have the potential to impact unknown cultural resources; however, given the limited amount of disturbance and the design features (Section 2.1.2), the potential for cultural resources impacts on a project or cumulative level would be negligible. Neither alternative would result in an incremental loss of cultural resources in the CIAA.

### **5.2.10 Recreation**

The CIAA for recreation is the Little Mountain Ecosystem. Cumulative impacts to recreation in the CIAA would occur from energy development and livestock grazing. The proposed project has the potential to disrupt certain forms of recreation within the immediate area for a short time period as described in Section 4.11. Additional human activity in the area would potentially result in decreased visitor satisfaction in the area for those visitors seeking solitude, and would likely cause recreationists to seek out other areas within the region. A primary concern is the potential effect that the proposed project would have on hunting in the region, in particular due to the project timing since project activities would not end until shortly before the start of big game hunting season. During project activities, big game would likely flee the immediate area and move to adjacent areas. It is possible that some big game would avoid the project area for a short period following project completion. However, given the small magnitude of the proposed project and lack of other simultaneous cumulative projects within the CIAA, cumulative impacts to recreation (including hunting) would be minor.

### **5.2.11 Visual Resources**

The CIAA for visual resources is the Little Mountain Ecosystem. Activities in the CIAA that have the potential to impact visual resources include surface disturbance and facilities associated with energy development. The impacts to visual resources described in Section 4.12 would result in minor cumulative impacts to the visual resources in the CIAA. The proposed project would result in minor disturbance to the vegetation in the project area that would likely not be visible except to those in the immediate area, and would gradually return to existing conditions within 1 to 5 growing seasons. Reclamation activities described in Section 2.1.2 would further reduce the long-term impacts to visual resources in this area. Due to the limited amount of

existing and proposed development, as well as the lack of simultaneous projects within the CIAA, cumulative impacts to visual resources would be minor.

#### **5.2.12 Special Designations**

The CIAA for special designations is the Sugarloaf Basin SMA. The proposed project would not include actions that would preclude or inhibit meeting the management objectives for the Sugarloaf Mountain SMA as described in Section 3.13, although the Proposed Action would be inconsistent with the management decisions limiting travel outside of designated roads (Alternative 2 would not include travel outside of designated roads) since buggy drills would travel off-road. Impacts would be minor due to the limited amount of off-road travel, as well as design features (offsetting buggy drill routes, blocking off buggy drill areas during reclamation, etc.) which would further reduce potential impacts. Additional cumulative impacts could occur to the SMA due to ongoing activities (e.g., recreation) which could result in unauthorized off road travel. Since the SMA does allow for oil and gas exploration and production, other cumulative projects would be consistent with the goals and objectives of the SMA assuming that design features would minimize potential impacts.

#### **5.2.13 Range Resources**

The CIAA for range resources comprises the Spring Creek Allotment and the Sugarloaf Allotment. The proposed project would result in a short-term, minor loss of forage due to temporary vegetation disturbance, as well as temporary displacement of cattle during project operations. Additional cumulative impacts to range resources in the area would result from energy development, livestock grazing, and recreation. However, since other cumulative projects and activities would generally be spread out over time and long-term impacts would be limited, cumulative impacts to range resources would be minor.

#### **5.2.14 Hazardous and Solid Wastes**

The CIAA for hazardous and solid wastes is the Little Mountain Ecosystem. Activities that would potentially add to cumulative impacts from hazardous and solid wastes would primarily be limited to past, present, and proposed energy development. The proposed project would increase the for spills of hazardous materials, as well as potential for solid waste. Given the limited activities which would introduce hazardous and solid wastes to the area, cumulative impacts would be minor.

## 6.0 CONSULTATION AND COMMUNICATION

### 6.1 PUBLIC PARTICIPATION

Public participation is a critical element in the scoping process. A Scoping Notice for the *North Dutch John 2D Seismic Project* was mailed to government agencies, government officials, public land user groups, private landowners, newspapers, radio stations, environmental organizations, and posted to the BLM website (<http://www.blm.gov/wy/st/en/info/NEPA/rsfdocs.html>). The scoping process included a public comment period from December 17, 2009 to January 16, 2010. During the comment period 4 letters were received, which included a total of 66 comments. A list of organizations that submitted comments along with a summary of comments are provided in Appendix C.

### 6.2 PREPARERS AND REVIEWERS OF THE EA

This EA was prepared by TEC Inc., a third party contractor for the BLM. The names and disciplines of the preparers are provided in Table 6-1. The BLM resource specialists who reviewed and approved the North Dutch John 2D Seismic Project EA are provided in Table 6-2.

**Table 6-1. List of Preparers.**

Resource(s)	Name	Company
Project Manager, QA/QC, Cumulative Impacts	Carlos Jallo	TEC, Inc.
Project Coordinator, Editor	Marion Fischel	TEC, Inc.
Soils; Water Resources; Wastes, Solid and Hazardous	Chris Rowe	TEC, Inc.
Vegetation, Wetlands and Riparian Areas, Invasive and Nonnative Plant Species, Special Status Species, Wildlife and Fisheries, Noise	Neil Lynn	TEC, Inc.
Cultural Resources and Native American Concerns, Recreation, Range Resources	Allison Parrish	TEC, Inc.
GIS, Maps, Visual Resources, Special Designations	Melissa Johnson	TEC, Inc.
References, Acronyms	Derek DeVito	TEC, Inc.
Word Processing, Formatting	Josie Jackman	TEC, Inc.

**Table 6-2. List of BLM Reviewers.**

<b>Resource(s)</b>	<b>Name</b>	<b>Office</b>
BLM Field Office Manager	Lance Porter	BLM Rock Springs
BLM Project Manager	Samantha Thurston	BLM Rock Springs
Assistant Field Manager-Minerals & Lands	John MacDonald	BLM Rock Springs
Assistant Field Manager-Resources	Gavin Levell	BLM Rock Springs
Economist	Roy Allen	BLM Wyoming State Office, Cheyenne
Hydrology	Dennis Doncaster	BLM Rock Springs
Recreation/OHV/Visual Resources/Wilderness	Jo Foster	BLM Rock Springs
Special Status Plants/Weeds/Vegetation	Jim Glennon	BLM Rock Springs
Fisheries/Riparian/Wetlands	John Henderson	BLM Rock Springs
Wildlife/Special Status Animals	Jeromy Caldwell	BLM Rock Springs
GIS	Douglas Kile	BLM Rock Springs
Land Use Planning	Kimberlee Foster	BLM Rock Springs
Realty	Patricia Hamilton	BLM Rock Springs
Document Editing	Angelina Pryich	BLM Rock Springs
Livestock Grazing/Weeds	Jonathon Sheeler	BLM Rock Springs
Cultural Resources/Native American Concerns	Jesse Bunot Penny Daniels	BLM Rock Springs

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## 8.0 ACRONYMS

ACEC – Area of Critical Environmental Concern

AMP – Allotment Management Plan

AO – Authorized Officer

APE – Area of Potential Effect

ATVs – All Terrain Vehicles

BA – Biological Assessment

BLM – Bureau of Land Management

CDP Common Depth Point

CEQ – Council on Environmental Quality

CERCLA – Comprehensive Environmental Response, Compensation and Liability Act

CFR – Code of Federal Regulations

CIAA – Cumulative Impacts Analysis Area

CNHP - Colorado Natural Heritage Program

COA – Conditions of Approval

COE – Corps of Engineers

CR – County Road

CRCT – Colorado River Cutthroat Trout

CWA – Clean Water Act

dBA – Decibel A-weighted filter

DEQ – Department of Environmental Quality

EA – Environmental Assessment

EO – Executive Order

EPA – Environmental Protection Agency

ERP – Emergency Response Plan

ESA – Endangered Species Act

ESD – Ecological Site Description

FAA – Federal Aviation Administration

Fe – Iron

FLPMA – Federal Land Policy and Management Act

FOOGLRA – Federal Onshore oil and Gas Leasing Reform Act of 1987

GAP – Gap Analysis project

GPS – Global Positioning System

GVW – gross vehicle weight

HCPC – Historic Climax Plant Community

MBTA – Migratory Bird Treaty Act

MFR – Midget Faded Rattlesnake

µg/L – Microgram per Liter

mg/L – Milligrams per Liter

MLA – Mineral Leasing Act

MMPA – Mining and Minerals Policy Act of 1970

Mn – Manganese

MSDS – Material Safety Data Sheet

N – North

NDJ – North Dutch John

NDJIF – North Dutch John Isolated Find

NEPA – National Environmental Policy Act

NMMPRDA – National Material and Minerals Policy, Research and Development Act of 1980

NOI – Notice of Intent

NRCS – Natural Resources Conservation Service

NRHP – National Register of Historic Places

NWI – National Wetlands Inventory

NWIS – National Water Information System

OHV – Off Highway Vehicle

ORV – Off Road Vehicle

OSHA – Occupational Safety and Health Administration

PFC – Proper Functioning Condition

PSI – Pound per Square Inch

R – Range

RCRA – Resource Conservation and Recovery Act

RMP – Resource Management Plan

ROD – Record of Decision

ROS – Recreation Opportunity Spectrum

ROW – Right-Of-Way

RSFO – BLM Rock Springs Field Office

SHPO – State Historic Preservations Office

SMA – Special Management Area

SO4 – Sulfur

SPCC – Spill Prevention, Containment, and Countermeasure

T – Township

TCPs – Traditional Cultural Properties

TDS – Total Dissolved Solid

USDA – United States Department of Agriculture

USFWS – United States Fish and Wildlife Service

USGS – United States Geological Survey

VRM – Visual Resource Management

W – West

WDEQ – Wyoming Department of Environmental Quality

WGFD – Wyoming Game and Fish Department

WOGCC - Wyoming Oil and Gas Conservation Commission

WQD – Water Quality Division

WSEO – Wyoming State Engineers Office

WYCRO – Wyoming Cultural Resources Records Office

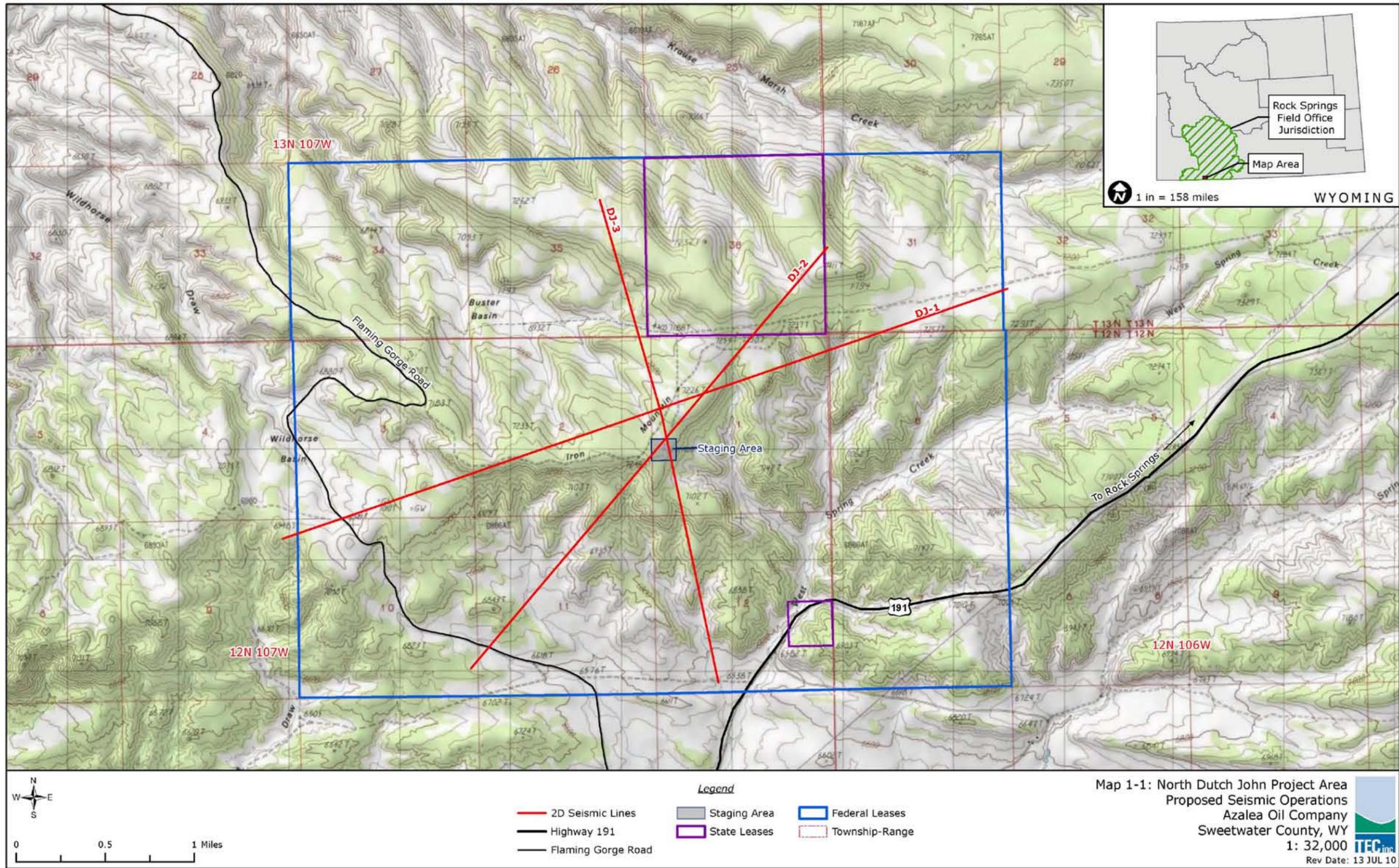
WYDOT – Wyoming Department of Transportation

WYNDD – Wyoming Natural Diversity Database

## APPENDICES

# **APPENDIX A**

## **MAPS**

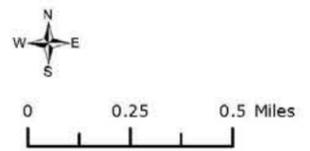
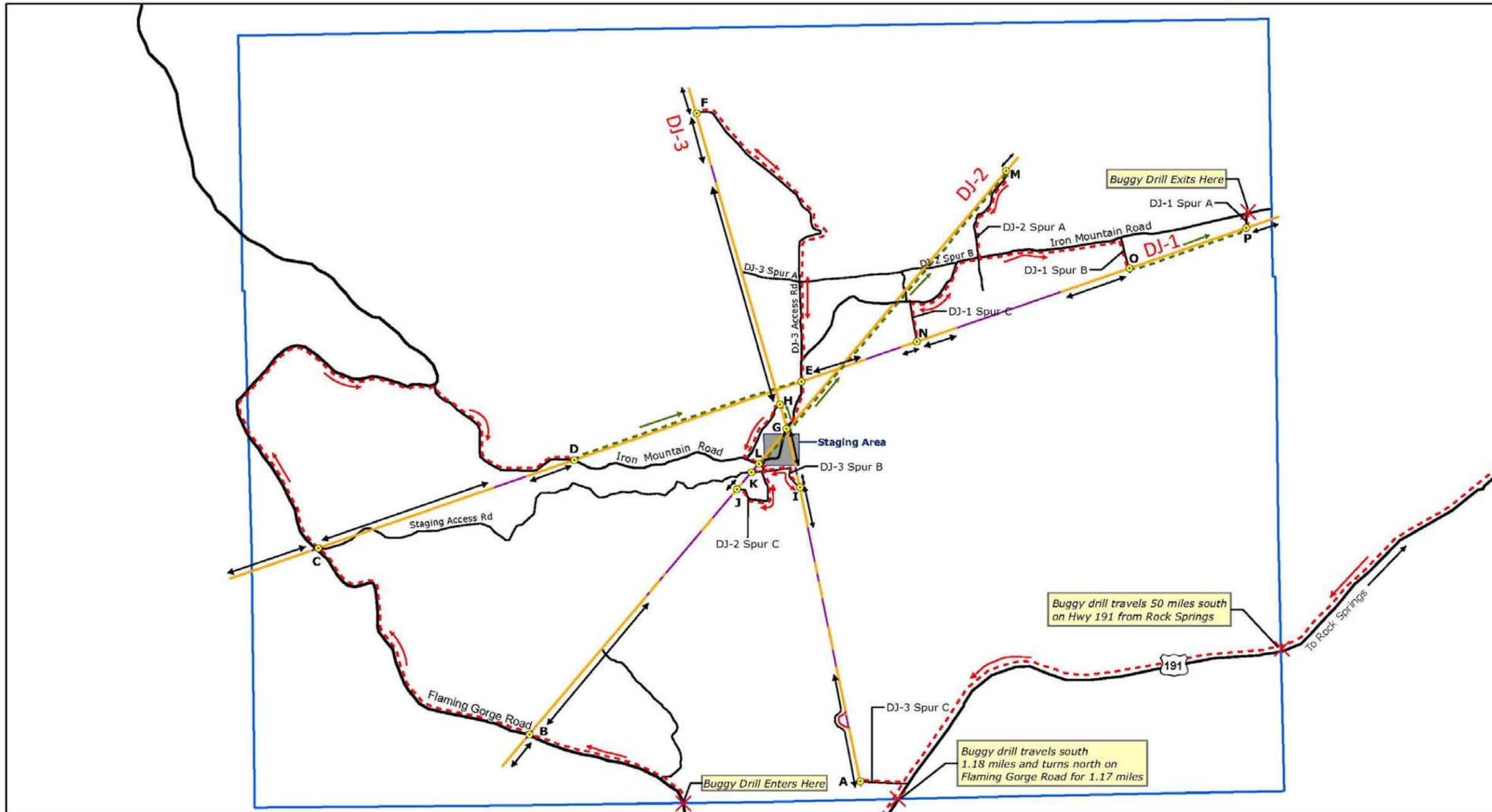


0 0.5 1 Miles

- Legend**
- 2D Seismic Lines
  - Highway 191
  - Flaming Gorge Road
  - Staging Area
  - State Leases
  - Township-Range
  - Federal Leases

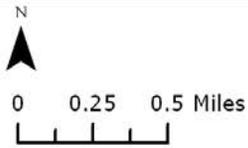
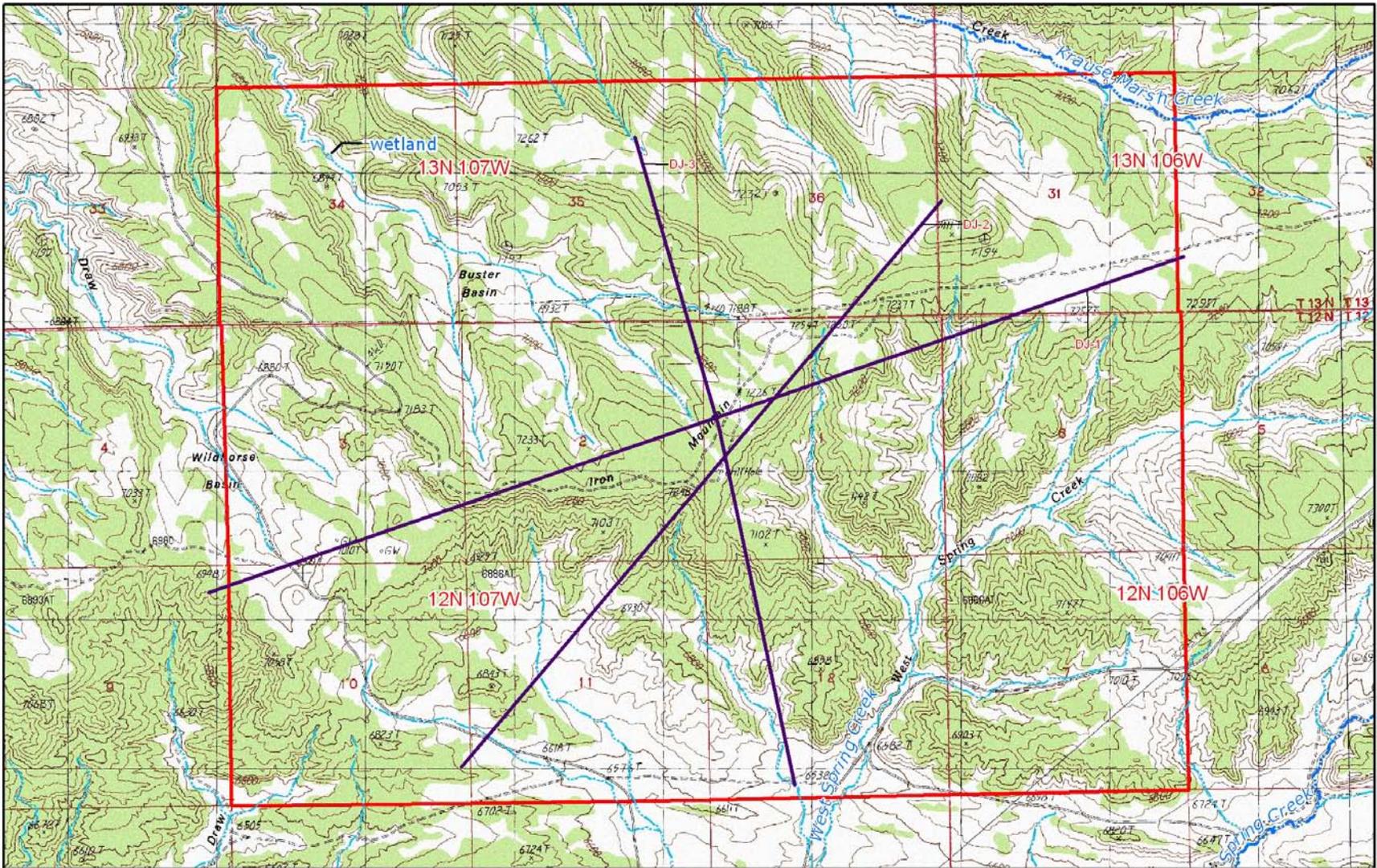
Map 1-1: North Dutch John Project Area  
 Proposed Seismic Operations  
 Azalea Oil Company  
 Sweetwater County, WY  
 1: 32,000  
 Rev Date: 13 JUL 10





- Legend**
- Seismic Line Access-Exit Points
  - Proposed Seismic Line Segments
  - Roads
  - Shot Holes Eliminated
  - Buggy Path
  - - - road travel
  - - - uni-directional drill path
  - ↔ bi-directional drill path
  - - - Slope Detour Route
  - Staging Area
  - Federal Leases

Map 2-1: Proposed Seismic Buggy Route  
 Proposed North Dutch John Project  
 Azalea Oil Company  
 Sweetwater County, WY  
 1: 23,000  
 Rev. Date: 13 JUL 10

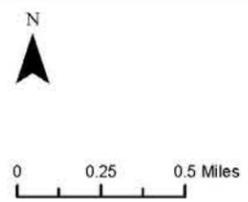
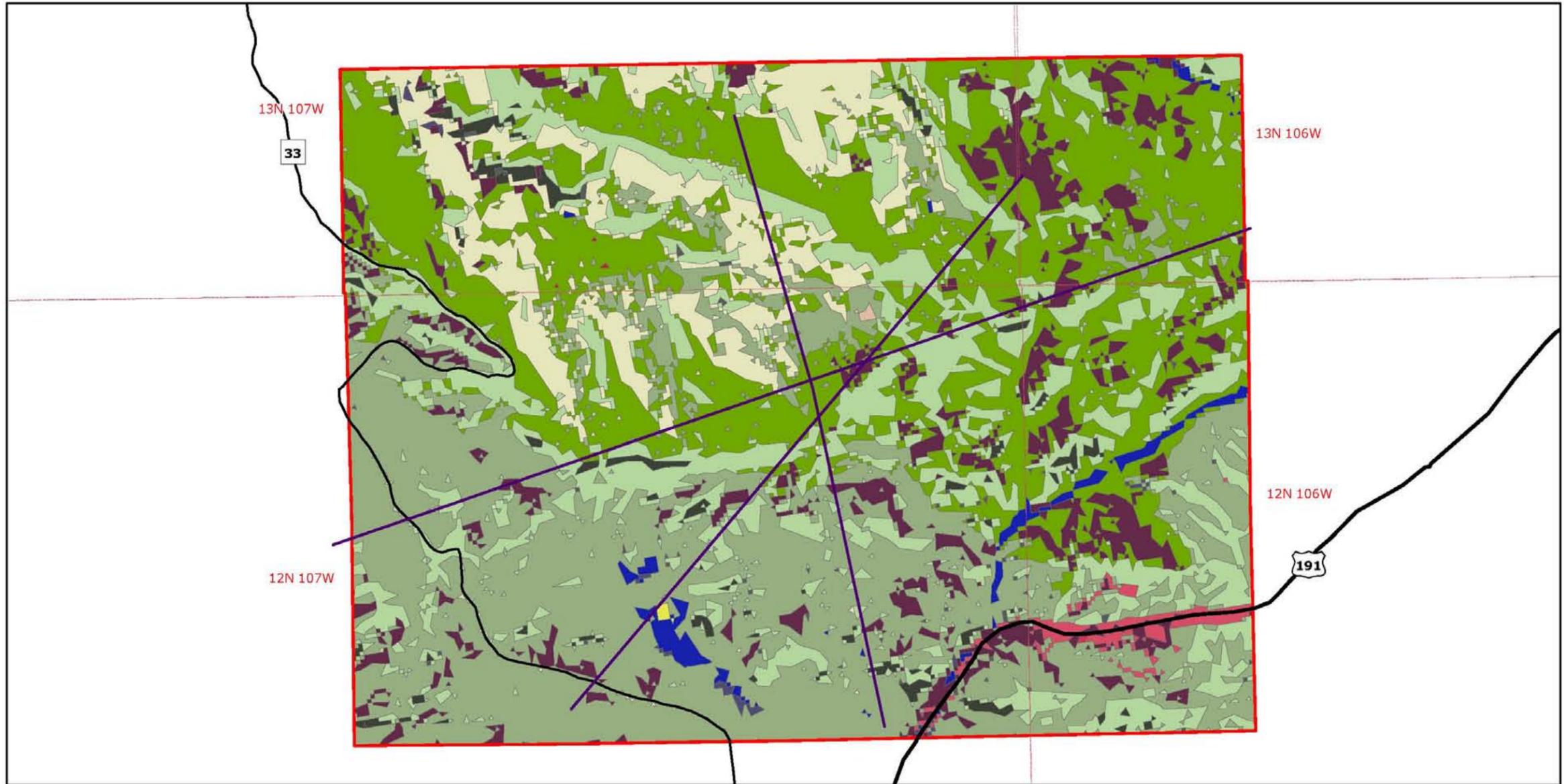


**Legend**

- Proposed 2D Seismic Lines
- Intermittent Stream
- Ephemeral Stream
- NWI Wetland
- Project Area
- Township-Range

Map 3-1: Surface Water  
 Dutch John 2D Seismic Project  
 Azalea Oil Company  
 Sweetwater County, Wyoming  
 Source: Nat'l Hydrography Dataset & USFWS NWI

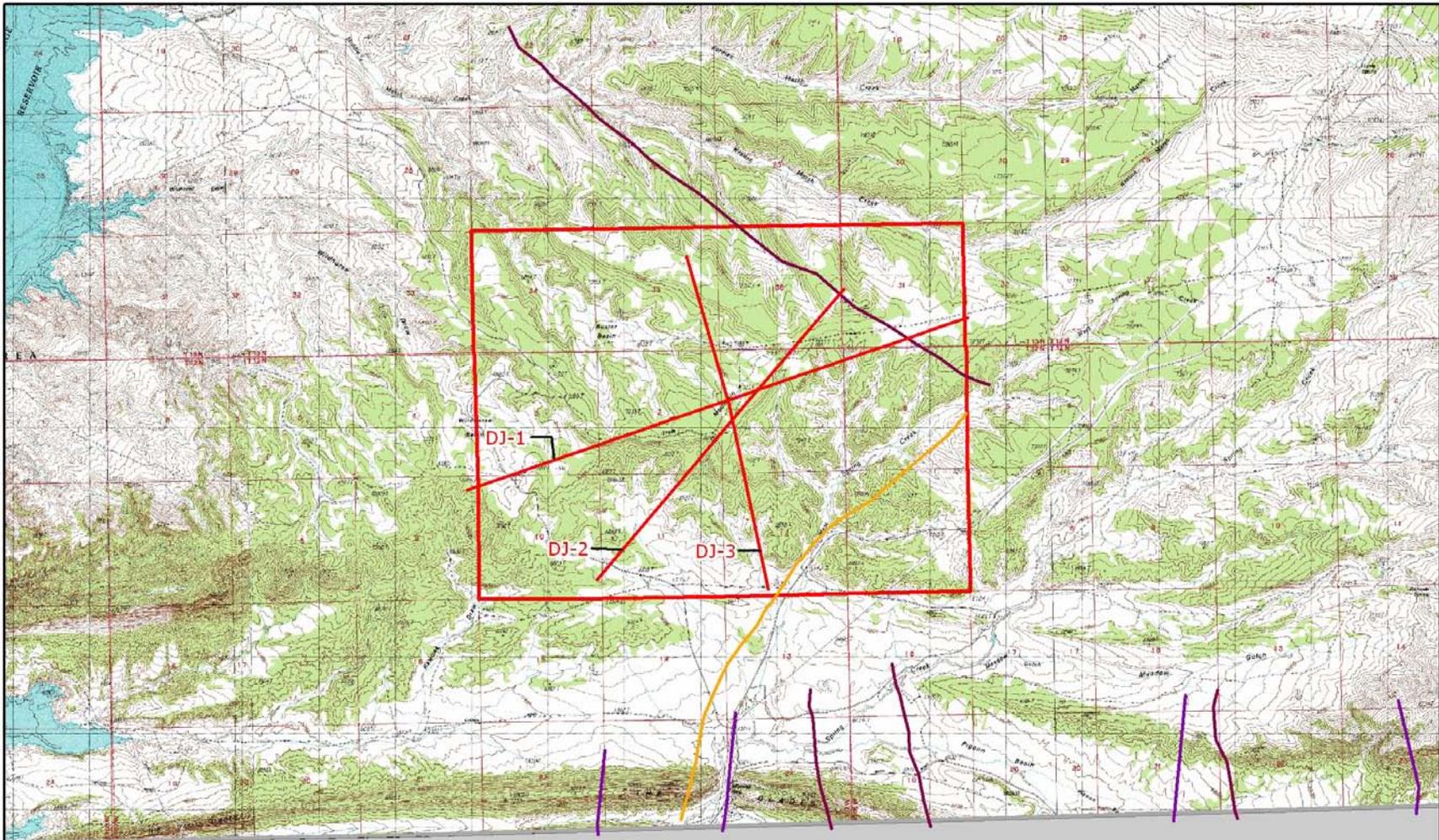




- Legend**
- |                                     |  |  |
|-------------------------------------|--|--|
| Proposed 2D Seismic Lines           | Inter-Mountain Basins Active & Stabilized Dune | Inter-Mountain Basins Big Sagebrush Steppe           |
| Federal Leases                      | Inter-Mountain Basins Cliff & Canyon           | Northwestern Great Plains Mixedgrass Praire          |
| Developed, Open Space               | Rocky Mtn Foothill Limber Pine-Juniper         | Inter-Mountain Basins Greasewood Flat                |
| Developed, low intensity            | Inter-Mountain Basins Mat Saltbush Shrubland   | Western Great Plains Saline Depression Wetland       |
| Pasture/Hay                         | WY Basins Dwarf Sagebrush Shrubland and Steppe | Western Great Plains Riparian Woodland and Shrubland |
| Inter-mountain Basins Shale Badland | Inter-Mountain Basins Big Sagebrush Shrubland  |  |

Map 3-2: GAP Landcover Data  
 Proposed North Dutch John Project  
 Azalea Oil Company  
 Sweetwater County, Wyoming  
 1:28,000  
 Source: GAP Landcover 1999-2001





UTAH



0 0.5 1 Miles

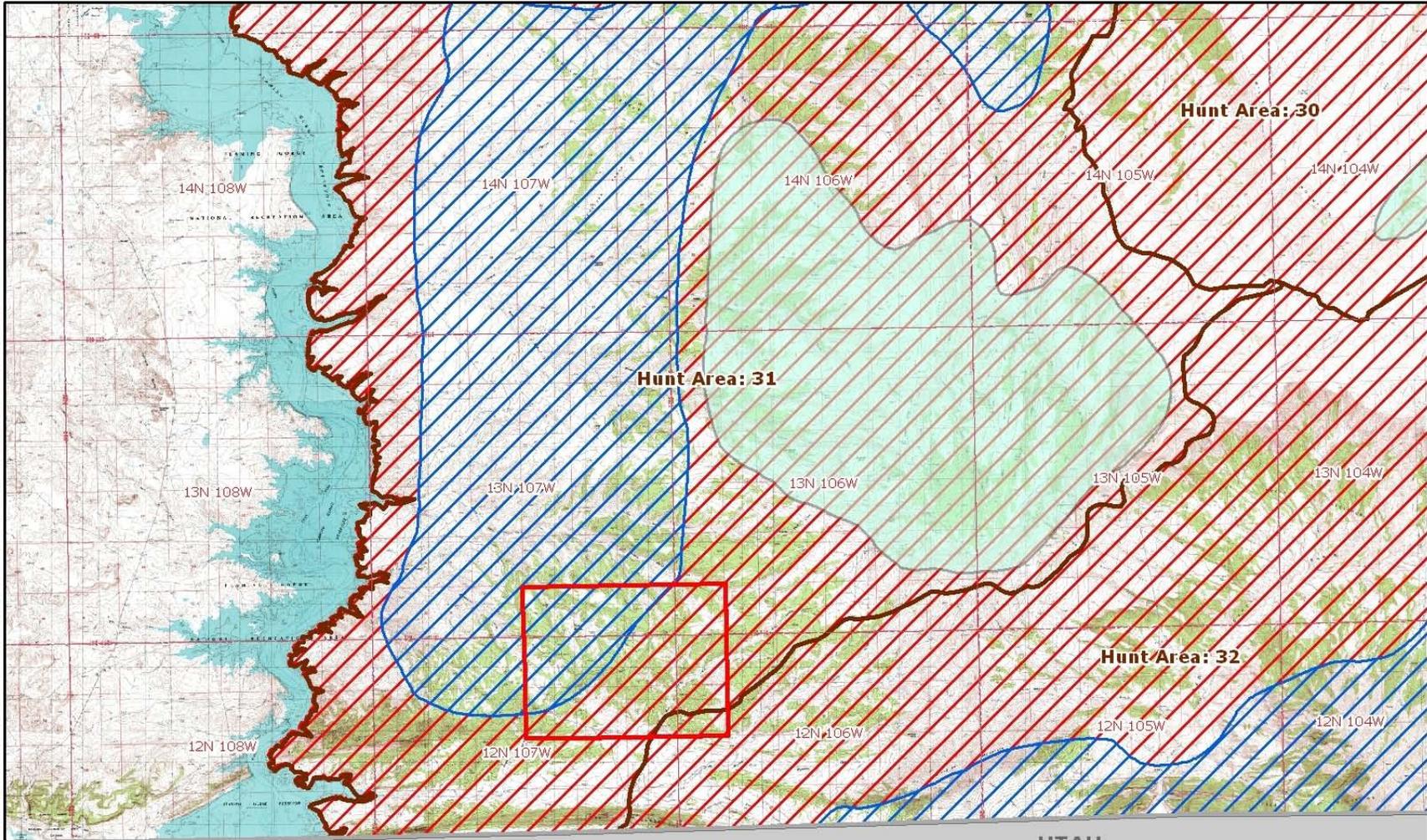
Legend

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|---|---|
|  Proposed 2D Seismic Lines |  Pronghorn Migration Route |
|  Elk Migration Route       |  Project Area              |
|  Mule Deer Migration Route |  Township-Range            |

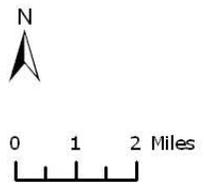
Map 3-3: Big Game Migration Corridors  
 North Dutch John Project  
 Azalea Oil Company  
 Sweetwater County, WY  
 1: 83,000



Source: Wyoming Game & Fish Department



UTAH



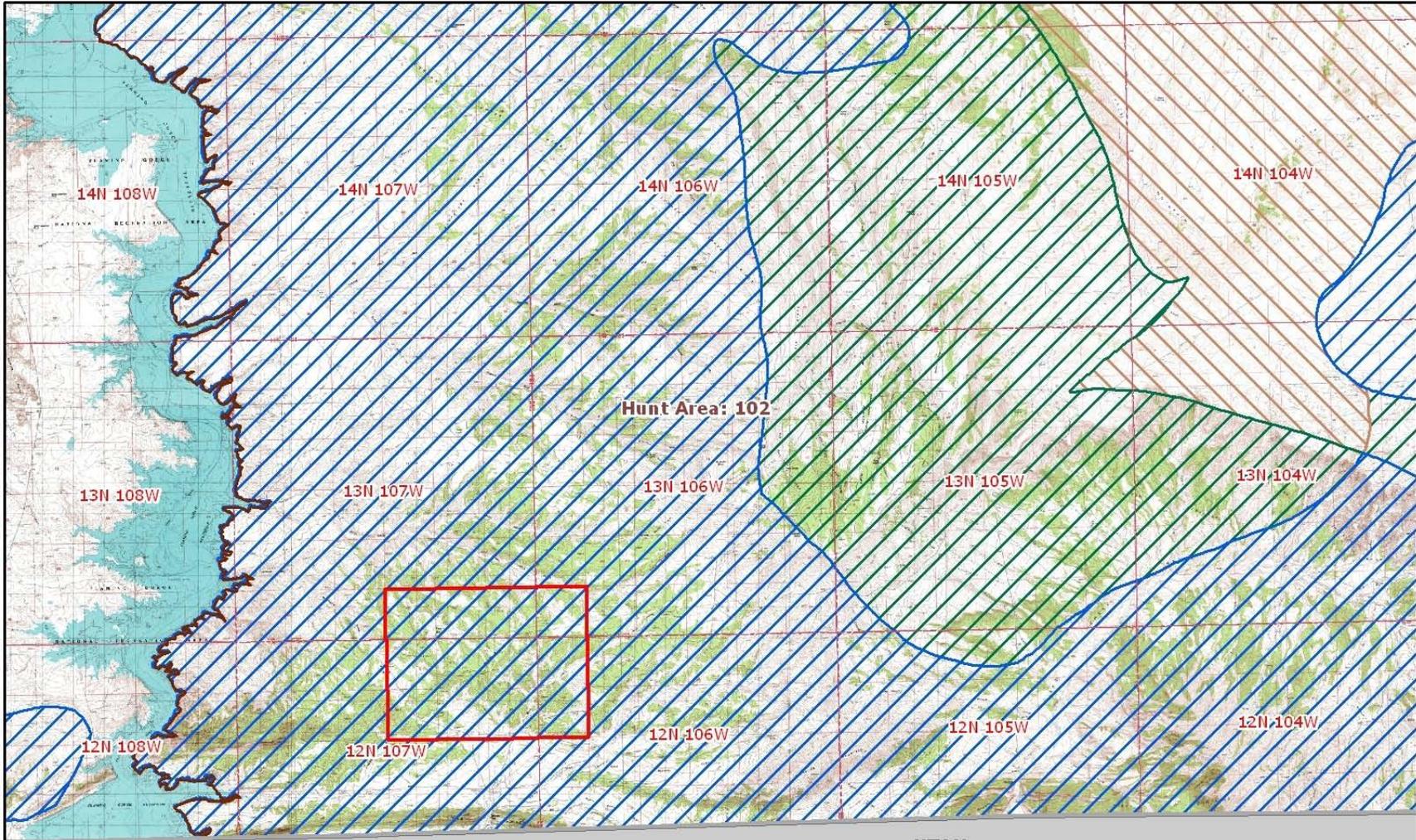
*Legend*

- |                         |                  |
|-------------------------|------------------|
| Hunt Areas              | Parturition Area |
| Crucial Winter/Yearlong | Project Area     |
| Yearlong                | Township-Range   |

Map 3-4: South Rock Springs Elk Herd Unit 424  
 Hunt Area and Range Designations  
 North Dutch John Project  
 Azalea Oil Company  
 Sweetwater County, WY  
 1: 200,000



Source: Wyoming Game & Fish Department



**UTAH**

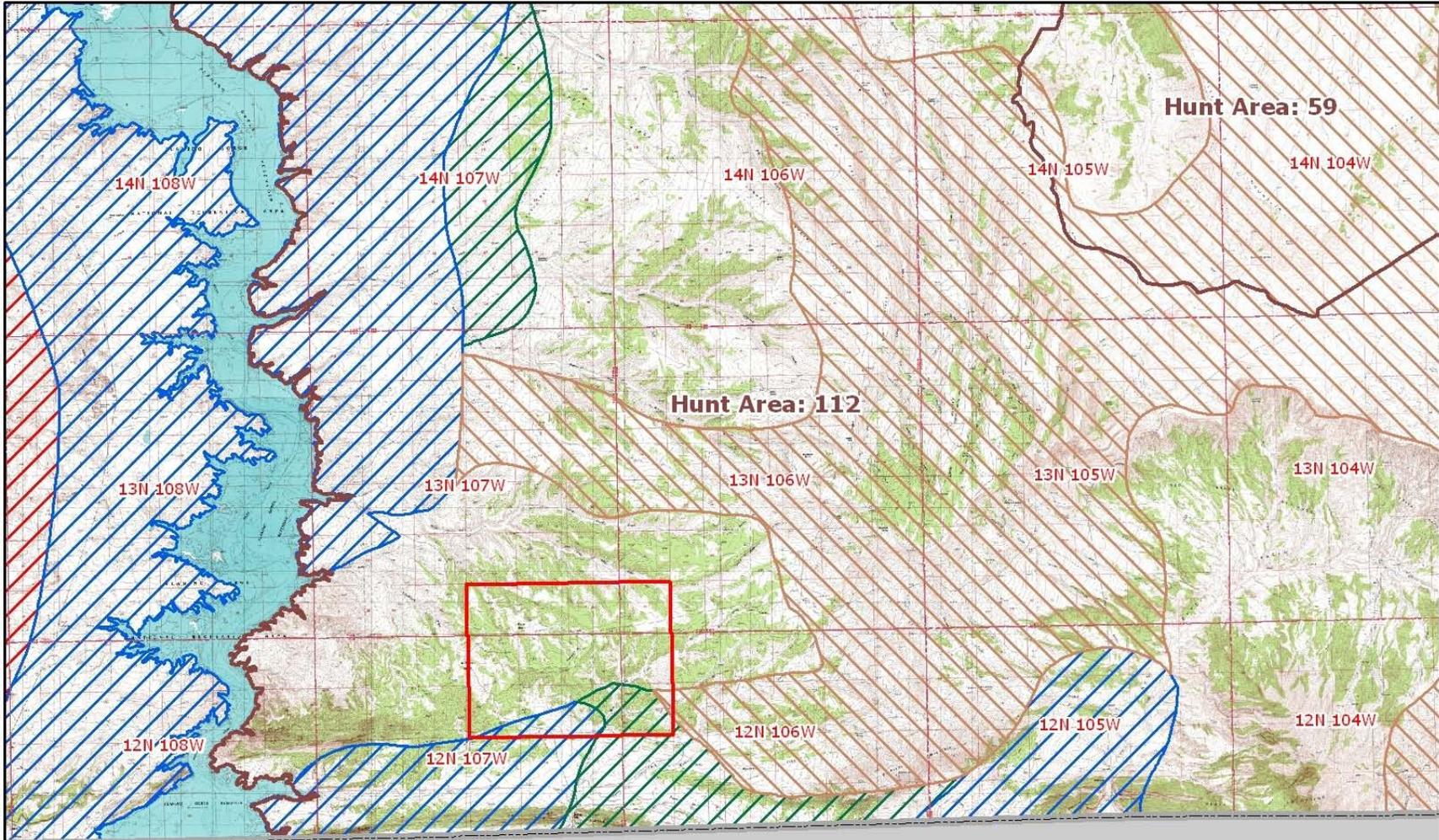
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0 1 2 Miles

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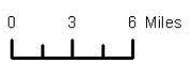
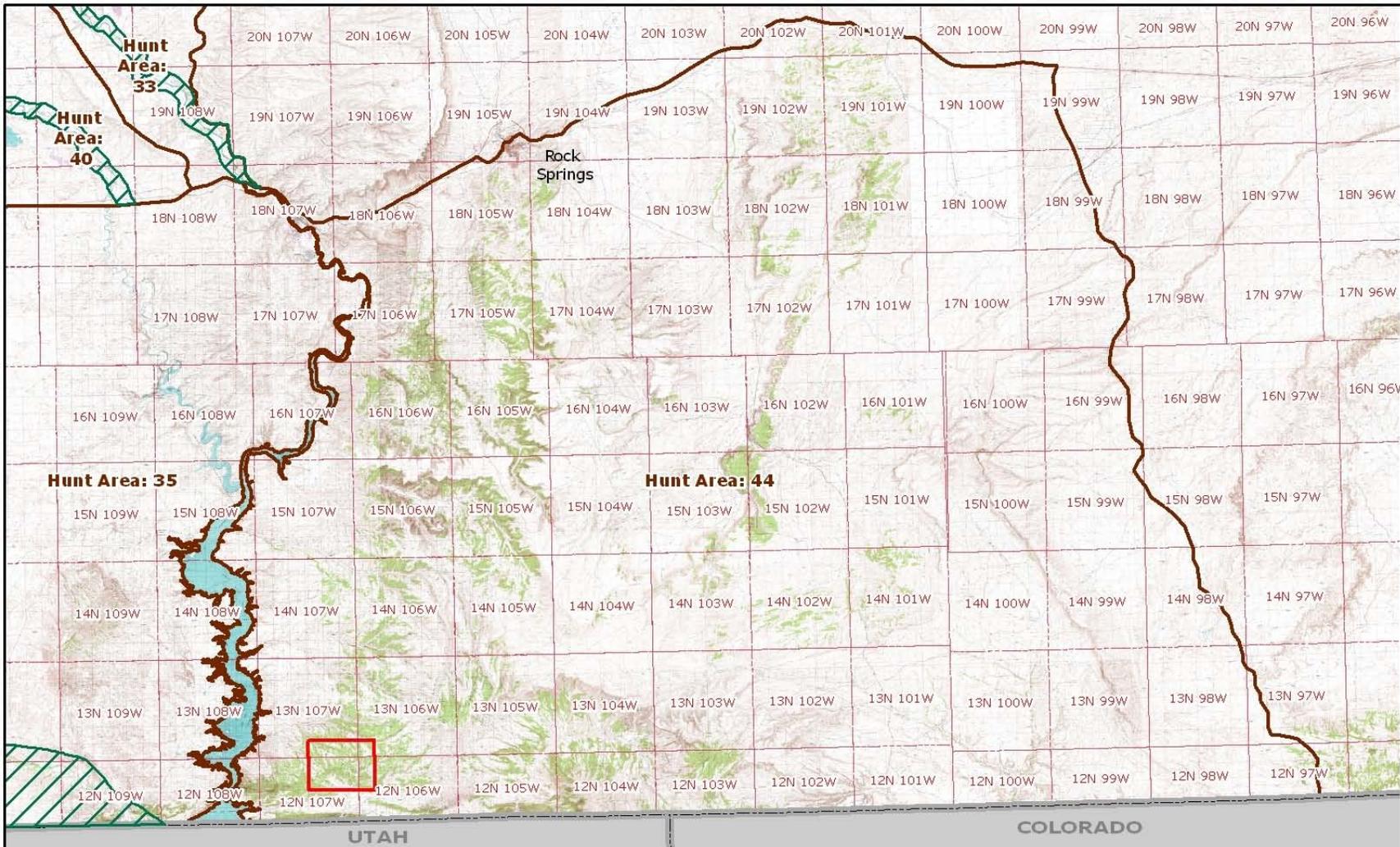
<p> Crucial Winter/Yearlong</p> <p> Winter/Yearlong</p> <p> Summer or Spring-Summer-Fall</p>	<p> Hunt Areas</p> <p> Project Area</p> <p> Township-Range</p>
--	--

Map 3-5: South Rock Springs Mule Deer Herd Unit #424  
 Hunt Areas and Range Designations  
 North Dutch John Project  
 Azalea Oil Company  
 Sweetwater County, WY  
 1: 200,000  
 Source: WY Game and Fish Department



UTAH

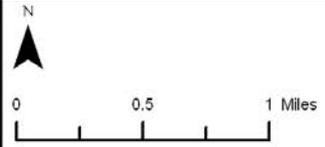
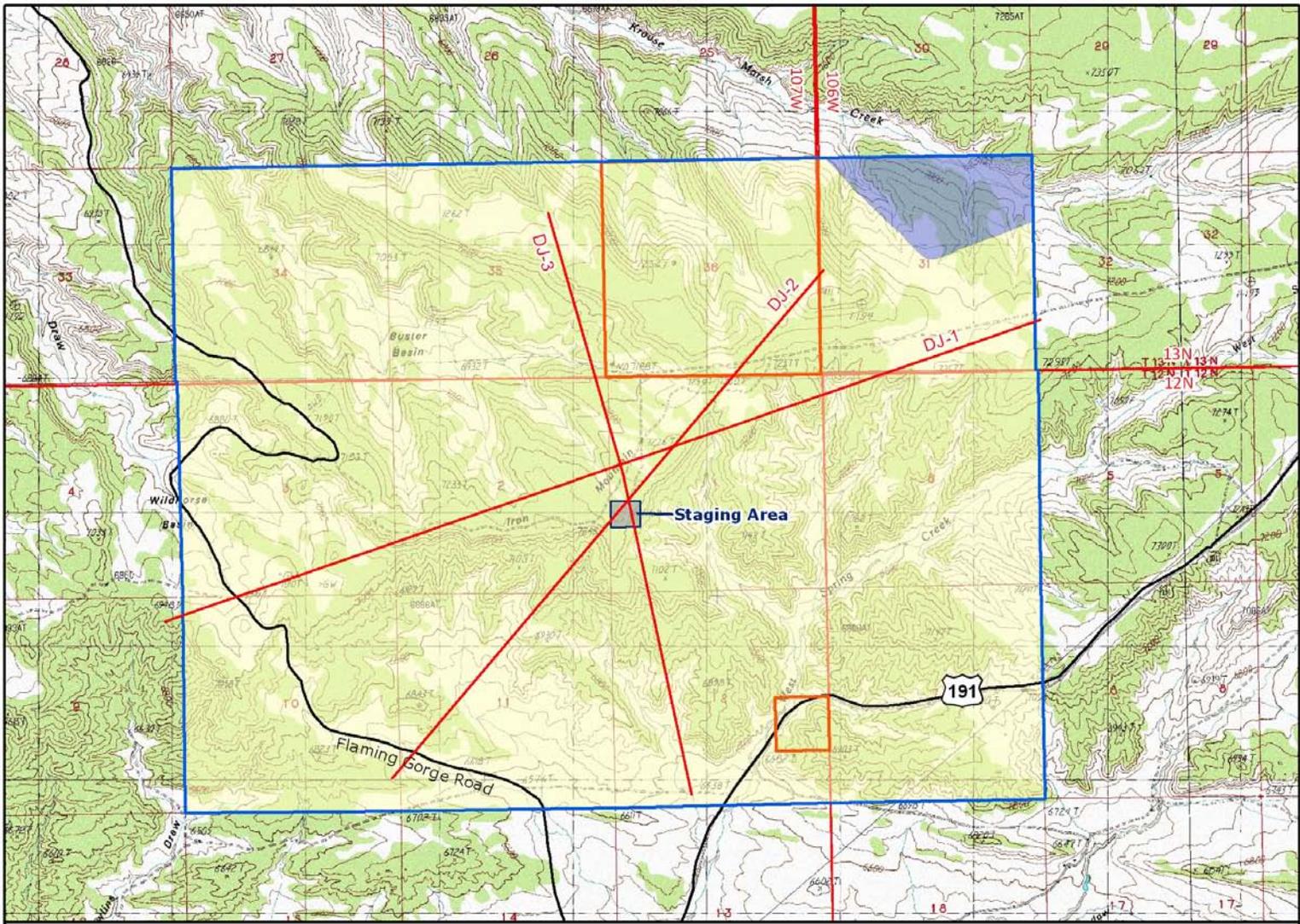
<p>N</p> <p>0 1 2 Miles</p>	<i>Legend</i>		<p>Map 3-6: South Rock Springs Pronghorn Herd Unit #412 Hunt Areas and Range Designations North Dutch John Project Azalea Oil Company Sweetwater County, WY 1:200,000 Source: WY Game and Fish Department</p>
	<p> Crucial Winter/Yearlong</p> <p> Winter/Yearlong</p> <p> Yearlong</p> <p> Summer or Spring-Summer-Fall</p>	<p> Hunt Areas</p> <p> Project Area</p> <p> Township-Range</p>	



- Legend**
- Winter/Yearlong
  - Hunt Areas
  - Project Area
  - Township-Range

Map 3-7: Uinta Moose Herd Unit #415  
 Hunt Areas and Range Designations  
 North Dutch John Project  
 Azalea Oil Company  
 Sweetwater County, WY  
 1: 575,000  
 Source: WY Game and Fish Department





**Legend**

- |                    |                  |                |
|--------------------|------------------|----------------|
| Grazing Allotments | 2D Seismic Lines | Federal Leases |
| Spring Creek       | Staging Area     | State Leases   |
| Sugarloaf          |                  |                |

Map 3-8: BLM Grazing Allotments  
 North Dutch John Project  
 Azalea Oil Company  
 Sweetwater County, WY  
 1: 48,000  
 Source: Rock Springs BLM



**APPENDIX B**

**SCOPING NOTICE**



United States Department of the Interior  
BUREAU OF LAND MANAGEMENT  
Rock Springs Field Office  
280 Highway 191 North  
Rock Springs, Wyoming 82901

In Reply Refer To:  
North Dutch John 2D Seismic Project  
WYW167741 (WYD04)

**Scoping Notice**  
**North Dutch John 2D Seismic Project**

**Introduction**

The Bureau of Land Management (BLM), Rock Springs Field Office (RSFO), will prepare a study in compliance with the National Environmental Policy Act (NEPA), for geophysical operations consisting of a 2D seismic survey for oil and gas resources proposed by Azalea Oil Company, LLC (Azalea) in the BLM RSFO in Sweetwater County, Wyoming (see Project Area Map). This project is referred to as the North Dutch John 2D Seismic Project. The survey would consist of three seismic lines totaling 10.5 linear miles located in sections 1-3 and 10-12, T. 12 N., R. 107 W.; section 6, T. 12 N., R. 106 W.; sections 35 and 36, T. 13 N., R. 107 W.; and section 31, T. 13 N., R. 106 W.

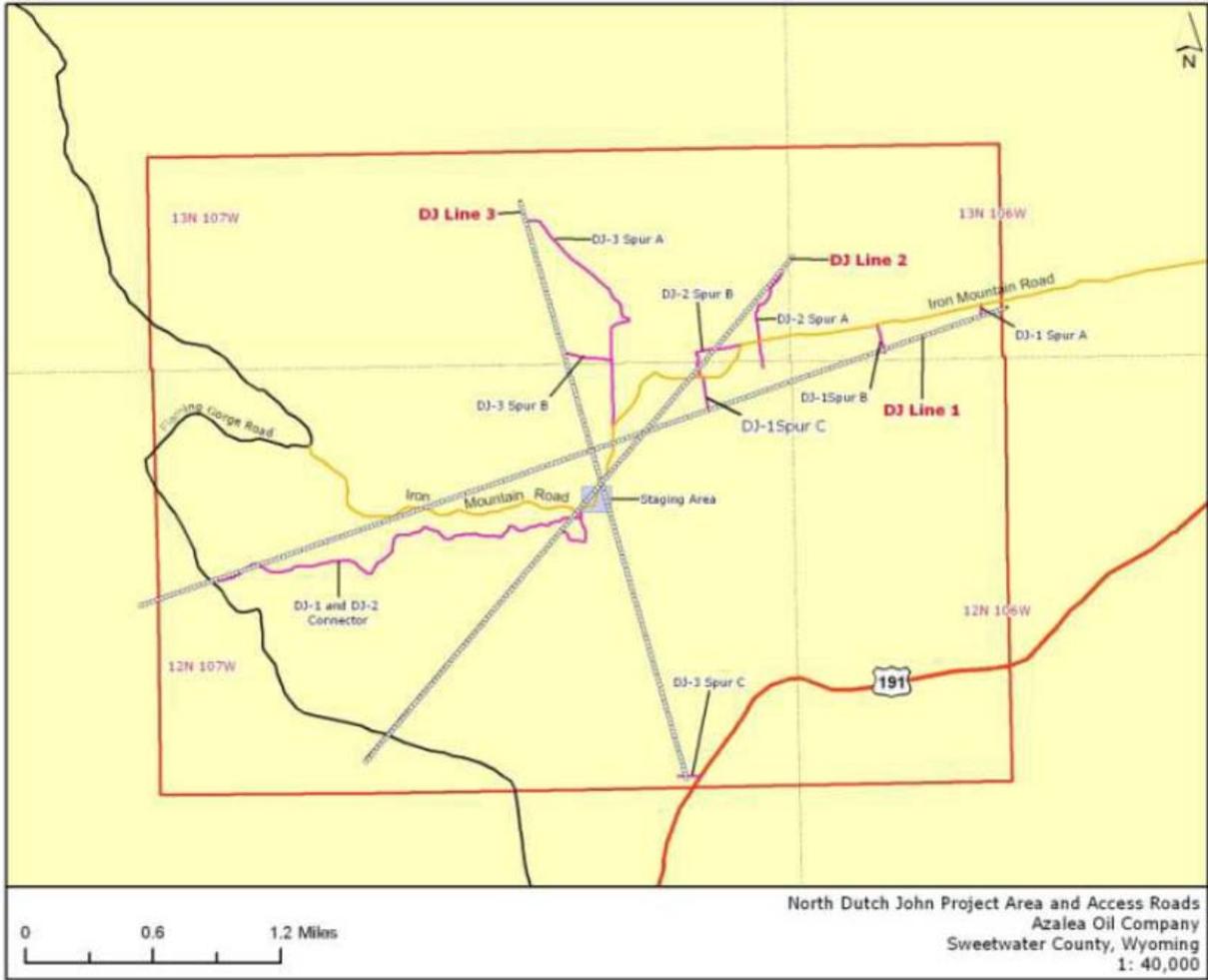
The vegetation is primarily composed of sagebrush and juniper woodland. Although the area is largely undeveloped, it is crossed by several paved and/or maintained roads including U.S. Highway 191, County Road 33, and Iron Mountain Road; several unmaintained dirt roads and two tracks; and includes cattle fencing and four plugged and abandoned oil and gas test wells.

**Project Description**

This project would involve three distinct phases: surveying shot and receiver locations; drilling and loading shot holes; and laying out geophones and recording data. The total length of time that seismic activities would occur at the site is expected to be less than four weeks. The project is anticipated to take place over 27 working days, although this timeframe may not be continuous (i.e., there may be days of inactivity between project phases), and is proposed to occur during July and August, 2009 to avoid affecting hunting activities in the area. Locations of the seismic lines have been sited in a manner that maximizes the use of existing roads and tracks for access as much as possible (see Project Area and Access Roads map). The first phase, surveying shot and receiver locations, and third phase, laying out equipment, would not involve any cross country vehicle travel (any activities outside of existing roads and trails would be completed on foot). The second phase, drilling and loading shot holes, would involve the use of the buggy drill. The buggy drill is the only vehicle that would travel off of existing roads, and any off road travel would be minimized to the extent feasible. The buggy drill would not travel on slopes

over ten degrees, and setback distances from sensitive resources would be employed to avoid driving the buggy drill in those areas. The survey would consist of up to 125 shot holes drilled to 50 feet, with the bottom seven feet, packed with ten pounds of explosive. For further details refer to the Plan of Development (POD) on the BLM website at:

<http://www.blm.gov/wy/st/en/info/NEPA/rsfodocs/nodutchjohn2d.html>



## Surveys

A Class III archaeological survey of the project area will be completed by a qualified archaeologist meeting the Secretary of the Interior's professional standards. This includes a Class I records search to identify any previously recorded cultural resources. A detailed report describing these findings will be submitted to the BLM archaeologist for review and then forwarded to the State Historic Preservation Office for concurrence.

Based on communication and coordination with the BLM and the Wyoming Game and Fish Department, several sensitive plant and wildlife species are known to occur or have the potential to occur in the project area. Surveys for these species will be completed prior to the start of seismic operations, during the appropriate season.

## Public Input

This document serves as notice of the beginning of the environmental analysis process to fulfill the requirements of the NEPA. The 30-day scoping period will begin on December 17, 2009, and end on January 17, 2010. Please send concerns and issues by letter or e-mail to:

U.S. Mail: Samantha Thurston  
Natural Resource Specialist  
Re: North Dutch John 2D Seismic Proposal  
BLM Rock Springs Field Office  
280 Highway 191 North  
Rock Springs, WY 82901

E-mail: [rock\\_springs\\_wymail@blm.gov](mailto:rock_springs_wymail@blm.gov)  
(emailed comments must include "North Dutch John 2D Seismic Proposal" in the subject line)

Your comments are important and will be considered in the environmental analysis process, and your name will be added to our mailing list, ensuring you are informed of decisions resulting from our analysis process. Please note that public comments submitted for this scoping review, including names, e-mail addresses, and street addresses of the respondents will be available for public review and disclosure at the BLM office during regular business hours (8:00 a.m. to 4:30 p.m.), Monday through Friday, except holidays.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Comments specific to this proposal submitted prior to this official 30-day comment period have been saved and will be used (unless otherwise directed) and do not need to be resubmitted.

Please contact Samantha Thurston at (307) 352-0237 in Rock Springs, Wyoming, with questions.

## **APPENDIX C**

### **SCOPING COMMENTS**



PO Box 1312  
309 Main Street, Suite A  
Lander, WY 82520  
307-335-8633 • Fax: 307-335-8690  
[www.wyomingwildlife.org](http://www.wyomingwildlife.org)

January 19, 2010

**Comments sent via e-mail to [rock\\_springs\\_wymail@blm.gov](mailto:rock_springs_wymail@blm.gov) & Certified Mail Return Receipt**

Samantha Thurston  
Natural Resource Specialist  
Bureau of Land Management  
Rock Springs Field Office  
280 Highway 191 North  
Rock Springs, Wyoming 82901

**Re: Comments on the North Dutch John 2D Geophysical**

Dear Ms. Samantha Thurston,

Please accept the following comments from the Wyoming Wildlife Federation on the Azalea North Dutch John 2D Geophysical Exploration proposal. The Wyoming Wildlife Federation (WWF), established in 1937 and with current standing membership of approximately 5,000, is Wyoming's oldest and largest statewide conservation organization. Our mission is to work for hunters, anglers, and other wildlife enthusiasts to protect and enhance habitat, to perpetuate quality hunting and fishing, to protect citizen's right to use public lands and waters, and to promote ethical hunting and fishing.

Recreation and wildlife are vitally important in Sweetwater County, Wyoming. The Little Mountain area is a place that has particular significance and value. The juniper woodland area of Little Mountain is a popular recreation spot for our members, particularly those in southwestern Wyoming. They utilize the backcountry recreational opportunities, drive off highway vehicles, watch wildlife, hunt and fish, and enjoy the scenery. This rugged Wyoming landscape supports abundant wildlife populations, sensitive species, and ample recreation opportunities.

A. Deny Seismic Survey

The Little Mountain area, which includes the Sugarloaf Basin Special Management Area, is one of the three most popular elk hunting spots in the state, the most popular deer area for both non-resident and resident hunters, and an outstanding outdoor and backcountry recreation area. The area harbors sensitive species and endemic non-game species unique to Wyoming. This

proposed project will create disturbance to our recreation, wildlife, wildlife and aquatic habitat, soils, and ground and surface water. The Green River Resource Management Plan (RMP) Record of Decision (ROD) indicates that the Sugarloaf Basin Management Area is to be managed for enhancing or improving the landscape as well as to “maintain and protect important wildlife habitat” (Green River RMP 1997, page 40). However, this proposal would involve substantial surface disturbance and impair vegetation quality and riparian condition through sediment and nutrient loading and potential contamination from storing gas and/or diesel near creeks. Big game crucial winter ranges and migration routes will also be impacted. A major concern for WWF is the southern portion of DJ Line 3 that has steep draws, thick old growth junipers and few roads, making it ideal elk security cover. This security cover will be lost if exploration moves forward, and the tracks created will lead to creation of new roads. Sage grouse nest in this area and the seismic survey will impact nesting activities. If this project is allowed the BLM will not meet its intent of the Resource Management Plan and its objectives for the Sugarloaf Basin Management Area.

WWF suggests that it is imperative that BLM to develop a plan for the Greater Little Mountain Area before approving piecemeal projects that will ultimately have unacceptable cumulative impacts. For instance, the approved but still uncompleted Rubicon 3D seismic survey project could be scheduled during the exact time Azalea is conducting their 2D survey. This would elevate the wildlife, habitat, recreation and surface water impacts that will occur in the Sugarloaf Basin Management Area and concentrate that disturbance during is one of the area’s busiest seasons for tourism. Therefore, in accordance with the Bureau of Land Management’s (BLM) own management objective for the Sugarloaf Basin Management Area, because of the valuable wildlife, streams, recreation and habitat resources this landscape hosts, due to the fact that the BLM doesn’t have a cumulative plan for the area, and the potential cumulative impacts that will occur if the Rubicon project is completing their survey, we respectfully request that the proposed Dutch John 2D Geophysical Seismic Survey be denied.

## B. Wildlife

The Little Mountain area is a biologically rich landscape with a plethora of terrestrial and aquatic species. Some of the species include: moose, elk, mule deer, antelope, sage grouse, mountain lion, black bear, several raptors, midget faded rattlesnake, and waterfowl. A number of sensitive species depend on juniper woodland, aspen and sagebrush habitats within the area. The proposed survey and its associated activities will impact all these species.

As you are aware, the greater sage-grouse has nesting sites within this proposed project area. This sensitive species is imperiled across its range. The Green River RMP ROD of 1997 notes that a sensitive species management objective of the region is to provide, maintain, and/or improve the habitat with mitigation measures and manipulating vegetation. Adequate and

suitable habitat should be protected by avoidance to prevent further decline in the species population numbers and distribution. This seismic survey will again be out of compliance with the BLM's management responsibilities for sage grouse.

Another component to this proposed development is the potential for wildlife displacement, harassment, and illegal kills. Therefore, during the second phase of drilling and loading shot holes, WWF requests this be performed via helicopter. The buggy drill will not be able to go in a straight line off-road due to the steepness of the terrain, rocks, and density of old growth junipers and mountain mahogany. The buggy will cause major disturbance to an arid area with sensitive soils. New tracks will lead to the creation of new roads, further displacing wildlife.

Any disturbance in this area will almost certainly result in the spread of cheatgrass, halogeton and other exotic weeds, thus impacting native vegetation. If the project is approved, any equipment should be routinely cleaned to minimize the inevitable spread of invasive species.

The WWF recommends the following for wildlife:

- Provide the most current impact data to wildlife from 2D seismic survey development utilizing buggy drilling.
- Use helicopters for the second phase to minimize surface disturbance.
- Provide an environmental compliance plan that considers enforcement for monitoring, environmental compliance and remediation for wildlife habitat affected by the project. If applicable, the environmental compliance plan should be accomplished on a landscape scale to determine management options for wildlife species.
- Supply a comprehensive analysis of the seasonal timing restrictions and the development plan as applied to all wildlife species.
- Establish a mitigation plan with a threshold matrix that addresses wildlife, wildlife habitat, invertebrates, aquatic habitat and stream changes.
- Develop a cumulative effects scenario that illustrates what may occur to sensitive, threatened or endangered species that are within this project area and will see habitat changes occur.
- Implement a timing restriction for all seismic work to be out of the area at least 5 days before the hunting season begins on September 1.
- Evaluate, mitigate, and develop a plan for invasive plant species. Invasive plants have a detrimental effect for wildlife, native plants, and recreation.
- Avoid sage grouse habitat to minimize impacts on this sensitive species.
- Avoid big game birthing areas, including moose that inhabit this southern portion of the greater Little Mountain area.
- Implement and enforce strong mitigation requirements. Enforcement of these requirements has been a weak link and we feel strongly that without enforcement, any

requirements will not be met. We understand that BLM staff resources are limited, but for this area, special attention is warranted.

### C. Recreation

Over 50 million U.S. citizens hunt and fish, according to data from state game and fish agencies. In 2006, 87 million Americans enjoyed some variety of recreational outdoor activity relating to fish and wildlife. In Wyoming, during 2006 more than 320,000 people participated in fishing and hunting. One of the fastest growing outdoor activities is wildlife watching and according to a US Fish and Wildlife Service survey, 716,000 people participated in some variety of this (USFWS 2006 National Survey of Fishing, Hunting, and Wildlife Associated Recreation). The total of hunting and fishing recreation days in Wyoming in 2008 was 3,683,371. Based on the number of recreation days and average expenditure per day, hunters, anglers and trappers expended approximately \$685 million in pursuit of their sport (WGFD Annual Report 2008). Non-consumptive users provided about \$420 million wildlife watching, taking photographs, and hiking. In total over \$1 billion dollars was spent in Wyoming in 2008 by outdoor enthusiasts (WGFD Annual Report 2008).

In 2008, Sportsmen for Responsible Energy Development conducted a survey of sportsmen's opinions regarding oil and gas extraction on our public lands. The survey concluded that the prominent concerns for Wyoming public lands are, "... increased poaching, the loss of access to hunting and fishing areas, decreased fish/wildlife populations, less fish/wildlife habitat, off-road vehicles, and increased water and air pollution." (SFRED, Sportsmen's Opinions on Oil and Gas Extraction Activities in the Rocky Mountain West, 2008). Although this proposed survey mentions the 2D geophysical work will be conducted before the deer and elk hunting seasons, WWF does not want any exceptions given to the Azalea Oil Company that would allow them to work beyond August 27, 2010 as the hunting season begins on September 1, 2010.

Hunting and wildlife watching are economically significant for Wyoming, and the Little Mountain area is a major contributor to these activities. The social and economic impacts associated with this proposal will have an impact to local residents as it is happening during the summer, which is the high tourist season. We are particularly concerned about impacts to elk and elk hunters. Resident elk hunters have only a 4% chance of securing license to hunt in this area. For most, it will be a once-in-a lifetime experience. We believe that buggy drilling will displace elk from this highly-sought after hunt area, possibly into Colorado and Utah. If these elk are unavailable to hunters as a result of seismic exploration, these hunters will be outraged.

The WWF recommends the following for recreation:

- No exceptions allowed for Azalea to continue seismic survey project beyond August 27, 2010 because the deer and elk hunting season begins on September 1. This allows five

days of relief for the animals to potentially move back into their usual habitat before the season.

- WWF requests the second phase of drilling and shot holes to be completed using helicopters rather than the buggy drill.

#### D. Surveys

If the project is approved, Azalea should conduct several sensitive plant and wildlife surveys. We request that Azalea use a qualified consultant to conduct studies on the following a) juniper obligate bird species, b) midget faded rattlesnake c) ornate tree lizards and northern plateau lizards, d) pinyon mouse, canyon mouse and cliff chipmunk. We would also like to see the results of the wildlife and plant studies that BLM claims Azalea will be doing prior to the approval of any seismic operation.

#### E. Roads

All ground transportation needs to stay on existing roads and two-tracks. No spur roads are acceptable because of the sensitive soils, the increase wildlife fatalities that will occur by vehicle traffic on those spur roads, and increased ground and surface disturbance.

#### F. Ground and Surface Water

Watershed and riparian conditions are important for the health and well being of both terrestrial and aquatic species. Cumulative effects from habitat fragmentation and degradation, increased truck traffic, the buggy drill, vegetation disturbance, along with sensitive soils that erode easily will impact these streams with increased sediment and nutrient loads.

The seismic survey project proposed may have an impact on the local and regional ground and surface water resources through contamination from storing gas and/or diesel and motor oil at the staging areas. Spills occur and cause harm to waterways, soils, wildlife, vegetation, fisheries and amphibians.

This juniper woodland – desert area has sensitive soils. The drainages are especially sensitive and when disturbed will cause sediment and nutrient loading in excess within Spring Creek and West Spring Creek. Channel erosion is probable causing faster stream flows and altering the vegetation. As ground and surface water contamination is a concern, we recommend to keep all equipment contained, do not cross streams, and move the staging areas away from any stream or headwaters.

Recommendations for surface water:

- Provide a complete description of the subsurface hydrology of the project area with

information on how the aquifers will be affected by the proposed activities.

- Implement a monitoring system for detecting spills around the proposed project area.
- Conduct a comprehensive analysis on all waterways and drainages near or crossing roads and staging areas.
- A complete and accurate assessment of the impacts (such as contamination and demands on water), including reasonably foreseeable impacts and baseline sampling, should be conducted to ground and surface water related to this proposed survey. This must be accomplished prior to approval.
- We recommend that all equipment be contained, do not cross streams, and move the staging areas away from any stream or headwater. Avoid all streams, riparian, springs, and seeps by placing a one-quarter mile buffer around these areas for no access.

#### F. Summary

The Little Mountain area, which includes the Sugarloaf Basin Special Management Area, is an outstanding outdoor and backcountry recreation area for our members, particularly those in southwestern Wyoming. We urge the BLM to consider the recommendations provided in these comments. We are concerned the BLM Rock Springs Office doesn't have the technical resources to successfully analyze and assess the short term, long range and permanent effects this proposed project along with other approved projects will accumulatively have on the Little Mountain area and its users. Damage this proposed project could have on recreation, wildlife, wildlife and aquatic habitat (particularly the sensitive species or species of greatest conservation need), soils, and groundwater and surface water outweigh any potential benefits this project would have for Wyoming. We respectfully request that this proposed Azalea Dutch John 2D Geophysical Seismic Survey project be denied.

In the event that the BLM does approve this project we respectfully request and strongly urge the BLM to incorporate our recommendations, particularly the use of helicopters in place of the buggy drills. We would also like a seat at the table during future discussions with the contracting seismic company and Azalea.

The Wyoming Wildlife Federation appreciates the opportunity to comment and to offer suggestions. We plan to work actively with our members and partners in the Sweetwater County area to continue our involvement in this process.

Sincerely,

Joy Bannon  
Field Director

Wyoming Wildlife Federation  
P.O. Box 1312  
Lander, Wyoming 82520  
307.335.8633  
joybannon@wyomingwildlife.org



*Working to Protect Native Species and Their Habitats*

P.O. Box 1512, Laramie, WY 82073 (307) 742-7978 fax: 742-7989

January 18, 2010

Samantha Thurston  
Rock Springs BLM  
280 Highway 191 North  
Rock Springs, WY 82901

### **Comments on the North Dutch John 2D Seismic Project**

Dear Ms. Thurston:

The following are the scoping comments on the North Dutch John 2D Seismic Project. As this project is in the Little Mountain area, it is of heightened concern from a conservation standpoint, and if it is allowed to proceed, BLM should be prepared to emplace strong standards to prevent impacts to the land. Shot-hole geophysical has lower impact than vibroseis, as buggy-mounted drills typically weigh in the 9 to 11 ton range versus 32 tons for thumper trucks. Thus, we are pleased that shot-hole is the method of choice here versus vibroseis.

#### **Juniper Woodlands**

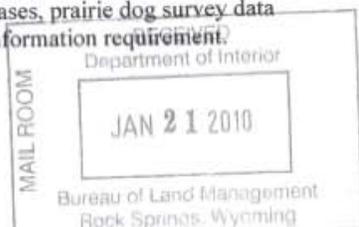
Juniper woodlands are present in the project area, particularly on the south slope of Iron Mountain. There are a number of State Sensitive species of juniper obligate songbirds, and these could readily be impacted significantly should shot-hole drill trucks be allowed to drive cross-country through juniper woodlands, causing mechanical destruction of the junipers along the way. See accompanying photograph of Veritas vibroseis buggies running over junipers in Utah. Vehicle traffic should not be allowed off-road in juniper woodlands for this reason.

#### **Burns**

It has been brought to our attention that there are recovering burns in the vicinity for which the BLM has emplaced special regulations warning visitors to stay on roads and trails to prevent damage to fragile soils and noxious weed invasion. The same standard should apply to geophysical personnel in these areas; heliportable drilling rigs and hand-laying of geophone lines should be required for burn landscapes.

#### **Other Sensitive Species**

The project area should be surveyed for midget faded rattlesnake, white-tailed prairie dogs, pygmy rabbits and other BLM Sensitive Species. Shot-holes should not be drilled in or near active prairie dog colonies, as the detonation of charges could result in the collapse of burrow systems. Thus, active prairie dog colonies will need to be mapped (with current data – it seems that in many cases, prairie dog survey data is a decade or more out-of-date) for avoidance as part of NEPA's baseline information requirement.





Hibernacula for midget faded rattlesnakes should also be identified and avoided for the purposes of shot-hole location. Impacts to Colorado River cutthroat trout need to be considered, including impacts of shot-holes on local shallow aquifers. Shot-hole projects in the Shirley Basin resulted in shallow aquifers being perforated, and due to inadequate sealing of the shot-holes, some of them resulted in upwelling of water, disrupting local subsurface and surface hydrology. BLM should also consider the potential effects of the project on sensitive big game ranges, including elk and mule deer crucial winter ranges, migration corridors, and parturition ranges. Activities should not be permitted in these habitats during the season when they are in use by big game. Finally, impacts to sage grouse should be avoided. Vehicle traffic should be routed away from sage grouse lek sites to avoid the creation of pathways for predators to the lek. In addition, activities should not occur in breeding, nesting, or brood-rearing habitats during their season of use by grouse. These habitats should be mapped as part of the baseline gathering process for the project.

#### **Conclusions**

Thank you for considering these comments, and please incorporate them into your forthcoming NEPA analysis. Due to the sensitivity of the public to oil and gas operations of all kinds in the Little Mountain area, use of a Categorical Exclusion in this case would not be appropriate. Please send us all future correspondence for this project, as we plan to remain engaged.

Sincerely yours,



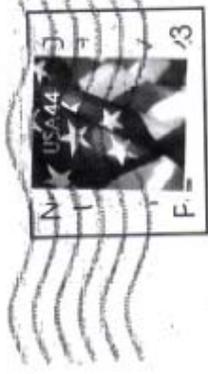
Erik Molvar



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CHEYENNE WY 820

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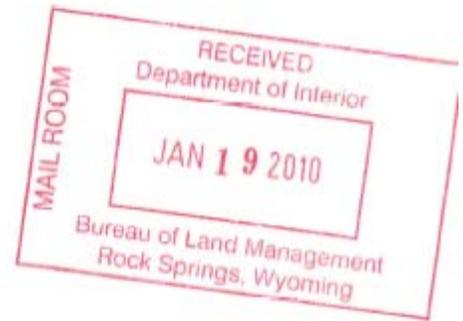
Samantha Thurston  
Rock Springs BLM  
280 Hwy 191 North  
Rock Springs, WY 82901

82901\$3447



January 18, 2010

Samantha Thurston  
Natural Resource Specialist  
BLM Rock Springs Field Office  
280 Highway 191 North  
Rock Springs, WY 82901



RE: North Dutch John 2D Seismic Project Scoping Comments

Dear Ms. Thurston,

Thank you for the opportunity to comment on the BLM's proposed North Dutch John 2D Seismic Project that Azalea Oil plans to conduct. We have several items of concern that we would like to offer and also some suggestions we'd like to see in the study you plan to conduct.

The Greater Little Mountain Coalition (GLMC) is an organized group of concerned sportsmen, anglers, local business people, union members, and sportsmen organizations who want to see the healthy and open landscapes of the greater Little Mountain area continue to support abundant wildlife populations, sensitive plant and animals species, and provide ample recreational opportunities. Our goal is to actively be a partner in protecting the vital and important natural resources of the greater Little Mountain area.

Our main concerns are that the seismic activity is going to be conducted in an area that we have discussed with the BLM as sensitive in its habitat resources and its special hunting and angling qualities. We fear that off-road vehicle use proposed by the company will greatly impact the sensitive surface area, including the many seeps, springs, streams, drainages, and creeks in this area. We continue to be concerned with the BLM's apparent lack of awareness of the community's significant interest in protecting this area. We feel that further energy activity of any kind, including seismic, will lead to further degradation of the unique wildlife values we have in our backyard south of Rock Springs. While seismic activities are claimed by BLM and companies as being non-invasive, the bigger picture of what seismic activities leads to is our main concern.

We respectfully request that the BLM halt this seismic project until a complete environmental impact statement can be crafted that will more aptly take into account the significant wildlife and fisheries resources in this area. We feel that relying on an outdated 1997 land use plan (Green River Resource Management Plan) is not currently benefiting the resource based on what we are seeing being approved already in this fragile area.

In addition, we ask that the BLM consider the development of a Habitat Management Plan and that we be considered partners at the table in designing this plan.

Finally, should the BLM go ahead and approve this seismic project, we ask that alternatives be developed that consider the cumulative and landscape scale impacts that are most likely to occur once the results of this survey become apparent. We firmly are committed to asking the BLM to require Azalea Oil Company to use helicopters if they chose to continue this seismic survey.

We ask that the BLM consider the following when writing the details of the study:

1. Do not permit off-road vehicle use by either the vehicles used for the general transport of equipment or for the actual drilling using the buggy drill.
2. Avoid all streams, riparian, springs, and seeps by placing a one-quarter mile buffer around these areas for no access. We are concerned about the impacts to these unique low elevation trout waters as well as the impacts from erosion and sedimentation to these waters and Flaming Gorge.
3. Do not permit seismic activities during hunting season and require that the company complete their work and be out of the area one week prior to the beginning of hunting season (September 1, 2010).
4. Sage grouse are a game bird that is in peril and this seismic study area includes sage grouse habitat. Avoidance of this birds' habitat should be a requirement in order that future listing of this species not be a necessity.
5. Avoid big game birthing areas, including moose that inhabit this southern portion of the Greater Little Mountain area.
6. Avoid highly important elk security areas in the southern portion of this project. The southern portion of DJ Line 3 would greatly disrupt elk movement and disturb secure access should off-road buggy drills and associated activities be allowed in this area.
7. Strong mitigation requirements must be in place and enforced. Enforcement of these requirements seem to be the weak link and we feel strongly that without enforcement, any requirements have the potential for not being met. We understand that your staff is limited in time and numbers, but for this area, special attention needs to be enacted.
8. We would like a seat at the table during future discussions with the contracting seismic company and Azalea.
9. We would like to see the results of the wildlife and plants study that BLM claims they will be doing prior to the approval of any seismic operation.
10. Many fires have occurred in the general area and now invasive cheatgrass has replaced grassland and shrub habitats important for wildlife. Restrictions for reclamation and vehicle care to avoid further contamination of other areas with cheatgrass and other invasive weeds need to be implemented.

Members of this Coalition hunt, fish and recreate in this area year round. We value its close proximity to our many communities and we understand the importance of what this area provides in terms of economic viability to many businesses and state agencies. We also work in the many energy industry sectors, including the mines, the oil and gas fields, or we indirectly assist these entities. We have families here who are just learning the

value of a good day of hunting, catching their first fish, or hiking in some of the most spectacular high desert country in the region. Not many places are left like this. We respectfully ask that you, as a regulatory and land management agency and as people who live in this community, consider the bigger picture and protect the future of this country.

Thank you,



Craig Thompson  
for Greater Little Mountain Coalition  
809 Rose Crown Circle  
Rock Springs, WY 82901



Sent via email ([rock\\_springs\\_wymail@blm.gov](mailto:rock_springs_wymail@blm.gov)) and US Mail

January 15, 2010

Samantha Thurston  
Natural Resource Specialist  
BLM Rock Springs Field Office  
280 Highway 191 North  
Rock Springs, WY 82901

**RE: North Dutch John 2D Seismic Project Scoping Comments**

Dear Ms. Thurston,

We appreciate the opportunity to comment on the North Dutch John 2D Seismic Project proposed by Azalea Oil Company, LLC (Azalea) located in Sweetwater County and in the Rock Springs RSFO. As with previous development activity in this sensitive watershed resource, Trout Unlimited (TU) is again very concerned about the direct and indirect impacts that may result from the surface and subsurface activity of the seismic proposal. The location of this seismic project is within the Sugarloaf Basin Special Management Area (SMA), an area of extreme interest by local citizens and referred to as the Greater Little Mountain Area. Known for its extreme vulnerability to erosion, sedimentation and permanent scarring of landscapes and habitats supporting sensitive Colorado River cutthroat trout, big game critical winter ranges, and other sensitive and endangered plant and animal species, TU cannot support any project that impacts these ecosystem values. In particular, any off-road activity in this sensitive ecosystem should not be permitted. Further, the potential for expansion of this project into a larger oil and gas development project should be part of the study BLM proposes to prepare and we strongly recommend the BLM consider preparing an environmental impact statement.

**General Background**

In Wyoming, TU has more than 1,300 members and 13 state chapters whose members actively utilize and enjoy the abundant natural resources on public lands. TU provides these comments on the basis that oil and gas development activities that occur on federal Bureau of Land Management lands have the potential to affect groundwater, surface water, air quality, fish and wildlife species and their habitat both on a localized level and beyond at a landscape scale level.

TU has participated in the past by commenting and expressing our concern for the many projects the Rock Springs BLM has approved for this special area, including

the Rubicon 3D Seismic Survey, the Horseshoe Basin 3D Seismic Survey, the Baxter Natural Gas project, and protests to the numerous oil and gas lease parcels that were nominated for sale in this general area.

As mentioned earlier, this project is also located within an area locally known as the Greater Little Mountain Area and has strong local and statewide citizen support through a group called the Greater Little Mountain Coalition. The BLM needs to include this group in any development discussion and seek collaborative methods to reduce the recognized impacts associated with such a project.

In addition to the local and organizational concerns identified above, Governor Freudenthal has also consistently supplied his letters of concern about ongoing energy development projects in this particular area. In his February 8, 2008 comments to the BLM on the Baxter Proposal, just north of this seismic site, he stated, "I do not want the Baxter Project to trigger the full industrialization of an irreplaceable recreational area and fragile ecosystem." The Wyoming State Geological Survey indicated to the Governor that this area has the potential to have closely spaced wells at 10- or even 5-acre spacing (again, from Governor Freudenthal's February 8, 2008 letter).

Finally, the Wyoming Game and Fish Department (WGFD) has consistently and strongly advised against numerous projects and lease sales within the Little Mountain ecosystem, of which the Sugarloaf Basin is a part of. Based on their professional wildlife expertise and recommendations, TU would strongly urge the BLM to partner with the WGFD and adhere to the WGFD's long-term wildlife protection and management efforts and recommendations, which includes the application of the Department's *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (WGFD, Version 2; May 2009), to this project proposal.

#### **Unique and Sensitive Qualities of the greater Little Mountain ecosystem area:**

Azalea's Dutch John 2D seismic project is located within the Sugarloaf Basin Special Management Area (SMA), designated in the Green River Resource Management Plan (GRRMP) of 1997 and considered a high value wildlife and recreation area by the Wyoming Game and Fish Department and the citizens of this state. It is also within the highly valued Little Mountain ecosystem. While the GRRMP states that the Sugarloaf Basin area has not been recommended as part of the Greater Red Creek ACEC (Area of Critical Environmental Concern) due to the less sensitive nature of resources compared with its bordering Carrant Creek ACEC, the Plan does recognize that the watershed resources in the area are interconnected with those of the Greater Red Creek ACEC. Further, the GRRMP is more than 10 years old and new fish and wildlife information has the potential to position this SMA into a higher protective status. Special management objectives and actions have been designated in the 1997 GRRMP for this 85,880 acre area and include:

- Improving and enhancing watershed condition and values;
- Improving riparian areas to proper functioning condition;
- Provide opportunities for dispersed recreation uses; and
- Maintain and protect important wildlife habitat;

- Manage the area as an avoidance area for rights-of-way and surface disturbing activities (other than the north-south ROW window parallel to the Flaming Gorge) as designated on Map 8 in GRRMP;
- Travel and transportation is limited to designated roads;
- Aquifer recharge zones in this area will be managed to protect groundwater quality and aquifer function (which include limited road density; surface disturbance and surface occupancy);
- Camping is allowed within 200 feet of water if damage to watersheds and their quality can be avoided;
- Motorized vehicle use is limited to designated roads and trails, including seasonal OHV restrictions to protect watershed values.

Because the Sugarloaf Basin SMA is recognized as part of the Little Mountain ecosystem, its high value for wildlife and fish species of this area cannot be ignored. This area contains all life-stage habitats for many high profile and sensitive terrestrial and aquatic species, including the following:

- Crucial big game winter range for elk, mule deer, and antelope;
- Moose parturition areas;
- Sage grouse habitat including breeding, nesting and rearing areas;
- Numerous springs and aquifers supplying water to sensitive Colorado River cutthroat trout watersheds;
- Raptor habitat for sensitive raptor species;
- Mapped as avoidance areas for rights-of-way and surface disturbance activities (Map 8 in GRRMP);
- A significant aquifer recharge zone, identified to be managed to protect groundwater quality and aquifer function (Map 26 in GRRMP);
- Habitat for native species of special concern including mountain suckers, pygmy rabbits, midget-faded rattlesnake, etc.

One of the leading concerns expressed by TU members, including the local Flaming Gorge TU Chapter, and non-TU members is the growing expansion of development permitted by the BLM in a known fragile ecosystem. This expansion rate is within the Little Mountain ecosystem and yet is not being considered from a cumulative analysis perspective by the BLM. Large pieces of irreplaceable wildlife and fisheries resources are being approved for development without the full benefits of a landscape scale analysis and consideration, ultimately compromising habitat function. For several wildlife and fish species in this area, this could potentially mean future candidate listing of these species as threatened or endangered.

The highly erosive nature of the soils, the natural springs and important groundwater recharge area, the limited native herbaceous vegetation cover, the unique qualities of the high desert ecosystem with its associated riparian and wetland complexes, and the considerable big game crucial winter range all contribute to this area's vulnerability to impacts and TU remains concerned about how energy development will irretrievably alter and harm this area. Should seismic surveys reveal significant recoverable natural gas resources, TU is concerned about the area becoming an industrialized field characterized by closely spaced well pads in a part of southwestern Wyoming that is prized for its public recreation and wildlife values.

## **Natural Resource Surveys Should Be Conducted, Available, and Incorporated into the Study Prior to Seismic Approval or Activities**

The use of science in land management decisions is important for resource-decision making and can lend itself to supporting energy development while maintaining functioning unfragmented resources. BLM must use science in this land management decision, including identifying the science needs and applications. The BLM's Science Strategy (September 2008) supports this approach and TU urges the BLM to consider the numerous studies and data available to assist in making their decision about this project. There is considerable biological data available that supports implementation of managed restricted use in this ecosystem.

In the scoping statement for this proposal, the BLM stated that specific wildlife and plant surveys will be completed prior to any approval or start of any seismic activities. There is considerable biological data available that supports implementation of managed restricted use in this ecosystem. TU understands that the Wyoming Landscape Conservation Initiative (WLCI) has been conducting wildlife and plant surveys in the Little Mountain area (Little Mountain Aspen Science surveys, 2009; WLCI, USGS, WGFD). Results from those initial surveys indicate the importance of these isolated aspen-riparian communities to migrant songbird species. More than 85 bird species were inventoried during last years surveys and according to the biologists conducting these surveys, this data is extremely valuable toward understanding the importance of these isolated aspen-riparian vegetation communities for obligate-dependent bird species.

Any additional wildlife, plant, and fish studies that are required to be completed should be conducted by a qualified and recognized professional biologist approved by both the WGFD and BLM. TU respectfully requests the results of these surveys be made available to the public prior to any approval of this project.

In addition, TU requests that a hydrologic survey be conducted prior to approval of this project due to the poorly mapped information in the GRRMP (see notation on Map 26). TU requested the hydrologic and biological survey (among others) information for the Horseshoe Basin 3D Seismic project in our scoping comments submitted in September 2008 but never received it. TU respectfully requests that this information be available in order that a thorough Environmental Analysis (EA) is conducted on this project.

Finally, the sensitive soil structure associated with this high altitude desert environment lends itself to the potential for abuse, including impacting the watershed system if strict specifications and monitoring are not enforced. The potential for significant drainage concerns ranks high with TU, particularly when off-road vehicle use is being proposed with this seismic project.

### **Specific Concerns that Should be Included in all Analysis Prior to Activities**

#### Impact Concerns to Colorado River Cutthroat Trout:

Any type of energy development activities have the potential for adverse effects on conservation populations of Colorado River cutthroat trout located in this area. Historically the populations in the greater Little Mountain ecosystem were part of an

extensive and well connected metapopulation in the upper Green River. The construction of Flaming Gorge Dam and subsequent filling of the reservoir disrupted the habitat connectivity resulting in the loss of fluvial life history forms and the creation of isolated populations.

The greater Little Mountain CRCT populations are at the edge of the species' topographic range which historically averaged 2500 meters and is currently over 2700 meters. In addition to occupying the low elevation margins, these populations are also located in one of the driest regions of the historic range and are the only remaining population that still occupies this semi-arid zone. Average annual precipitation across the historic range was 21 inches but with the loss of the lower elevation fluvial populations, particularly in the drier Green River system, the current trout distribution averages 27 inches of annual precipitation. In contrast the populations in the greater Little Mountain region receive just 13 inches of precipitation a year. The low elevation and dry conditions likely resulted in stream temperatures significantly warmer than found in other portions of the range and thus required unique local adaptations to survive.

The importance of the greater Little Mountain CRCT populations and their unique habitat is recognized in the range-wide status assessment. Specifically, the Currant and Sage Creek populations are classified as conservation populations based on their 'unique life history' as desert populations rather than mountain populations (Hirsch C.L., S.E. Albeke, and T.P. Nesler. 2006. *Range-wide status of Colorado River cutthroat trout (Oncorhynchus clarkii pleuriticus): 2005*. Colorado River Cutthroat Trout Conservation Team, Wyoming Game and Fish Department, Cheyenne, WY). Interconnected waters, such as those in the Sugarloaf Basin, contribute to sustaining CRCT populations.

Populations at the margins of a species' range, such as these in the greater Little Mountain ecosystem, are critically important to the long-term conservation of genetic diversity. In reviewing fossil records, Hampe and Petit (Hampe, A., and R.J. Petit. 2005. *Conserving biodiversity under climate change: the rear guard matters*. Ecology Letters 8:461-467.2005) found that populations at the constricting margins of a species' range (in this case low elevations) are disproportionately important to the survival and evolution of the species because they commonly contain the bulk of the species' genetic diversity. This is a particularly important consideration when placed in the context of global warming induced environmental change because these populations may have unique adaptations that have allowed them to survive and evolve at the margins of suitable habitat.

TU requests the following factors be evaluated for the proposed BLM study:

- Updated fish surveys be conducted with the Spring Creek and Marsh Creek areas for both trout species and the declining native non-trout species which are candidates for endangerment. Those three species include the bluehead sucker (*Catostomus discobolus*), the flannelmouth sucker (*Catostomus latipinnis*), and the roundtail chub (*Gila robusta*).
- Much of this geographic area has contributing waters that directly impact the survivability of Currant Creek and Red Creek CRCT populations, including the Marsh Creek complex, Spring Creek and West Spring Creek. The BLM is a signatory agency to the Colorado River Cutthroat Trout Conservation Agreement

- Increase stream buffers to 500 feet. The GRRMP states campers are not allowed within a 200 foot buffer of streams; use of seismic materials (including explosives) and vehicular equipment are significantly more hostile to the riparian and wetland areas than camping and should be appropriately limited to the 500 foot buffer.
- Manage the aquifer recharge zones in the area as defined in the GRRMP. This would include the requirement for an updated groundwater survey. Protection of the groundwater resources, their quality and aquifer function (as depicted in Map 26, GRRMP) will be integral to the balance and sustainability of the many unique wildlife and fisheries resources. Various types of protection of these resources including (as identified in the GRRMP) limiting road density, surface disturbing activities, and surface occupancy in the identified recharge zones to maintain them in a healthy and functioning condition.
- Partner with the WGFD and adhere to the WGFD's long-term wildlife protection and management efforts and recommendations, which include the application of the Department's *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (WGFD, Version 2; May 2009) to this project proposal.
- As indicated in the recent federal climate change directive the BLM should manage for any impacts, short term and long term, that might affect water quality issues within an ecosystem from a climate change perspective. The August 22, 2008 directive to all federal agency senior staff (from the directors of the Departments of Agriculture, Interior, Defense, Commerce and the EPA) authorized agencies to cooperate in work to adapt water program management to reflect the changing climate and its associated science-based impacts and changing climatic conditions. The implications of climate change to water and watershed management is significant from TU's perspective and we request the BLM to address this issue in the EA for this project.
- Application of any new BLM oil and gas leasing reforms recently defined by the Department of Interior (January 2010).

Impact Concerns to Terrestrial Wildlife Species:

With the increase in energy development interest (including wind) in the greater Little Mountain ecosystem, TU recommends that the BLM consider landscape cumulative impact analysis on big game and sensitive wildlife species in its study for this seismic proposal. This seismic project opens the door for further and larger scale development in a currently undeveloped area.

In light of the importance of this area from a natural ecosystem base, TU requests that the BLM consider the following factors when evaluating this area for seismic activities and future development work.

- Restrict all off-road activity.

- This seismic project is located in sensitive sage grouse habitat. The BLM should restrict access in sage grouse habitat and propose alternate ways to conduct the surveys.
- Avoid big game parturition areas and restrict activity with appropriate timing limitations.
- Avoid big game migration routes.
- All areas that have been identified in the GRRMP as restricted in surface disturbance activities should be managed as such. This would include the locations where the seismic activity has been proposed. Sugarloaf Basin SMA has been defined in the GRRMP as an area to be maintained as a geographic management unit with four specific objectives, including improving the watershed condition, maintaining and protecting important wildlife habitat to enhancing the watershed values to reducing erosion.
- Manage the Sugarloaf Basin Special Management Area as the avoidance area defined in the GRRMP. This includes prohibiting rights-of-way and surface disturbing activities (Table 2 "Areas of Oil and Gas Lease Restrictions by Hydrocarbon Potential – Rights-of-Way avoidance and exclusion areas", GRRMP).
- Protect the air quality conditions necessary to maintain a healthy and balanced ecosystem. Consideration of future development scenarios and their impacts must be considered in the landscape evaluation of this project.
- Restrict simultaneous seismic projects which may occur during 2010 in this area.

#### **Specific Considerations that should be required prior to any Activities**

The seismic proposal offered by Azalea is located in a special management area identified by the BLM, it is bordered by the Currant Creek ACEC and the Red Creek ACEC, contains numerous springs and watershed resources that are interconnected with the Greater Red Creek ACEC (composed of Currant Creek, Red Creek and Sage Creek ACEC's), is located in historic Colorado River cutthroat trout (CRCT) watershed habitat, has crucial big game winter range, greater sage grouse habitat, big game parturition areas, and includes numerous federal and state recognized sensitive and threatened wildlife and plant species.

The BLM has an obligation to the public to ensure that any extractive development activities that occur in this area be approached with a high level of respect to the natural renewable resource values that are considered extremely valuable to the people of this state. TU offers the following comments:

1. The BLM should consider preparing an Environmental Impact Statement for the greater Little Mountain ecosystem due to the increase in energy development projects (both renewable and nonrenewable) in this area and their potential long-term harm to the public and to the natural and unique resources in this area. New fish and wildlife data has emerged in the last 10 years that indicate this area supports numerous sensitive, threatened and endangered species. Currently, piece-meal project approvals are being conducted without looking at the landscape and future impacts to a resource that has been considered by state and federal agencies as unique and irreplaceable. The future severity of impact of this seismic action, should it prove up significant oil and gas resources, can be assured by development plans for future drilling activities. Increased air pollution, water pollution, the loss of fish and wildlife species, the loss of

recreational enjoyment and hunting opportunities, impacts to tourism and local businesses dependent on natural renewable resource uses in this area would all experience harm. Adverse environmental effects caused by the cumulative actions that are being planned in this area are will be in excess of those created by existing uses.

2. In addition to an EIS, the BLM should develop a Cumulative Habitat Management Plan for the greater Little Mountain ecosystem prior to any further project development activities or approvals. This type of Plan would benefit the resource substantially toward maintaining the quality and integrity of the ecosystem and clearly communicate to energy development interests why this area is so important.

3. In the event this project moves forward with BLM approval, the BLM should require the use of helicopters and prohibit the use of off-road vehicles including buggy drills. An alternative that requires helicopter use, such as that which was required for Devon Energy for their Rubicon 3D Seismic survey, prevents the surface disturbance that will occur from the off-road use of vehicles, buggy drills, and numerous other associated impacts from this type of field survey. TU appreciates and recognizes the added expense associated with the use of helicopters but feels the long-term protection of this landscape for the wildlife and fish resource meets the GRRMP intent of managing this unique area.

4. Devon Energy began conducting their Rubicon 3D Seismic survey in this general area last summer (2009) but did not complete the project during their field season. Should Devon resume seismic survey operations in 2010, TU is concerned about the impacts two simultaneous seismic surveys would have on the resource. TU respectfully requests that should the BLM approve Azalea's project, that any surveys be delayed until 2011 when Devon presumably would be completed with their seismic survey. It is unacceptable to TU that two seismic surveys be completed at the same time in the same geographic territory.

5. Maintaining high quality public hunting and fishing experiences in the greater Little Mountain ecosystem is of high importance to the WGFD. Elk, mule deer, and antelope hunting is extremely popular in the Sugarloaf Basin SMA and occurs at a high level. Any seismic activity should not occur during hunting season and any summer seismic activities should be halted one week prior to the beginning of hunting season.

#### **Management Conflicts with Wyoming Game and Fish Department's Comprehensive Wildlife Conservation Strategy**

Within the geographic area being proposed for seismic surveys are more than 42 known terrestrial and aquatic wildlife species that have been identified by the WGFD as species of greatest conservation need (SGCN, 2005). Several are being considered for listing under the Endangered Species Act (including the sage grouse), have been considered for petitioning for listing (such as the pygmy rabbit), or have the potential to be listed (Colorado River cutthroat trout) due to their heightened sensitivity to sedimentation and erosion events caused by development. Further the WGFD is updating their Strategic Wildlife Management Plan with projected approval being targeted for October 2010. TU recommends the BLM work closely with the WGFD to consider the available draft updates to this important wildlife management document.

Any type of development further threatens the stability of these species' endurance and longevity and TU strongly urges the BLM to consider the long-term ramifications of what oil and gas development in this area might do to these sensitive wildlife species.

### **Additional Considerations for Analysis in the Environmental Analysis**

The sensitive nature of the soils and vegetation communities in this area make reclamation a great challenge. Previous development activities have demonstrated this reclamation and vegetative re-establishment challenge. In fact, the GRRMP cites specific examples where habitat has deteriorated or been affected by fire and has thus enacted restrictions on surface activities on these lands for a defined term limit. TU requests that all reclamation efforts and plans be analyzed prior to any activity, and full monitoring and enforcement be implemented with Azalea in order to prevent any sedimentation, erosion, weed infestation and invasive species occupation. This is of particular concern where cheatgrass has invaded this resource area and the use of vehicles over miles of vulnerable habitat could exacerbate the situation.

Further, any impacts to air and water quality be specifically monitored to assure the public that future degradation does not occur. Water management plans, including surface impoundments, well drilling and testing, and dust abatement need to be strictly observed.

### **Summary**

One of Wyoming's premier natural resources is being placed in jeopardy. Strong sentiment exists among Wyoming residents (and many non-residents) for those special places that afford the public open recreation, hunting and fishing access. This particular area, considered a part of the greater Little Mountain ecosystem provides important economic and recreation contributions to a diverse and significant population of individuals who reflect the traditional culture of Wyoming's great outdoors.

The WGFD has consistently opposed current plans for development in this ecosystem and has strongly encouraged the BLM to reduce its growing cumulative impacts for this region. We agree with WGFD's assessment. The BLM should not be responsible for the further deterioration of one of Wyoming's unique and sensitive premiere ecosystems.

Governor Freudenthal has also consistently declared his concerns about the level of development that is occurring in these special and unique places and the Greater Little Mountain Area has been declared as one of the Top 10 Threatened Places by energy development in America by a national group of conservation organizations (see "*Hunting and Fishing Imperiled: energy development threatens 10 of the most important fish and wildlife habitats on America's public lands*". 2009. [www.Sportsmen4ResponsibleEnergy.org](http://www.Sportsmen4ResponsibleEnergy.org)).

TU urges the BLM to act responsibly in their analysis for this study. We respectfully request BLM to consider preparing an environmental impact statement, to temporarily halt further development activities until such an EIS is completed, and to simultaneously develop a Habitat Management Plan that incorporates restrictions and

specifications which place the burden of responsibility directly on the proponent's shoulders.

Included in any project approval should be stipulations that impose quarter-mile setback restrictions to all springs, creek and riparian areas; prohibit seismic activity during seasonal restrictions (including parturition); prohibit off-road vehicle use; prohibit seismic activities during hunting seasons, the completion of a thorough groundwater analysis, new fish and wildlife surveys, avoidance of the Marsh Creek spring complex, and implementing strict regulatory and monitoring stipulations that assist Azalea in protecting Wyoming's natural resources responsibly during their quest for natural gas.

TU has been actively working with the BLM, the WGFD, the Governor's office and energy companies to find ways to protect the identified fragile resources in this area while coordinating on defined development areas. We ask to continue this communication and partnership. Thank you for the opportunity to offer our comments and voice our concerns.

Sincerely,

Cathy Purves  
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Trout Unlimited  
250 North 1<sup>st</sup> Street  
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[cpurves@tu.org](mailto:cpurves@tu.org)

cc: Don Simpson, State BLM Director  
Governor Dave Freudenthal  
Wyoming Game and Fish Department



## WYOMING GAME AND FISH DEPARTMENT

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November 12, 2008

The Honorable Dave Freudenthal  
State Capitol Building  
200 West 24<sup>th</sup> Street  
Cheyenne, WY 82002-0010

Dear Governor Freudenthal:

Thank you for your continued interest, involvement, and support regarding energy development and natural resource protection in the Little Mountain area south of Rock Springs. This letter and enclosed information is in response to your letter of October 28, 2008 in which you requested additional information and that our office refine the State's position on the Little Mountain complex and the upcoming December Oil and Gas Lease Sale. We share your hope to see rational decisions about the issuance of any new leases in the area and to ensure that any development that is authorized be conducted with consideration and protection of wildlife resources and habitat.

The following information pertains to the Little Mountain Ecosystem (LME). For this purpose, we define the LME as all lands bounded by Wyoming Highway 430 on the east, Interstate Highway 80 on the north, and Flaming Gorge Reservoir on the west, and the Wyoming-Colorado Stateline on the south. This complex represents a relatively intact ecosystem that provides all life requirements for a host of popular game, fish, and sensitive nongame species.

To fully understand our position regarding this critically important area, to maintain any semblance of what the sportsmen and wildlife enthusiasts of Wyoming currently enjoy in this area, we must maintain an intact ecosystem, large blocks of undeveloped lands, and unhindered migration corridors. Any reduction in habitat function and connectivity *will* lead to significant losses to wildlife resources in this area. Responsible development can occur in some portions of the LME without a significant reduction in wildlife resource value, but some declines will occur under any development scenario. Unitization of leased mineral resources within all or much of the LME will be necessary to ensure that wildlife resources are adequately considered and protected under a development scenario.

Our approach and answers to your questions are based on what we consider, as wildlife managers, to be the only way significant wildlife values can be maintained in the LME under a development scenario. We refer to a (currently in review) draft of Wyoming Game & Fish Department "Standards Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats", which is being amended to be consistent with the Governor's executive order regarding development within greater sage-grouse habitats and has

Governor Dave Freudenthal  
November 6, 2008  
Page 2

been amended to reflect the latest research concerning mule deer. We can provide a copy of these draft standard guidelines at your request. We have divided the LME area into Zones that represent various development and necessary protection scenarios needed to maintain wildlife quality and quantity (See Map and Zone Key).

Deviation from these recommended standards and protections will yield unacceptable losses to these prized resources. The Wyoming Game and Fish Department continues to oppose development in crucial habitats and any additional leasing for energy development in the Little Mountain Ecosystem.

Please find our responses to your inquiry below. If additional clarification or information is needed, please do not hesitate to contact our office.

Sincerely,



Steve DeCecco  
Regional Wildlife Supervisor  
Green River Region

Attachment: Little Mountain Ecosystem Map with Development/Management Zones

Cc: Director Steve Ferrell

**Response to Specific Questions and Additional Information**

**1) Are there areas that should have “No Surface Occupancy” (NSO) applied, even with current leases? If so, where are these areas and why should they be NSO?**

The simple answer to this question is “yes”. To maintain some level of an intact ecosystem and functional wildlife habitats, two areas that represent the core of the LME need to maintain an NSO or no lease status. These Zones are delineated on the attached map as “A” and “B.” Zone “A” represents a combination of the Currant Creek and Sage Creek watersheds. NSO status is currently applied to the majority of the Currant Creek watershed, and a large portion of the upper portion of the Sage Creek watershed is not leased. Zone “B” represents the Red Creek watershed, which is in a “No Lease” zone as identified by the Rock Springs RMP. We support the NSO designation.

These areas represent the heart of the LME, and maintenance of these two areas is key to maintaining some level of ecosystem and habitat function. It cannot be stated strongly enough that development within these areas will compromise and ultimately prohibit our ability to do so. In combination, they represent the most productive portion of the LME and represent a significant proportion of sensitive species habitats. All of the Colorado River cutthroat trout habitats in the LME occur in these watersheds. Approximately 75% of LME habitat treatments to restore LME ecosystem function conducted during the past 20 years have been done in “A” and “B.” Soil stability in these watersheds is very low and development will further destabilize these fragile areas, reduce water quality, and increase downstream sedimentation and nutrient loading (e.g. Flaming Gorge Reservoir). The combination of “A” and “B” contain nearly (excluding the upper ½ of Pine and Aspen Mountains) all the habitats both deer and elk in this area rely upon for fawn and calf production and rearing. If either of these Zones becomes fragmented through development activities (both development and production), maintenance of publicly acceptable quality and quantity wildlife resources in the LME will be unachievable.

**2) What standards should be applied and enforced outside of the “No Surface Occupancy” (NSO) areas?**

We have defined a tiered system of varying standards we recommend be applied outside Zones “A” and “B.” Three remaining Zones exist: “C”, the Sugarloaf Basin; “D”, Aspen Mountain to Pine Mountain; and “E”, the remainder of the LME. The standards that would allow for a development scenario while maintaining some of the wildlife values include:

**Sugarloaf Basin “C”** – We feel this represents an opportunity and a “laboratory” to demonstrate that quality wildlife habitat can be maintained in the face of responsible development. This would provide Devon Energy with a significant and genuine opportunity to show the country they are responsible and are concerned for more than the bottom line. A higher level of standards would be applied in this area, where maintenance of watershed/ecosystem function and wildlife habitat will be the main focus (as identified within the current Rock Springs RMP). Development of this Zone will occur through intense consultation and mutual agreement with

Wyoming Game and Fish concerning infrastructure (roads, pipelines, pads, etc.) location and seasonal stipulations throughout the life-of-project (including the production phase). Site-specific habitat features and function will dictate Department input. The Department will not oppose the opportunity to develop resources, but will endeavor to influence the timing, density, and methodology of development. The highest level of protections outlined in the Wyoming Game and Fish Commission's "Standard Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats" (in review) provides the basis for the standards to be applied in this area.

**Aspen-Pine Mountains "D"** – The Department will request that our new (draft in review) "Standards Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats" be applied in this area, with the understanding this will lead to losses in both wildlife habitat value and populations. Development under this scenario represents a significant compromise on the part of the Wyoming Game and Fish Department and will reduce public consumptive and non-consumptive wildlife use opportunities.

**Remaining LME "E"** – The Department comment in this Zone will be minimal. We reserve the right to comment in instances where special features, including sensitive species habitats, may be impacted, (e.g. midget-faded rattlesnake den sites and sage-grouse leks).

**3) Are there areas that are so sensitive that they should not be leased, including already-leased parcels (due to slope, soil type, habitat type, riparian areas, etc.)?**

The Wyoming Game and Fish Department fully understands the Nation's energy needs and does not necessarily oppose leasing liquid minerals providing that surface values and terrestrial and aquatic wildlife habitats are not compromised. Protections identified in Zones "A", "B" and "C" will permit resource extraction and wildlife habitat protection with adequate directional drilling technology providing outlined development scenarios are at no time violated. The Red Creek Watershed should remain in a permanent "No Lease" status given its fragility, as should have the entire Sage Creek, Currant Creek, and smaller watersheds west of Little Mountain that flow directly into Flaming Gorge Reservoir. Avoidance (including road and pipeline construction) of extreme slopes, fragile soils and riparian areas within the remaining Zones may reduce some impacts, as will greatly reducing the development footprint/dispersion, and reduction of native vegetation removal.

**4) What are the most important/sensitive areas for hunting, fishing and camping uses?**

At present, under the "no development" scenario, this extremely popular area receives significant and widespread use throughout the LME, particularly hunting. Some current clustering of use occurs by species pursued or user group.

**Hunting**

- Elk – All of Zones A, B, and C, and the higher elevations in Zone D (Aspen, Pine, Miller and Potter mountains, Laney Rim, Elk Butte, Upper Firehole Basin, and Upper Little Bitter Creek).
- Deer – Same as for elk.

- Pronghorn – Zones C and D.
- Sage-grouse – Zones A, C, and D.
- Moose – Zones A, B, and the higher elevations in Zone D.

#### **Camping**

- All of Zone A, C, and D (Pine and Aspen Mtns. and the shoreline of Flaming Gorge).

#### **Fishing**

- Zones A and C (East shoreline of Flaming Gorge Reservoir).

#### **5) How long should stipulations be applied? (Exploration, development, production)**

Under this “development plan”, application of seasonal stipulations will vary throughout the LME. NSO will occur in Zones A and B, so seasonal stipulations (excluding exploration) do not apply. In the remainder of the area, we recommend the following seasonal stipulations be applied:

#### **Exploration**

- Zones A through E. Application of any required and necessary wildlife seasonal stipulation (see “Standard Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats”) *and* avoid big game hunting seasons following consultation with the Department.
- Avoidance of site-specific areas around midget faded rattlesnake hibernacula through consultation with the Department.

#### **Development**

- Zone A and B. NSO, other stipulations are not applicable.
- Zone C. Application of applicable seasonal stipulations to protect crucial and important wildlife habitats as defined by the new (draft in review) “Standards Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats.”
- Zone D. Application of applicable seasonal stipulations to protect crucial and important wildlife habitats as defined by the new (draft in review) “Standards Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats.”
- Zone E. Seasonal stipulations may be waved in this area.
- Avoidance of site-specific areas around midget faded rattlesnake hibernacula through consultation with the Department.

#### **6) What on-site and off-site mitigation should be required?**

The Department had intended to direct “off-site” mitigation efforts toward this unique and valuable ecosystem in light of developments in other portions of the state. Offsite mitigation measures designed to offset impacts to the LME are nonexistent. If offsite mitigation is determined necessary, maintenance of habitat function and value in the LME has failed. Therefore all measures mentioned below should be applied “on-site” only, and those requiring funding should be paid entirely by the developer/operator(s).

- Purchase AUMs and grazing permits to establish forage reserves. This measure could have some limited off-site application.
- Fund onsite private land conservation easements.
- Pursue withdrawal of state land energy (O&G and wind) development leases in polygons A-D to minimize industrialization of the area and assist in maintaining ecosystem integrity and connectivity.
- Avoid future development of significant sized wind energy projects in polygons A-D. If wind energy projects cannot be avoided in the LME, unitized collaborative planning must occur between O&G developers, wind energy developers, and resource management agencies to minimize cumulative development impacts and maintain wildlife habitat integrity and function.
- Carefully planned phased energy development exhibiting successful vegetative rehabilitation on disturbed sites, which is implemented in a manner to provide adequate quantities of undisturbed quality wildlife habitat inside the LME.
- Fully apply adaptive management principles and BMPs that specifically benefit wildlife throughout the development and during the life of project.
- Collection of products at centralized facilities to reduce cumulative pipeline developments and use of remote monitoring during the production phase to reduce vehicle traffic and human presence.
- Directional drilling and multi-well pads to reduce surface disturbance and reduce human presence.

**7) What pre/post-development monitoring should be required?**

Pre and post-development wildlife monitoring should be viewed as a standard cost-of-doing-business for energy development companies, not as mitigation. This is merely an information gathering process that permits better decisions. Pre development monitoring will permit the Department and developer(s) to refine development plans to potentially reduce wildlife impacts. Post-development monitoring is necessary to clearly assess impacts and allow for true adaptive management. The Department requests the following pre and post development monitoring:

- Elk – GPS collar monitoring (periodically LOP)
- Mule Deer - GPS collar monitoring (periodically LOP)
- Pygmy rabbits – inventory distribution and abundance LOP
- Juniper Obligate Birds and Small Mammals – inventory distribution and abundance LOP
- Greater sage-grouse - GPS collar monitoring (periodically LOP)
- Herptiles
  - Lizards – inventory distribution
  - Snakes – Increase knowledge of life-history and response to development in Zone A and C through use of implant telemetry (midget faded rattlesnakes and Great Basin gophersnakes)
- Invasive plant species distribution and abundance, particularly cheatgrass.

- Pre and post sediment transport, nutrient loading, and channel geomorphology in all streams that drain to Flaming Gorge Reservoir.
- Volumes and quality of water produced from key spring and seep sources feeding streams in Zones A, C, and D.

**8) Are current reclamation requirements and bonds sufficient?**

No. Interim reclamation is often considered successful if any plant species, including noxious weeds such as halogeton, occurs on sites to be reclaimed. Additionally, final reclamation has often been unsuccessful in southwest Wyoming due to low precipitation zones, exacerbated by drought conditions. Removal of only the smallest amount of native vegetation, careful monitoring and timely control of invasive plant species and vegetation standards for both interim and final reclamation that include an appropriate mixture of grasses, forbs, and shrubs will improve standards and value to wildlife. We recommend the use of drilling mats since they have proved successful in reducing surface disturbance and accelerate reclamation in the Jonah Field development. Bonds for reclamation are sufficiently low at this time to permit some smaller companies to leave impacted areas unreclaimed. We support higher reclamation bonds and more stringent measurements to assure reclamation success.

**9) What pad density thresholds, per species, before populations are reduced? Are there critical/crucial areas in which pad density should be decreased?**

Efforts to reduce impacts to the three species listed below will provide protections for many of the other terrestrial species occurring within the LME. These must be combined with BMPs to be successful. Special considerations will need to be applied in some areas to reduce sensitive herptile species impacts (e.g. midget-faded rattlesnakes) such as speed limits, limited road construction and types, traffic levels, and avoidance of rocky den habitats.

**Mule Deer** - Research by Sawyer et al. (2008) during the first 5 years of natural gas development on the Pinedale Anticline documented that areas within 1.6 miles of well pads received significantly less deer use and were classified as low or moderate use areas. Based on Sawyer's research density of 1 well pad per square mile causes a moderate impact, and a density of 2-4 well pads per square mile causes a high impact. The impact is considered extreme when densities exceed 4 well pads per square mile. Impacts tend to cause displacement of deer to less desirable habitats or concentrate deer in areas further from pads. Both lead to increased mortality and/or habitat degradation.

**Elk** - Elk are extremely sensitive to disturbance and tend to abandon heavily impacted landscapes. No definition of moderate impact occurs within the literature given this sensitivity. A density of 1-4 pads per section results in high impacts to this species. Exceeding one well pad per section, can lead to range abandonment, artificial concentration, and ultimately population reduction.

**Greater Sage-grouse** - Greater sage-grouse populations are negatively affected by large-scale developments. To attempt to minimize impacts, establishment of a 0.6-mi. NSO around each occupied lek, limiting well pad densities to 1 per square mile within 2 miles of occupied leks, and implementing appropriate management practices should be sufficient to maintain occupied habitats.

**10) What standard management practices should be required to reduce wildlife impacts?**

Industry adoption and application of Best Management Practices (BMPs), as outlined within the Department's new (draft in review) "Standards Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats" will reduce impacts to wildlife resources.

**11) What will elk distribution and densities look like under a field development scenario? Would there be an expectation of interstate movement and population shifts?**

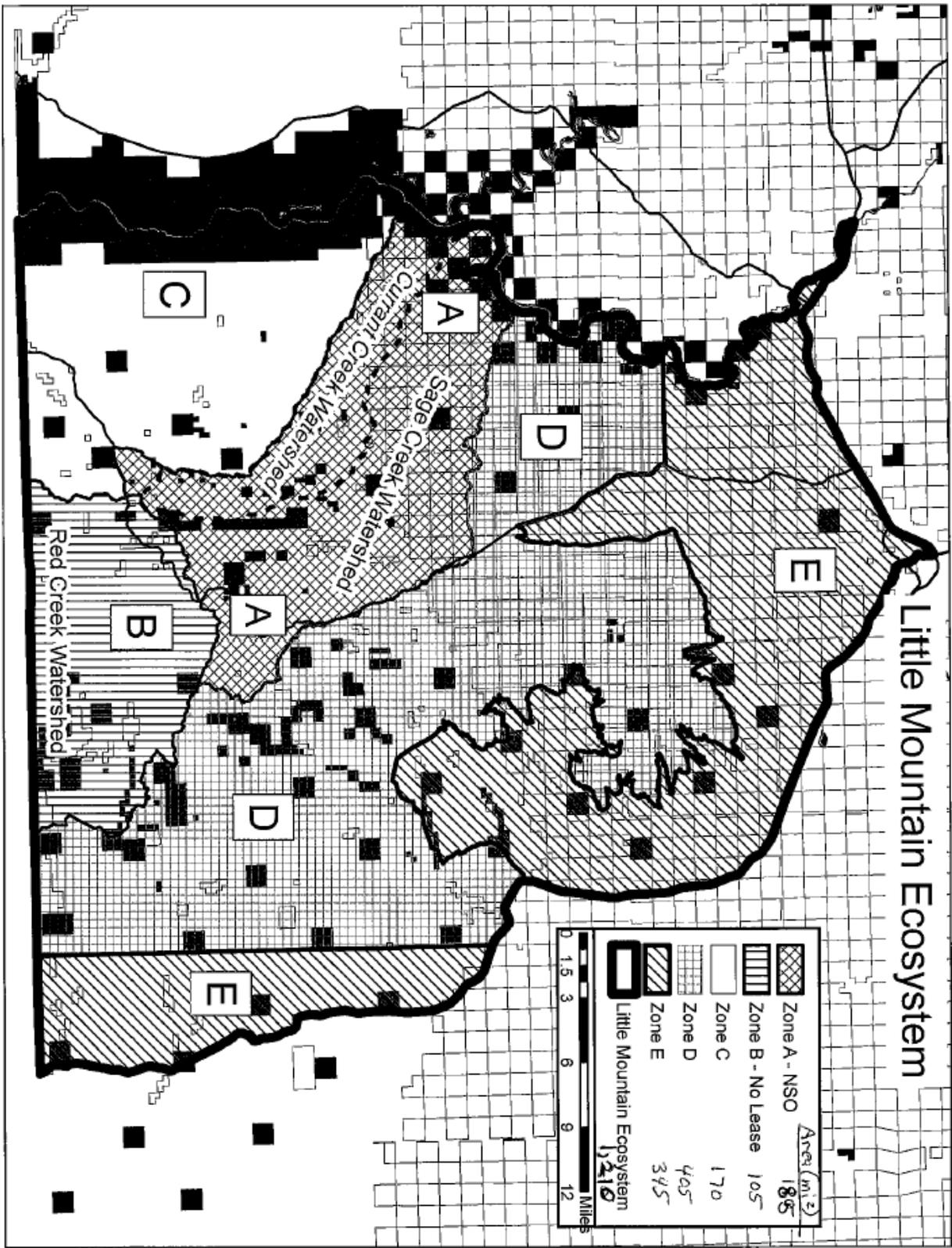
Based on all available literature and professional experience, elk will be displaced during exploration, development, and production. Full field development, without the recommendations outlined, will likely lead to abandonment of the area. Elk are the most popular big game animal in this area, and use the majority of the LME during some portion of the year. This planned development will negatively impact this resource, without question. It is extremely likely elk populations will shift to accommodate development activity to an area with little or no development. Based on current leasing maps, this will be extreme NE Utah and NW Colorado. While actual income to the state of Wyoming from elk licenses in this area are not a significant percentage of the Department's income, the value of this resource to the sportsmen's community is priceless.

**Little Mountain Ecosystem (LME) Map and Zone Key**

- Zone A – Currant Creek and Sage Creek watersheds (NSO and Not Leased)
- Zone B – Red Creek Watershed (Identified by BLM's RMP as "No Lease")
- Zone C – Sugarloaf Basin (Apply high level of standards)
- Zone D – Aspen & Pine Mountain (Apply new WGFD Standard Recommendations)
- Zone E – Remaining Area within the LME (Minimal standards on project basis)

<b>ZONE</b>	<b>AREA (Mile<sup>2</sup>)</b>	<b>% Of LME AREA</b>
A	185	15.3%
B	105	8.7%
C	170	14.0%
D	405	33.5%
E	345	28.5%
<b>TOTAL LME</b>	<b>1,210</b>	<b>100%</b>

# Little Mountain Ecosystem



**Table C-1. Summary of Scoping Comments Received**

<b>Number</b>	<b>Resource Affected</b>	<b>Comment</b>	<b>Commenter(s)*</b>
1	NEPA/Planning	An Environmental Impact Statement should be prepared for this project	GLMC, TU
2	NEPA/Planning	Use of a categorical exclusion would not be appropriate	BCA
3	NEPA/Planning	Information should be made available so a through EA is prepared	TU
4	NEPA/Planning	Using the 1997 Green River RMP is not currently benefitting the resources in the area	GLMC
5	NEPA/Planning	BLM should consider developing a Habitat Management Plan	GLMC, TU
6	NEPA/Planning	WWF suggests that it is imperative that the BLM develop a plan for the GLMA before approving piecemeal projects that will ultimately have unacceptable cumulative impacts.	WWF
7	NEPA/Planning	Establish a mitigation plan with a threshold matrix that addresses wildlife, wildlife habitat, invertebrates, aquatic habitat and stream changes.	WWF
8	NEPA/Planning	Trout Unlimited (TU) would strongly urge the BLM to partner with the WGFD and adhere to their long-term wildlife and protection management efforts and recommendations . . . to this project proposal	TU
9	NEPA/Planning	TU requests that all reclamation efforts and plans be analyzed prior to activity and full monitoring and enforcement be implemented with Azalea in order to prevent any sedimentation, erosion, weed infestation and invasive species occupation	TU
10	NEPA/Planning	Water management plans, including surface impoundment, well drilling and testing, and dust abatement need to be strictly observed	TU
11	NEPA/Planning	Implement a monitoring system for detecting spills around the proposed project area	WWF
12	Process	Azalea should use helicopters for drilling	GLMC, BCA, WWF, TU
13	Process	Pleased that shot holes are used instead of vibroseis	BCA
14	Process	Seismic activities should be delayed until 2011 when Devon is finished	TU,

**Table C-1. Summary of Scoping Comments Received**

<b>Number</b>	<b>Resource Affected</b>	<b>Comment</b>	<b>Commenter(s)*</b>
15	Roads	No off road activity should be allowed	GLMC, BCA, WWF, TU
16	Roads	New tracks lead to new roads, further displacing wildlife	WWF
17	Hunting	Do not permit seismic activities during the hunting season and be out of the area within 5-7 days prior to the start of the hunting season (varies by commenter)	GLMC, WWF, TU,
18	Wildlife/Fisheries	Further energy activity of any kind degrades wildlife values	GLMC
19	Wildlife/Fisheries	Sage grouse habitat should be avoided	GLMC, BCA, WWF, TU
20	Wildlife/Fisheries	Sage grouse nest in the area and would be impacted by the seismic survey	WWF
21	Wildlife/Fisheries	Route roads away from leks	BCA
22	Wildlife/Fisheries	Avoid big game birthing areas, including moose	GLMC,BCA, WWF, TU
23	Wildlife/Fisheries	Consider impacts on big game seasonal habitat and restrict activities during the season they are in use/	BCA, TU
24	Wildlife/Fisheries	Avoid elk security habitat in the southern portion of the project area	GLMC, WWF
25	Wildlife/Fisheries	Avoid big game migration routes	TU
26	Wildlife/Fisheries	Perform wildlife surveys for sensitive species	BCA, WWF, TU
27	Wildlife/Fisheries	Make the result of wildlife surveys available	GLMC, WWF, TU
28	Wildlife/Fisheries	Shot holes should not be drilled near prairie dog colonies	BCA
29	Wildlife/Fisheries	Hibernacula for midget faded rattlesnakes should be identified and avoided	BCA
30	Wildlife/Fisheries	Impacts to Colorado River cutthroat trout (CRCT) need to be considered (including impacts of shot holes on shallow aquifers)	BCA, TU
31	Wildlife/Fisheries	Any type of development has the potential for adverse effects on CRCT in the area	TU
32	Wildlife/Fisheries	Updated fish surveys should be conducted in the Spring Creek and Marsh Creek areas	TU
33	Wildlife/Fisheries	Provide the most current impact data to wildlife from 2D seismic survey development utilizing buggy drilling	WWF
34	Wildlife/Fisheries	Provide an environmental compliance plan that considers enforcement for monitoring,	WWF

**Table C-1. Summary of Scoping Comments Received**

Number	Resource Affected	Comment	Commenter(s)*
		environmental compliance and remediation for wildlife habitat affected by the project. If applicable, the environmental compliance plan should be accomplished on a landscape scale to determine management options for wildlife species.	
35	Wildlife/Fisheries	Supply a comprehensive analysis of the seasonal timing restrictions and the development plan as applied to all wildlife species.	WWF
36	Wildlife/Fisheries	Develop a cumulative effects scenario that illustrates what may occur to sensitive, threatened or endangered species that are within this project area and will see habitat changes occur.	WWF
37	Wildlife/Fisheries	Partner with the WGFD and adhere to their long-term wildlife protect and management efforts and recommendations . . . to this proposal	TU
38	Wildlife/Fisheries	. . . TU strongly urges the BLM to consider the long-term ramification of what oil and gas development in this area might do to these sensitive species.	TU
39	Riparian	Off-road use will greatly impact the sensitive surface area, including many seeps, springs, streams, drainages, and creeks in the areas	GLMC
40	Riparian	Avoid all streams, riparian, springs, and seeps by placing a ¼ mile buffer around these areas	GLMC, WWF, TU
41	Riparian	. . . this proposal would involve substantial surface disturbance and impair vegetation quality and riparian condition through sediment and nutrient loading and potential contamination from storing gas and/or diesel near creeks.	WWF
42	Riparian	Increase stream buffers to 500 feet	TU
43	Water	Provide a complete description of the subsurface hydrology of the project area with information on how the aquifers will be affected by the proposed activities	WWF, TU
44	Water	Conduct a comprehensive analysis on all waterways and drainages near or crossing roads and staging areas	WWF

**Table C-1. Summary of Scoping Comments Received**

<b>Number</b>	<b>Resource Affected</b>	<b>Comment</b>	<b>Commenter(s)*</b>
45	Water	A complete and accurate assessment of the impacts (such as contamination and demands on water), including reasonably foreseeable impacts and baseline sampling, should be conducted to ground and surface water related to this proposed survey. This must be accomplished prior to approval	WWF
46	Water	A hydrologic survey should be completed	TU
47	Water	As indicated in the recent federal climate change directive, the BLM should manage for any impacts, short term and long term, that might affect water quality issues within an ecosystem from a climate change perspective	TU
48	Vegetation	Restriction and guidance should be provided to prevent the spread of noxious weeds	GLMC, WWF,
49	Vegetation	Evaluate, mitigate, and develop a plan for invasive species	WWF
50	Soil	Buggies will cause major disturbance to an arid area with sensitive soils	WWF
51	Soil	The sensitive soil structure associated with this high altitude desert environment lends itself to the potential for abuse, including impacting the watershed system if strict specification and monitoring are not enforced	TU
52	Air	Protect air quality conditions necessary to maintain a healthy and balanced ecosystem.	TU
53	Air/Water	Further, any impacts to air and water quality be specifically monitored to assure the public that future degradation does not occur.	TU
54	General/Miscellaneous	We continue to be concerned with the BLM's apparent lack of awareness of the community's significant interest in protecting this area	GLMC
55	General/Miscellaneous	Strong mitigation requirements must be in place and enforced	GLMC, BCA, WWF
56	General/Miscellaneous	We would like a seat at the table during future discussion with the contracting seismic company and Azalea.	GLMC, WWF
57	General/Miscellaneous	We respectfully ask that you . . . consider	GLMC

**Table C-1. Summary of Scoping Comments Received**

<b>Number</b>	<b>Resource Affected</b>	<b>Comment</b>	<b>Commenter(s)*</b>
		the bigger picture and protect the future of this country	
58	General/Miscellaneous	Thank you for considering these comments and please incorporate them into your forthcoming NEPA analysis.	BCA, WWF
59	General/Miscellaneous	Please send us all future correspondence for this project, as we plan to remain engaged.	BCA
60	General/Miscellaneous	. . . in accordance with the BLM's own management objective for the Sugarloaf Basin Management Area. . . we respectfully request that the proposed Dutch John 2D Geophysical Survey be denied	WWF
61	General/Miscellaneous	BLM must use science in this land management decision, including identifying the science needs and applications.	TU
62	General/Miscellaneous	. . . TU urges the BLM to consider the numerous studies and data available to assist on making their decision about this project	TU
63	General/Miscellaneous	Application of any new BLM oil and gas leasing reforms recently defined by the DOI (January 2010).	TU
64	General/Miscellaneous	All areas that have been identified in the GRRMP as restricted in surface disturbance activities should be managed as such. This would include the locations where the seismic activity has been proposed	TU
65	General/Miscellaneous	Manage the Sugarloaf Basin Special Management Area as the avoidance area defined in the GRRMP	TU
66	General/Miscellaneous	TU urges the BLM to act responsibly in their analysis for this study	TU

\*GLMC – Greater Little Mountain Coalition  
 BCA – Biodiversity Conservation Alliance  
 WWF – Wyoming Wildlife Federation  
 TU – Trout Unlimited

## **APPENDIX D**

### **CONDITIONS OF APPROVAL**

## **North Dutch John 2D Seismic Survey**

### **Conditions of Approval**

1. The 2D seismic survey will be conducted in accordance with the management objectives in the Green River Resource Management Plan (BLM 1997) for the Sugarloaf Basin Management Area.
2. Cultural Surveys will be completed on all two-tracks, and staging areas that will be used for the 2D seismic survey. Cultural surveys are not required for existing improved access roads. The proposed 2D seismic lines (source and receiver lines) will be surveyed at a width of 100 feet (source/receiver lines). A 10-acre block survey will be conducted around the proposed staging area.
3. The identified cultural site (#48SW17736) will be avoided. Note that an existing road runs through the non-contributing portion of this cultural site.
4. Reclamation will be conducted within 30 days after completion of the 2D seismic survey. Seed Mix A will be used. The tags from the certified seed mix used for reclamation will be provided to the Rock Springs Field Office to verify that weed-free and pure live seed were used for reclamation (See BLM standard terms and conditions in H-3150-1).
5. Low pressure, wide, smooth tires will be used on the buggy drill to minimize vegetation disturbance during seismic survey.
6. All wildlife surveys will be completed before the initiation of the 2D seismic survey.
7. Surface disturbing and/or disruptive activities will be prohibited within mapped greater sage-grouse nesting/early brood-rearing habitats outside the sage-grouse “core areas” from March 15–July 31. This restriction will apply within mapped habitat important for connectivity or within 2 miles of any occupied or undetermined lek.

# **APPENDIX E**

## **TRANSPORTATION PLAN**

## APPENDIX E – Transportation Plan

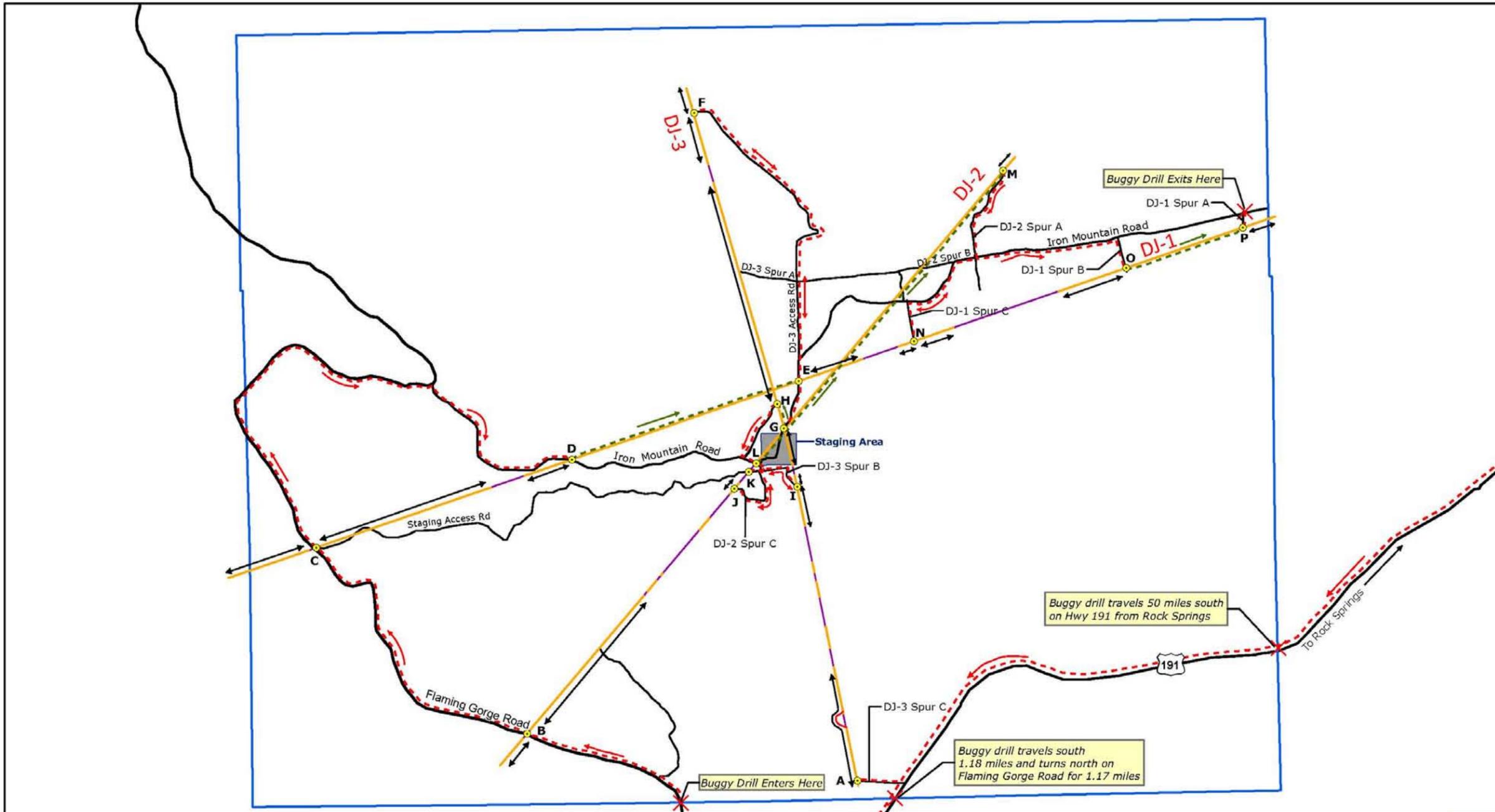
Based on the proposed seismic lines in the North Dutch John Project Area, and subtracting the line portions where the land presents a slope greater than 25% or where sensitive resources are located (with BLM specified buffer zones, as applicable), a route for laying the seismic line has been planned. As specified in the Proposed Action, most segments of the seismic lines would have the buggy drill travel the seismic line a maximum of two times to drill the line (out and back) except, where possible based on existing road locations, the buggy drill would pass over the seismic line only once. Also, in off road locations where the buggy drill either accesses a portion of seismic line or travels on a seismic line twice, the second pass would be offset from the initial pass where possible to reduce impacts to vegetation. The following is a description of the proposed buggy drill route. Figure 1 provides a map showing the proposed route of the buggy drill using letters from A to P and arrows to show direction.

1. The buggy drill would likely drive south from Rock Springs on Highway 191 for approximately 50 miles, and enter the project area from the east and travel 1.7 miles and turn west onto Road DJ-3 Spur C. The buggy drill would drive on Road DJ-3 Spur C for 0.19 mile and arrive at Access Point A (Figure 1). The buggy drill would then access a segment of seismic line DJ-3 to the north and travel a length of 0.21 mile, during which shot holes would be drilled. At this point the slope of the terrain increases to over 25% and a pre-approved route detour (see Figure 1) would be followed around the steep slope for .09 miles and the buggy drill would resume its path on DJ-3 for 0.18 mile during which shot holes would be drilled at specific points. Upon completion of the 0.21 miles the buggy drill would return back to Access Point A via the detour. From Access Point A the buggy drill would drill a short segment (a length of 110 feet) of DJ-3 to the south and return back to Access Point A. The buggy drill would then drive west and enter Highway 191 heading south for 1.18 miles and turn north on Flaming Gorge Road and re-enter the project area in 1.17 miles.

2. Once entering the project area, the buggy drill would travel 0.68 mile northwest on Flaming Gorge Road to Access Point B (Figure 1). The buggy would then access a segment of seismic line DJ-2 to the southwest of Flaming Gorge Road and travel 856 feet, during which shot holes would be drilled at specific points, then return to Access Point B. From Access Point B, the buggy drill would access a second segment of DJ-2 on the northeast side of Flaming Gorge Road and drive a length of 0.7 mile in a northeast direction along the line and return to Access Point B.

3. The buggy drill would continue in a northwest direction on Flaming Gorge Road for approximately 1.25 miles to Access Point C (Figure 1). The buggy drill would then access a segment of line DJ-1 to the southwest of Flaming Gorge Road and follow the line for 0.033 mile, during which shot holes would be drilled at specific points and return to Access Point C. From Point C the buggy would access a segment of DJ-1 to the northeast and follow the line for 0.7 mile, during which shot holes would be drilled at specific points, and return to Access Point C.

4. From Access point C the buggy would travel northwest on Flaming Gorge Road for approximately 1.58 miles and turn east (right) onto Iron Mountain Road, an improved dirt road. The buggy drill would continue east on Iron Mountain Road for approximately 0.76 mile to Access Point D (Figure 1). From Access Point D, the buggy would access a segment of DJ-1 to the southwest and drill shot holes for a length of 0.2 mile, then return to Access Point D. From Access Point D the buggy drill would access another segment of DJ-1 to the northeast of the road and traverse the seismic line for approximately 0.93 mile while drilling shot holes at specific points and arrive at Access Point E (Figure 1) on the DJ-3 Access Road.
5. From Access Point E the buggy drill would access a segment of DJ-1 to the northeast and drill shot holes along DJ-1 for approximately 0.26 mile and return to Access Point E.
6. From Access Point E, the buggy drill would travel north on DJ-3 Access Road for 1.35 miles to Access Point F (Figure 1). From Access Point F, the buggy drill would access a segment of seismic line DJ-3 to the north and drill for a length of 0.10 mile and return to Access Point F. From Access Point F, the buggy drill would access another segment of DJ-3 to the south and drill on the seismic line for approximately 0.2 mile and return to Access Point F.
7. The buggy drill would return south on DJ-3 Access Road for 1.55 miles to Access Point G (Figure 1), located on Iron Mountain Road. From Access Point G, the buggy drill would access a segment of seismic line DJ-3 to the south and drill shot holes on the seismic line for a length of 0.15 mile and return to Access Point G. From Access Point G, the buggy drill would access another segment of seismic line DJ-3 to the north and drill shot holes on the seismic line for approximately 0.10 mile until reaching Access Point H (Figure 1).
8. From Access Point H, the buggy drill would access a segment of DJ-3 to the north and drill shot holes on the seismic line for a length of 0.89 mile and return to Access Point H.
9. From Access Point H, the buggy drill would travel south from Access Point H on a closed BLM road for 0.25 mile to Iron Mountain Road, and then turn east on Iron Mountain Road for 0.09 mile, bypassing Access Point L, and then turn east from Iron Mountain Road onto Road DJ-3 Spur B and travel 0.19 mile to Access Point I2. From Access Point I, the buggy drill would access two segments of line DJ-3. The buggy drill would drill shot holes along the seismic line for 0.05 mile to the northwest and return to Access Point I. To the southeast of Access Point I, the buggy drill would drill shot holes along 0.16 mile of DJ-3 and return to Access Point I.
10. From Access Point I, the buggy drill would return 0.19 mile on Road DJ-3 Spur B, and turn south on Road DJ-2 Spur C for 0.27 mile to Access Point J. From Access Point J, the buggy drill would be able access two short segments of line DJ-2. The buggy drill would drill shot holes along the seismic line for 0.03 mile to the southwest, return to Access Point J, and drill shot holes along the seismic line for 0.03 mile northeast and return to Access Point J. From Access



	Seismic Line Access-Exit Points	Buggy Path road travel	Slope Detour Route
	Proposed Seismic Line Segments	uni-directional drill path	Staging Area
Roads	Shot Holes Eliminated	bi-directional drill path	Federal Leases

Figure 1: Proposed Seismic Buggy Route  
 Proposed North Dutch John Project  
 Azalea Oil Company  
 Sweetwater County, WY  
 1: 23,000  
 Rev. Date: 13 JUL 10

Point J, the buggy drill would travel 0.27 mile Easton Road DJ-2 Spur C, then turn west onto Staging Access Road for 0.04 mile to Access Point K.

11. At Access Point K, the buggy drill would be able to drill one or two holes on or in proximity to the Staging Access Road. From Access Point K, the buggy drill would travel 0.04 mile east, turn north and travel 0.04 mile to Access Point L.

12. From Access Point L, the buggy drill would access a segment of line DJ-2 to the northeast. The buggy drill would drill shot holes for approximately 1.48 miles along DJ-2 and arrive at Access Point M (Figure 1). From Access Point M, the buggy drill would traverse a short segment of line DJ-2 to the northeast and drill shot holes for approximately 0.07 mile and return to Access Point M.

13. From Access Point M, the buggy drill would travel south on road DJ-2 Spur A for 0.39 mile to Iron Mountain Road. Here, the buggy drill would turn west onto Iron Mountain Road and travels 0.35 mile. The buggy drill would then turn south onto DJ-1 Spur C for 0.17 mile to Access Point L (Figure 1). At Access Point N, the buggy drill would traverse and drill on two short segments of DJ-1. The buggy drill would drill approximately 0.06 mile of DJ-1 to the southwest and return to Access Point N, then drill shot holes to the northeast along 0.16 mile of DJ-1, and then return to Access Point N.

14. From Access Point N, the buggy drill would travel 0.16 mile north on DJ-1 Spur C to Iron Mountain Road. At Iron Mountain road the buggy drill would turn east and travel 1.09 miles, and turn south on DJ-1 Spur B for 0.12 mile to access Point O (Figure 1). At Access Point O, the buggy drill would travel and drill on approximately 0.27 mile of DJ-1 to the southwest and return to Point O. The buggy drill would then drill shot holes for approximately 0.48 mile on DJ-1 to the northeast and arrive at Access Point P (Figure 1). From Access Point P, the buggy drill would travel and drill approximately 0.13 mile on DJ-1 and return to Access Point P. From Access Point P, the buggy drill would travel north on road DJ-1 Spur A for 0.06 mile to reach Iron Mountain Road, from where the buggy drill would exit the project area or return to the staging area via Iron Mountain Road (Figure 1).

## **APPENDIX F**

### **PUBLIC COMMENTS AND RESPONSES**

**Public Comment Response Matrix – Azalea North Dutch John 2D Seismic Project EA**

<b>Number</b>	<b>Commenter</b>	<b>Resource</b>	<b>Comment</b>	<b>Response</b>
CMH 1	C. Michael Hunzie	Alternatives Selection	Urge BLM to adopt the No Action Alternative.	The BLM will consider all valid alternatives.
CMH 2	C. Michael Hunzie	Elk	Saw elk grazing in proposed staging area.	Potential impacts to elk are addressed in Section 4.7 of the EA.
CMH 3	C. Michael Hunzie	Off Road Vehicle Use	Urge BLM not to allow off road vehicle use.	Alternative 2 of the EA evaluates an alternative to the Proposed Action that does not allow off road vehicle use.
CMH 4	C. Michael Hunzie	Project Schedule	Suggest August 15 rather than September 1 should be project completion date for seismic activities.	BLM, in coordination with the Wyoming Game and Fish Department, considered several factors in establishing September 1 as the end date for seismic activities (although the shot point/receiver survey may be allowed to occur during July since this would be done on foot). September 1 was selected because it was determined that not allowing certain project activities to begin until August 1 was necessary due to potential raptor nesting in the project area. Since a 31-day window was determined necessary to provide a realistic timeframe to complete the project, August 1-31 was determined to be the most logical timeframe in considering multiple use of the area (i.e., wildlife, hunting, oil and gas exploration, etc.).
PS 1	Phillip Stanton	Environmental Impacts	If seismic project is successful it will lead to future land disturbance and habitat disruption.	Since Azalea has not submitted a proposal for the development of oil and gas wells in this area, any future development is speculative at this time and therefore not subject to review under this National Environmental Policy Act (NEPA) analysis. Any future proposals for development in the project area will be subject to environmental review under separate NEPA analysis.
JB 1	Joanna Bennett	Alternatives	Opposed to project.	The BLM will consider the No Action Alternative.
JB 2	Joanna Bennett	Hunting	Project would impact hunting in the area.	Potential impacts to hunting are evaluated in Section 4.11 of the EA.
JB 3	Joanna Bennett	Recreation	Project would impact recreation in the area.	Potential impacts to recreation are evaluated in Section 4.11 of the EA.
JB 4	Joanna Bennett	Wildlife	Wildlife would be driven from area due to project activities.	Potential impacts to wildlife are addressed in Section 4.7 of the EA.
CRV 1	Charles R. Vandervort	Alternatives Selection	Urge BLM to adopt the No Action Alternative.	See Response to Comment CMH 1.
CRV 2	Charles R. Vandervort	Wildlife	Believe the Sugarloaf Basin SMA should not be disturbed as it is an elk, deer, cougar, and bear habitat.	See Response to Comment JB 4.
CRV 3	Charles R. Vandervort	Hunting-	Elk hunters would be unsuccessful this fall due to elk leaving the area as a result of project activities.	Comment noted. See Response to Comment JB 2.
JDP 1	John D. Pallesen	Special Designations	Advises BLM to establish set asides south of Rock Springs from the western border of Flaming Gorge Reservoir-Little Mountain-Richards Mountain-Iron Mountain-Mellor Mountain-Aspen, and Pine to the Kinney Rim for wildlife concerns.	Comment noted. This request is beyond the scope of the current analysis.
JDP 2	John D. Pallesen	Alternatives Selection	Opposed to project.	Comment noted. See Response to Comment JB 1.
GJ/SJ 1	George and Sheila Jost	Alternatives Selection	Urge BLM to adopt Alternative 2.	See Response to Comment CMH 1.
GJ/SJ 2	George and Sheila Jost	Environmental Impacts	Supports preservation of the area.	Comment noted.
CS 1	Cory Shumway	Alternatives	Opposed to project.	Comment noted. See Response to Comment JB 1.
CS 2	Cory Shumway	Hunting	Project would impact hunting in the area.	Comment noted. See Response to Comment JB 2.
CS 3	Cory Shumway	Recreation	Project would impact recreation in the area.	Comment noted. See Response to Comment JB 3.
CS 4	Cory Shumway	Visual Resources	Project would impact visual resources in the area.	Potential impacts to visual resources are evaluated in Section 4.12 of the EA.
CS 5	Cory Shumway	Noise	Project would impact noise levels in the area.	Potential impacts to noise are evaluated in Section 4.9 of the EA.

CS 6	Cory Shumway	Environmental Impacts	Impacts from the project to hunting and recreation outweigh the potential benefits.	The BLM will consider all potential impacts from the proposed project before issuing a decision on whether to allow the project proponent to move forward with seismic exploration in association with their valid and existing lease rights.
DM 1	Dan Mulholland	Alternatives Selection	Urge BLM to adopt the No Action Alternative.	See Response to Comment CMH 1.
DM 2	Dan Mulholland	Miscellaneous	Project is unnecessary due to surplus of natural gas and existing wells in Wyoming.	The development needs of natural gas in Wyoming is beyond the scope of this EA.
DM 3	Dan Mulholland	Recreation	Project would impact recreation in the area.	Comment noted. See Response to Comment JB 3.
DM 4	Dan Mulholland	Hunting	Project would impact hunting in the area.	Comment noted. See Response to Comment JB 2.
WS 1	Warren Schreiner	Alternatives Selection	Area has already been explored for mineral development, and no more exploration should take place.	The project proponent has valid and existing lease rights, including the right to explore for oil and gas underlying their leases. Oil and gas exploration is considered an allowable activity in this area under the existing 1997 Green River RMP.
WS 2	Warren Schreiner	Conditions of Approval	Concern that as with a previously drilled test well in the Jarvis/Krause Marsh, future non-producing well pads will not be reclaimed and will be an eyesore for neighboring property owners.	Comment noted. BLM requires reclamation for the proposed project following the completion of project activities. Required reclamation measures are outlined in Section 2 of the EA. Any future proposals for development in the project area will be subject to environmental review and reclamation requirements determined by BLM.
WGFD 1	John Emmerich for Wyoming Game and Fish Department	Alternatives Selection	Recommend No Action Alternative until an ecosystem-level plan can be developed to protect the environmental resources of the Greater Little Mountain Ecosystem (LME).	See Response to Comment CMH 1.
WGFD 2	John Emmerich for Wyoming Game and Fish Department	Alternatives Selection	Urge BLM to adopt Alternative 2 if No Action Alternative is not selected.	See Response to Comment CMH 1.
WGFD 3	John Emmerich for Wyoming Game and Fish Department	Off Road Vehicle Use	Urge BLM not to allow off road vehicle use.	See Response to Comment CMH 3.
WGFD 4	John Emmerich for Wyoming Game and Fish Department	Environmental Impacts	Alternative 1 would result in new roads and additional disturbance to habitats.	The potential for disturbance due to the use of buggy drills is analyzed for various resources in Chapter 4 of the EA. No new roads are proposed.
GLMC 1	Craig Thompson for Greater Little Mountain Coalition	Alternatives Selection	Urge BLM to adopt the No Action Alternative.	See Response to Comment CMH 1.
GLMC 2	Craig Thompson for Greater Little Mountain Coalition	Cumulative Analysis	Inadequate analysis of potential future environmental impacts if project is successful.	Comment noted. See Response to Comment PS 1.
GLMC 3	Craig Thompson for Greater Little Mountain Coalition	Project Schedule	Project's planned completion is August 31, prior to start of rifle hunting season, but bow hunting season is scheduled to commence on August 15.	Comment noted. See Response to Comment CMH 4.
GLMC 4	Craig Thompson for Greater Little Mountain Coalition	Project Schedule	Suggest project completion prior to the commencement of bow hunting season on August 15.	Comment noted. See Response to Comment CMH 4.
GLMC 5	Craig Thompson for Greater Little Mountain Coalition	Water Resources	Use of off road vehicles for project would impact water resources.	Potential impacts to water resources are evaluated in Section 4.3 of the EA.
GLMC 6	Craig Thompson for Greater Little Mountain Coalition	Special Designations	Off road vehicle travel prohibited in Sugarloaf Basin Special Management Area.	The project is in conformance with the Green River RMP. Mineral exploration and development activities are allowed within the Sugarloaf Basin Management Area and the proponent has a valid, existing lease. The proposed action requires all motorized vehicles, with the exception of the buggy drill, to stay to existing roads and trails. To accommodate the seismic lines, the buggy drill will have to leave the existing roads/trails for short durations for a few holes. Site specific analysis indicates these short off-road trips will have minimal impact and are necessary for the

				exploration activity. Reclamation for all impacts from the proposed action is required and is discussed in Section 2.1.1.4.
GLMC 7	Craig Thompson for Greater Little Mountain Coalition	Conditions of Approval	Inadequate requirements for project completion prior to the commencement of hunting season.	Comment noted. See Response to Comment CMH 4.
GLMC 8	Craig Thompson for Greater Little Mountain Coalition	Conditions of Approval	Inadequate requirements for buffers around water resources.	Shot hole setbacks for water resources (i.e., springs, riparian areas, streams) are provided in Table 2-1 of the EA. Field surveys of the project area determined that no springs, riparian areas, or streams are located within these buffer areas in relation to proposed project activities.
GLMC 9	Craig Thompson for Greater Little Mountain Coalition	Conditions of Approval	Inadequate requirements for the completion of necessary natural resource surveys.	Applicable natural resource surveys were completed in accordance with federal and state laws and regulations, as well as BLM guidance. Results of these surveys have been incorporated into the EA.
GLMC 10	Craig Thompson for Greater Little Mountain Coalition	Conditions of Approval	Inadequate requirements for the protection of natural resources in general.	Measures to protect natural resources will be followed in accordance with federal and state laws and regulations. In addition, BLM and Azalea have developed design features and mitigation measures to further reduce potential impacts.
GLMC 11	Craig Thompson for Greater Little Mountain Coalition	Alternatives Selection	Urge BLM to adopt Alternative 2 if No Action Alternative is not selected.	See Response to Comment CMH 1.
GLMC 12	Craig Thompson for Greater Little Mountain Coalition	Off Road Vehicle Use	Urge BLM not to allow off road vehicle use.	See Response to Comment CMH 3.
GLMC 13	Craig Thompson for Greater Little Mountain Coalition	Water Resources	Urge BLM to require a one-quarter mile buffer around water resources.	See response to Comment GLMC 8.
GLMC 14	Craig Thompson for Greater Little Mountain Coalition	Special Status Species	Urge BLM to avoid sage grouse habitat.	As stated on page 31 of the EA, there are no occupied leks within 2 miles of the Project Area, the standard buffer area. Additionally, the Project Area is not within mapped sage grouse core areas. Finally, the Wyoming game and fish department does not provide data on season ranges for the sage grouse. The BLM has indicated that there are no habitat concerns in the area.
GLMC 15	Craig Thompson for Greater Little Mountain Coalition	Special Status Species	Urge BLM to consult with Wyoming Department of Fish and Game with regard to sage grouse habitat and timing of project activities.	Comment noted. See Response to Comment GLMC 14.
GLMC 16	Craig Thompson for Greater Little Mountain Coalition	Wildlife	Urge BLM to avoid big game birthing areas.	A review of the Wyoming Game and Fish data does not show any parturition areas for any big game species including moose within the Project Area. The nearest parturition area is located approximately 8 kilometers (5 miles) northeast of the Project Area. None of the data shows a moose birthing area to the south. Moose are generally found in or near riparian habitats, which are lacking in the Project Area.
GLMC 17	Craig Thompson for Greater Little Mountain Coalition	Conditions of Approval	Urge BLM to enforce resource mitigation requirements.	Several mitigation requirements have been developed by BLM to reduce potential impacts and these mitigations are described within the EA. In addition, several design features have been developed and proposed by the project proponent and are described in Section 2.1.2 of the EA.
GLMC 18	Craig Thompson for Greater Little Mountain Coalition	Public Participation	Request to attend future discussions between Azalea and seismic contractors.	To be an eligible cooperator, an agency must have jurisdiction by law or have special expertise regarding a component of the issue at hand. The BLM is unable to offer official cooperator agency status to non-governmental organizations; therefore, interested parties are allotted the opportunity to participate in decisions through the public comment period(s).

GLMC 19	Craig Thompson for Greater Little Mountain Coalition	Wildlife	Request to see results of wildlife studies completed in preparation for planned project.	The wildlife reports are part of the administrative record and case file for this EA and are available for review upon formal request through the Freedom of Information Act.
GLMC 20	Craig Thompson for Greater Little Mountain Coalition	Plants	Request to see results of plant studies completed in preparation for planned project.	The plant survey report is part of the administrative record and case file for this EA and is available for review upon formal request through the Freedom of Information Act.
GLMC 21	Craig Thompson for Greater Little Mountain Coalition	Conditions of Approval	Urge BLM to require emergency plans and equipment to minimize environmental impact of potential accidents resulting from project.	The emergency response plan and additional emergency response measures are described in sections 2.1.2.4 and 2.1.2.8 of the EA.
GLMC 22	Craig Thompson for Greater Little Mountain Coalition	Water Resources	Urge BLM to require a plan to deal with the effects of potential project-related contamination of groundwater resources.	Refer to sections 2.1.2.4 and 4.3.1.2 for discussions of potential effects to groundwater.
GLMC 23	Craig Thompson for Greater Little Mountain Coalition	Conditions of Approval	Request for Azalea to establish a bond for compensation of individuals affected by environmental impacts of potential accidents resulting from project.	The proponent has an active bond on file with the BLM (RLB0010405).
GLMC 24	Craig Thompson for Greater Little Mountain Coalition	Environmental Impact	Believe an environmental impact statement is warranted.	The EA was prepared to determine whether the proposed action or alternatives would result in significant impacts. Based on the analysis in the EA, it has been determined that the project would not result in significant impacts to any resource and therefore an EIS is determined not to be necessary. A Finding of No Significant Impact (FONSI) is being prepared.
WWF 1	Joy Bannon for Wyoming Wildlife Federation	Consistency with Green River RMP	Project is in direct conflict with the Green River Resource Management Plan (RMP) Record of Decision (ROD).	See Response to Comment GLMC 6.
WWF 2	Joy Bannon for Wyoming Wildlife Federation	Hunting	Project would impact hunting in the area.	Comment noted. See Response to Comment JB 2.
WWF 3	Joy Bannon for Wyoming Wildlife Federation	Wildlife	Elk habitat would be impacted from project-related disturbance to elk security cover.	See Response to Comment JB 4.
WWF 4	Joy Bannon for Wyoming Wildlife Federation	Special Status Species	Project would impact sage grouse habitat and nesting activities.	Potential impacts to special status species are evaluated in Section 4.8 of the EA. Also, see response to comment GLMC 14.
WWF 5	Joy Bannon for Wyoming Wildlife Federation	Special Designations	Project is in direct conflict with objectives of the Sugarloaf Basin Special Management Area.	See response to comment GLMC 6.
WWF 6	Joy Bannon for Wyoming Wildlife Federation	Cumulative Impacts	Urge BLM to develop a plan for the Greater Little Mountain Ecosystem (LME) to address cumulative impacts prior to project approval.	Cumulative impacts for mineral leasing were considered in the Final EIS for the Green River RMP. The Record of Decision for the RMP allows for mineral leasing and related exploration and development activities in the Sugarloaf Basin Management Area with appropriate mitigation requirements applied to protect all other resource values.
WWF 7	Joy Bannon for Wyoming Wildlife Federation	Alternatives Selection	Urge BLM to adopt the No Action Alternative.	See Response to Comment CMH 1.
WWF 8	Joy Bannon for Wyoming Wildlife Federation	Special Status Species	Urge BLM to consult with Wyoming Department of Fish and Game with regard to sage grouse habitat and timing of project activities.	Comment noted. Early and regular communication with Wyoming Department of Game and Fish has occurred throughout the EA process. See Response to Comment GLMC 14.
WWF 9	Joy Bannon for Wyoming Wildlife Federation	Special Status Species	Recommend avoidance of adequate and suitable sage grouse habitat.	Comment noted. See Response to Comment GLMC 14.
WWF 10	Joy Bannon for Wyoming Wildlife Federation	Wildlife	Project would contribute to wildlife displacement, harassment, and illegal kills.	Comment noted. See Response to Comment JB 2.
WWF 11	Joy Bannon for Wyoming Wildlife Federation	Alternatives Selection	Request BLM to adopt Alternative 2 to reduce the potential for wildlife displacement, harassment, and illegal kills.	See Response to Comment CMH 1.
WWF 12	Joy Bannon for Wyoming	Wildlife	Request the most current data on impacts to wildlife from buggy	Impacts to wildlife for all alternatives (including buggy drilling) are

	Wildlife Federation		drilling if project is approved.	described in Sections 4.7 and 4.8. No impacts beyond those disclosed in the EA are expected.
WWF 13	Joy Bannon for Wyoming Wildlife Federation	Monitoring	Request BLM to provide a landscape scale environmental compliance plan that accounts for enforcement of monitoring, compliance, and remediation for impacted resources.	The proposed action and alternatives are in compliance with the Wyoming BLM Reclamation Policy (IM WY-2009-022). In addition to design features of the proposed action/alternatives, specific reclamation actions are discussed in Section 2.1.1.4. Landscape scale environmental compliance plans are outside the scope of this EA.
WWF 14	Joy Bannon for Wyoming Wildlife Federation	Wildlife	Request an all-encompassing analysis of seasonal timing restrictions and development plan with regard to all wildlife.	Seasonal wildlife restrictions are available as Table 1.1 in the EA. Impacts to wildlife from the implementation of the proposed action and alternatives are discussed in Sections 4.7 and 4.8.
WWF 15	Joy Bannon for Wyoming Wildlife Federation	Wildlife	Request a mitigation plan with a threshold matrix with regard to wildlife, habitats, and stream changes.	See response to comment WWF 13.
WWF 16	Joy Bannon for Wyoming Wildlife Federation	Special Status Species	Request a determination of cumulative effects of the project on sensitive, threatened, and endangered species whose habitats may be impacted by the project.	See Section 5.2.8 of the EA.
WWF 17	Joy Bannon for Wyoming Wildlife Federation	Project Schedule	Suggest a project completion date of August 10, 5 days prior to the commencement of bow hunting season on August 15.	See Response to Comment CMH 4.
WWF 18	Joy Bannon for Wyoming Wildlife Federation	Special Status Species	Urge BLM to avoid sage grouse habitat.	See Response to Comment GLMC 14.
WWF 19	Joy Bannon for Wyoming Wildlife Federation	Wildlife	Urge BLM to avoid big game birthing areas.	See Response to Comment GLMC 16.
WWF 20	Joy Bannon for Wyoming Wildlife Federation	Conditions of Approval	Urge BLM to implement and enforce resource mitigation requirements.	See Response to Comment GLMC 17.
WWF 21	Joy Bannon for Wyoming Wildlife Federation	Project Schedule	Project's planned completion is August 31, prior to start of rifle hunting season, but bow hunting season is scheduled to commence on August 15.	See Response to Comment CMH 4.
WWF 22	Joy Bannon for Wyoming Wildlife Federation	Project Schedule	Urge BLM to make no exceptions for continuance of project activities after August 10 due to hunting season.	See Response to Comment CMH 4.
WWF 23	Joy Bannon for Wyoming Wildlife Federation	Socioeconomics	Project would have local social and economic impacts.	Due to the small scale and short duration of the proposed project, any social and economic effects would be minimal and therefore are not analyzed in detail in this EA.
WWF 24	Joy Bannon for Wyoming Wildlife Federation	Hunting	Project would impact elk hunting.	See Response to Comment JB 2.
WWF 25	Joy Bannon for Wyoming Wildlife Federation	Alternatives Selection	Urge BLM to adopt Alternative 2 if No Action Alternative is not selected.	See Response to Comment CMH 1.
WWF 26	Joy Bannon for Wyoming Wildlife Federation	Weeds	Project would impact native vegetation by spreading invasive species.	Potential impacts to vegetation are evaluated in Section 4.4 of the EA.
WWF 27	Joy Bannon for Wyoming Wildlife Federation	Invasive and Nonnative Plant Species	Request routine cleaning of all equipment to reduce potential for spread of invasive species.	Cleaning of equipment is included as an applicant committed measure. Please see section 2.1.2.6.
WWF 28	Joy Bannon for Wyoming Wildlife Federation	Invasive and Nonnative Plant Species	Request daily washing of all project-related vehicles, and particularly buggy drills due to their planned off road use.	Cleaning of equipment, including the buggy drills, is adequately addressed in Section 2.1.2.6.
WWF 29	Joy Bannon for Wyoming Wildlife Federation	Biological Surveys	Request inclusion of additional details on biological surveys in Chapter 2 of document, such as what biological surveys would be conducted and which species would be surveyed.	Additional details on biological surveys are provided in sections 2.1.2.6 and 2.1.2.7 as well as in the appropriate resource sections of the EA.
WWF 30	Joy Bannon for Wyoming Wildlife Federation	Wildlife	Request Azalea to use a qualified consultant to conduct wildlife	Qualified consultants performed the following wildlife surveys: pygmy

	Wildlife Federation		studies on juniper obligate bird species, midget faded rattlesnake, ornate tree lizards and northern plateau lizards, pinyon mouse, canyon mouse, and cliff chipmunk.	rabbit, midget faded rattlesnake, juniper obligate species. BLM elected not to require surveys for ornate tree lizards and northern plateau lizards, pinyon mouse, canyon mouse, and cliff chipmunk.
WWF 31	Joy Bannon for Wyoming Wildlife Federation	Wildlife	Request to see results of wildlife studies prior to project approval.	The survey report for wildlife species is on file at the BLM Rock Springs Field Office as part of the administrative record and case file.
WWF 32	Joy Bannon for Wyoming Wildlife Federation	Water Resources	Cumulative effects of project would impact streams.	Potential cumulative impacts to wetlands and riparian areas are evaluated in Section 5.2 of the EA.
WWF 33	Joy Bannon for Wyoming Wildlife Federation	Water Resources	Ground and surface water resources could be impacted by contamination due to storage of project-related hazardous materials at staging areas.	Potential impacts related to water resources, as well as from the storage and use of hazardous materials, are addressed in sections 4.3, 4.15, 5.2.2, and 5.2.15.
WWF 34	Joy Bannon for Wyoming Wildlife Federation	Hazardous and Solid Wastes	Spills of hazardous materials related to project activities would impact natural resources.	See response to comment WWF 33.
WWF 35	Joy Bannon for Wyoming Wildlife Federation	Vegetation	Project would impact vegetation.	Comment noted. See Response to Comment WWF 26.
WWF 36	Joy Bannon for Wyoming Wildlife Federation	Soils	Project would impact soils.	Potential impacts to soils are evaluated in Section 4.2 of the EA.
WWF 37	Joy Bannon for Wyoming Wildlife Federation	Consistency with Green River RMP ROD	Selection of Alternative 1 or 2 would put BLM out of compliance with the objectives of the Sugarloaf Basin SMA and the goals of the Green River RMP.	See Response to Comment GLMC 6.
WWF 38	Joy Bannon for Wyoming Wildlife Federation	Water Resources	Recommend a comprehensive analysis of subsurface hydrology including the effects of project activities on aquifers.	The information provided in the EA is believed to be the most comprehensive information available for subsurface hydrology in the project area. Since this comment does not provide additional literature sources that could be considered more comprehensive than that provided in the EA, or indicate where the analysis of impacts to groundwater is deficient, no changes have been made to the EA.
WWF 39	Joy Bannon for Wyoming Wildlife Federation	Hazardous and Solid Wastes	Recommend the implementation of a spill detection monitoring system within project area.	Spill response is adequately addressed in Section 2.1.1.6. A spill detection monitoring system is not required for the minimal quantities of hazardous fluids expected for the proposed action or alternatives.
WWF 40	Joy Bannon for Wyoming Wildlife Federation	Wetlands and Riparian Areas	Recommend a comprehensive analysis of waterways and drainages crossing or in the vicinity of roads and staging areas.	See response to comment GLMC 8.
WWF 41	Joy Bannon for Wyoming Wildlife Federation	Water Resources	Recommend an assessment of project-related impacts to water resources, including contamination, demands on water, and reasonably foreseeable impacts and baseline sampling, prior to project approval.	Impacts to water resources and riparian areas are adequately discussed in Sections 4.3 and 4.5, respectively. Baseline sampling is not required.
WWF 42	Joy Bannon for Wyoming Wildlife Federation	Water Resources	Urge avoidance of all surface water resources with a one-quarter mile buffer.	See response to comment GLMC 8.
WWF 43	Joy Bannon for Wyoming Wildlife Federation	Water Resources	Recommend restrictions on crossing streams, placement of staging areas, and containment of equipment with regard to protection of water resources.	See response to comment GLMC 8.
WWF 44	Joy Bannon for Wyoming Wildlife Federation	Reclamation	Request BLM Authorized Officer (AO) document damage to existing roads, two-tracks, and OHV trails to account for additional reclamation work.	See Section 2.1.1.4 of the EA.
WWF 45	Joy Bannon for Wyoming Wildlife Federation	Conditions of Approval	Recommend reclamation of all areas containing seismic survey equipment in any form.	See Section 2.1.1.4 of the EA.
WWF 46	Joy Bannon for Wyoming Wildlife Federation	Environmental Impacts	Question the technical capability of the BLM Rock Springs Field Office to effectively analyze and assess all impacts to environmental	Comment noted.

			resources resulting from the proposed project, including cumulative impacts.	
WWF 47	Joy Bannon for Wyoming Wildlife Federation	Environmental Impacts	Impacts from the project to hunting and recreation outweigh the potential benefits.	See response to comment CS 6.
WWF 48	Joy Bannon for Wyoming Wildlife Federation	Special Designations	Urge BLM to make no exceptions for surface disturbing activities within the Sugarloaf Basin SMA.	See response to comments CS 6 and WS 1.
WWF 49	Joy Bannon for Wyoming Wildlife Federation	Public Participation	Request a presence during future discussions between Azalea and seismic contractors.	See response to comment GLMC 18.
TU 1	Cathy Purves for Trout Unlimited	Cumulative Impacts	Project will lead to unacceptable cumulative and long-term impacts.	See response to comment CS 6.
TU 2	Cathy Purves for Trout Unlimited	Alternatives Selection	Urge BLM to adopt the No Action Alternative.	See Response to Comment CMH 1.
TU 3	Cathy Purves for Trout Unlimited	Environmental Impacts	Urge BLM to develop a comprehensive environmental impact statement for the Greater Little Mountain Ecosystem (LME) to address cumulative impacts prior to project approval.	See response to comment WWF 6.
TU 4	Cathy Purves for Trout Unlimited	RMP Revision	Request a postponement of project approval until an RMP revision is complete.	The proposed action and alternatives are in compliance with the existing Green River RMP, which allows for mineral development in the Sugarloaf Basin Management Area. The RMP Revision process, once begun, is expected to take a minimum of four years for completion. Due to valid existing lease rights, the BLM will continue to make decisions on a case-by-case basis in accordance with the existing Green River RMP until a Record of Decision for the revised RMP is signed.
TU 5	Cathy Purves for Trout Unlimited	Project Schedule	August 31 project completion date is unacceptable, project needs to be completed prior to the start of bow hunting season for pronghorn (August 15).	See Response to Comment CMH 4.
TU 6	Cathy Purves for Trout Unlimited	Project Schedule	Project schedule/timeframe needs to be more specific and consistent in EA document.	Project schedule/timeframes made more consistent throughout EA.
TU 7	Cathy Purves for Trout Unlimited	Wetlands and Riparian Areas	Request increase in shot hole setback designation for streams from 100 feet to 500 feet in order to achieve adequate protection of resources.	Shot hole setbacks will remain as described in Table 2-1, which are in compliance with the 1997 Green River RMP.
TU 8	Cathy Purves for Trout Unlimited	Project Schedule/Hunting	Project's planned completion is August 31, prior to start of rifle hunting season, but bow hunting season is scheduled to commence on August 15.	See Response to Comment CMH 4.
TU 9	Cathy Purves for Trout Unlimited	Project Schedule/Hunting	Recommend the completion of project activities three days to one week prior to commencement of archery hunting season.	See Response to Comment CMH 4.
TU 10	Cathy Purves for Trout Unlimited	Hunting	Concern for big game dispersal and hunter safety with regard to project activity timeframe.	See Response to Comment CMH 4. See Section 4.11 of the EA for information on potential impacts to big game dispersal with regard to hunting. Due to lack of detail regarding concerns for hunter safety, it is unclear what these concerns are.
TU 11	Cathy Purves for Trout Unlimited	Hunting	Recommend additional planning and increased media for notification of public of project activities prior to project commencement for benefit of public safety, especially with regard to hunters.	Public safety is adequately addressed in Section 2.1.2.8.
TU 12	Cathy Purves for Trout Unlimited	Conditions of Approval	Recommend BLM require carpooling by project staff to minimize impacts of increased traffic.	Carpooling would be utilized. As shown in Table 2-2 of the EA, under Alternative 1, there would be two crew members who would travel to the field each day via one truck. Under Alternative 2, Table 2-2 indicates that the 15 person crew would travel to the project area via three transport

				vehicles.
TU 13	Cathy Purves for Trout Unlimited	Project Description	Table 2-2 provides an inaccurate account of number of project personnel.	As the title states, Table 2-2 is a comparison between Alternatives A and B for the shot hole drilling phase as that is the only phase of the project where personnel and vehicles/equipment would differ between the two alternatives. As such, it is an accurate account of the personnel that would be used (i.e., drillers, explosives, etc.) based on information provided by the seismic contractor. Sections 2.1.1.1 and 2.1.1.3 describe personnel and equipment numbers which are applicable to either alternative (Section 2.1.1.1 has been updated to state that two personnel would be used for the shot hole/receiver survey) for the survey and recording phases. Section 2.1.1.4 has been updated to state that two members of the 20 person recording crew would be responsible for reclamation/clean up. The project phases are not anticipated to overlap; language to this effect has been added to section 2.1.1.
TU 14	Cathy Purves for Trout Unlimited	Off Road Travel	Recommend restriction on off road travel for project activities due to highly sensitive and unstable soils in project area.	See Response to Comment CMH 3.
TU 15	Cathy Purves for Trout Unlimited	Conditions of Approval	Recommend careful monitoring of staging area for project-related impacts including hazardous material spills, compaction, and spread of invasive species.	See Sections 2.1.1.4 and 2.1.1.6 of the EA.
TU 16	Cathy Purves for Trout Unlimited	Conditions of Approval	Recommend use of most up-to-date reclamation technologies and careful monitoring of reclamation activities.	. See response to comment WWF 13.
TU 17	Cathy Purves for Trout Unlimited	Water Resources	Recommend field survey of surface water drainage prior to start of project activities.	During surveys for sensitive resources in June 2010, TEC biologists reviewed certain water features in the area. Potential seep areas were observed and none of the potential seeps contained any of the characteristics of seeps, including moist soils or the presence of water at the surface. Also, the general hydrology of the areas typically precludes springs and seeps from forming. Gap vegetation data shows scattered pockets of Western Great Plains Riparian Woodlands and Shrublands along portions of the seismic lines. When visited, these areas did not contain any riparian vegetation nor was there a source of water present that would support riparian vegetation. Vegetation in these areas is composed primarily of sagebrush and other shrubs, including rabbitbrush. Sections 3.5 and 4.5 of the EA have been updated to incorporate this information.
TU 18	Cathy Purves for Trout Unlimited	Water Resources	Project contaminants could impact surface water.	See Response to Comment GLMC 5.
TU 19	Cathy Purves for Trout Unlimited	Soils	Project would impact soils, causing erosion and disbursement.	See Response to Comment WWF 36.
TU 20	Cathy Purves for Trout Unlimited	Special Status Species	Concern that information from survey data for Colorado River cutthroat trout and sensitive amphibian species is no longer up-to-date or as accurate as annual incidence of occurrence.	Information on the presence of Colorado River cutthroat trout and sensitive amphibian species were obtained from the Wyoming Natural Diversity Database and from conversations with BLM staff. Additionally, there is a lack of waterbodies, wetlands, and riparian areas in the project area to support populations of these species.

TU 21	Cathy Purves for Trout Unlimited	Special Status Species	Recommend survey of West Spring Creek for presence of sensitive fish and/or amphibian species.	Fisheries (in relation to West Spring Creek) are adequately addressed in Sections 3.7.3 and 4.7.1.4. A survey for the presence of fish in West Spring Creek is not necessary due to both the lack of perennial flows and the lack of expected impacts to surface water.
TU 22	Cathy Purves for Trout Unlimited	Cumulative	Request the inclusion of recently occurring oil and gas projects in the description of existing land use.	Recently occurring oil and gas projects are described as appropriate in Sections 1.1 and 5.1 of the EA.
TU 23	Cathy Purves for Trout Unlimited	Water Resources	Project activities could impact groundwater resources.	See Response to Comment GLMC 5.
TU 24	Cathy Purves for Trout Unlimited	Water Resources	Request analysis of potential for shot holes to perforate aquifers.	The Little Mountain area to the east of the Project Area is a groundwater recharge area, and is known to have near surface groundwater. The Project Area itself is west of the flank of Little Mountain and as a result, the groundwater is anticipated to be deeper. The presence of Iron Mountain in the center of the Project Area would also influence and likely reduce probability of encountering groundwater at depths above 50 below the ground surface. However, the potential exists for groundwater to be encountered by the drill rigs. In the event that groundwater is encountered the operator would not place a shot in the hole, and would backfill the shot hole with a bentonite mixture to ensure that the groundwater table is not influenced by a groundwater table perforation.
TU 25	Cathy Purves for Trout Unlimited	Water Resources	Request inclusion of updated groundwater data in document.	Based on a review of the WOGCC online file system, no relevant data regarding the groundwater table associated with nearby wells was identified. The best source of information identified is the USGS publication entitled "Water Resources of Sweetwater County, Wyoming" by Jon P. Mason and Kirk A. Miller. This publication and other data sources were used in the preparation of the groundwater resource sections of this EA.
TU 26	Cathy Purves for Trout Unlimited	Water Resources	Request a complete survey of springs in the project area due to significant moisture events of past two years.	See response to comment TU 17.
TU 27	Cathy Purves for Trout Unlimited	Vegetation	Request to see results of plant studies completed in preparation for planned project prior to start of project activities.	The survey report that includes sensitive plants is on file at the BLM Rock Springs Field Office.
TU 28	Cathy Purves for Trout Unlimited	Wetlands and Riparian Areas	Request to see results of wetland and riparian areas studies completed in preparation for planned project prior to start of project activities.	The survey report that includes survey for seeps, springs, and riparian areas is on file at the BLM Rock Springs Field Office.
TU 29	Cathy Purves for Trout Unlimited	Wetlands and Riparian Areas	Several areas within project area could be considered wetlands based on increased precipitation of past two years.	No potential wetland areas have been identified in the project area.
TU 30	Cathy Purves for Trout Unlimited	Wetlands and Riparian Areas	Recommend avoidance of wetland and playa areas.	No potential wetland and playa areas have been identified in the project area.
TU 31	Cathy Purves for Trout Unlimited	Invasive and Nonnative Plant Species	Request a formal mapping and inventory of weeds in project area.	A mapping and inventory of weeds was not required to be completed per the BLM.
TU 32	Cathy Purves for Trout Unlimited	Conditions of Approval	Request the establishment of a weed management plan for project vehicles with regard to proposed project.	Invasive and Non-native Plant Species are adequately addressed in Sections 3.6 and 4.6.
TU 33	Cathy Purves for Trout Unlimited	Big Game	Inquire as to the date of elk migration information contained in document.	The data was provided by the Wyoming Game and Fish Department
TU 34	Cathy Purves for Trout Unlimited	Big Game	Inquire as to whether updated Wyoming Game and Fish Department information shows elk migration corridors in project area.	Elk migration corridors are shown on Figure 3-2 of the EA.
TU 35	Cathy Purves for Trout Unlimited	Big Game	Project activities would impact elk.	See Response to Comment JB 4.

TU 36	Cathy Purves for Trout Unlimited	Big Game	Request the inclusion of updated moose habitat occupancy data.	The most recent data from the Wyoming Game and Fish Department was used. See response to comment GLMC 16.
TU 37	Cathy Purves for Trout Unlimited	Big Game	Disagree with analysis in the EA with regard to project impacts on big game species.	Comment noted. The comment does not substantiate their disagreement with the information provided in the EA and does not indicate specific studies or information to support their position. Therefore, no changes were made to the EA.
TU 38	Cathy Purves for Trout Unlimited	Wildlife and Fisheries	Question the viability of avoidance of migratory bird habitat.	Discussion in Section 4.7.1.3 has been clarified to state that mountain mahogany and junipers would not be removed.
TU 39	Cathy Purves for Trout Unlimited	Wildlife and Fisheries	Inquire as to the date of the last fish or stream survey completed in the project area.	No fish bearing streams occur in the project area and streams are either intermittent or ephemeral. Wetland and riparian areas along the seismic lines were visited during wildlife surveys in June 2010.
TU 40	Cathy Purves for Trout Unlimited	Wetlands and Riparian Areas	Spring Creek is included in the Environmental Consequences section of the document, but not in the Affected Environment section.	Section 3.7.3 of the EA has been updated to include Spring Creek.
TU 41	Cathy Purves for Trout Unlimited	Special Status Species	Request to see results of special status species surveys completed in preparation for planned project prior to start of project activities.	The survey report that includes survey for special status species is on file at the BLM Rock Springs Field Office as part of the administrative record and case file.
TU 42	Cathy Purves for Trout Unlimited	Special Status Species	The document contains conflicting data on the presence of sage grouse leks and breeding areas within the project area, and may need a more detailed assessment of the resource.	Additional information provided in Section 3.8.1.1 to clarify sage grouse information.
TU 43	Cathy Purves for Trout Unlimited	Special Status Species	Inquire as to the date of lek information contained in the document.	Sage-grouse lek data includes the locations of leks through 2007.
TU 44	Cathy Purves for Trout Unlimited	Wildlife and Fisheries	Request to see results of migratory birds and raptors surveys.	Surveys for juniper obligate species were performed and the survey report is on file at the BLM Rock Springs Field Office. Raptor surveys were not performed since the project would occur outside of the raptor nesting season.
TU 45	Cathy Purves for Trout Unlimited	Special Status Species	Request that a date for the last raptor nest site survey within and around the project area be included in the document.	See response to comment TU 44.
TU 46	Cathy Purves for Trout Unlimited	Wildlife and Fisheries	Project may not comply with July 31 timing restriction and half-mile buffer avoidance area with regard to raptor nest sites, if this resource is found to be present in project area.	See responses to comments TU 44 and CMH 4.
TU 47	Cathy Purves for Trout Unlimited	Project Schedule	Inconsistent information for start dates for project throughout the document.	The project schedule dates have been clarified throughout the EA.
TU 48	Cathy Purves for Trout Unlimited	Special Status Species	Recommend completion of survey for sensitive mammal species prior to start of project activities.	The survey reports that include pygmy rabbit are on file at the BLM Rock Springs Field Office.
TU 49	Cathy Purves for Trout Unlimited	Special Status Species	Project could impact Townsend's big-eared bat, if found to be present in project area.	Impacts to bat species are discussed in section 4.8.1.1.
TU 50	Cathy Purves for Trout Unlimited	Special Status Species	Request to see results of Midget faded rattlesnake survey completed in preparation for proposed project.	A survey for midget faded rattlesnake was completed during the week of July 5, 2010. The survey reports will be on file at the BLM Rock Springs Field Office.
TU 51	Cathy Purves for Trout Unlimited	Special Status Species	Request that project staff be given general information and identification measures for midget faded rattlesnakes, and that they be directed not to kill rattlesnakes.	If midget faded rattlesnakes are identified in the project area, appropriate mitigation measures will be implemented to minimize potential impacts.
TU 52	Cathy Purves for Trout Unlimited	Special Status Species	Request completion of survey for Northern leopard frogs in ephemeral, perennial, and intermittent areas identified in the document.	There are no reported sightings of the northern leopard frog in the project area and the BLM elected not to conduct surveys for amphibian species due to a lack of wetlands and riparian habitat in the project area.
TU 53	Cathy Purves for Trout	Wildlife and Fisheries	Roundtail chub, Flannelmouth sucker, and Bluehead sucker fish	These species have been added to Table 3-4. However, as stated

	Unlimited		species are included in the Environmental Consequences section of the document, but not in the Affected Environment section.	elsewhere, due to the lack of habitat for fish in the project area, no impacts would occur.
TU 54	Cathy Purves for Trout Unlimited	Special Status Species	Recommend a more detailed assessment of Colorado River fish in document.	See additional language provided in Section 4.8.1.1 of the EA.
TU 55	Cathy Purves for Trout Unlimited	Water Resources	Document lacks detailed discussion of buffer areas with regard to surface water resources.	There are not any perennial stream channels or riparian areas near the seismic survey lines, and as a result, these buffers were not discussed in the EA. If there were, the appropriate buffers would be applied and a discussion of their use and relevance would be discussed.
TU 56	Cathy Purves for Trout Unlimited	Special Status Species	Table 1-1 does not identify spawning times, or sensitive or special status fish species.	Section 3.7.3 discloses that due to a lack of habitat, there are no fisheries occurring within the project area. Sensitive fish species are discussed in section 3.8.
TU 57	Cathy Purves for Trout Unlimited	Special Status Species	Cooperative effort for landscape management coordination appears lacking based on any reference to <u>Conservation Agreement for Colorado River Cutthroat Trout in the States of Colorado, Utah, and Wyoming.</u>	As stated in Section 3.8.2.5 of the EA, the nearest known population is 5 miles from the project area and no habitat for fisheries exist in the project area so the project would not affect this species, therefore the Conservation Agreement is beyond the scope of the EA.
TU 58	Cathy Purves for Trout Unlimited	Special Status Species	Document lacks detailed discussion of Colorado River cutthroat trout in landscape.	See response to comments TU 56 and TU 57.
TU 59	Cathy Purves for Trout Unlimited	Special Status Species	Question accuracy of distribution of Colorado River cutthroat trout as presented in document.	Colorado River Cutthroat Trout do not occur in the project area, and are not known to occur in the two nearest streams (Krause Marsh Creek and Spring Creek)
TU 60	Cathy Purves for Trout Unlimited	Special Status Species	Request that project staff be given results of sensitive plant species survey in order to protect thistle from being treated as a weed.	The survey report that includes survey for special plants is on file at the BLM Rock Springs Field Office.
TU 61	Cathy Purves for Trout Unlimited	Recreation	Title of Recreation section should include Angling.	Since fishing does not occur in the project area, it is beyond the scope of this EA.
TU 62	Cathy Purves for Trout Unlimited	Dispersed Recreation	Project area access road also access road for fishing areas in Flaming Gorge and other local streams.	Since fishing does not occur in the project area, it is beyond the scope of this EA.
TU 63	Cathy Purves for Trout Unlimited	Hunting	Update Table 3-5 to reflect archery hunting season.	Table has been updated to provide bow hunting seasons.
TU 64	Cathy Purves for Trout Unlimited	Hunting	Archery hunting season start date not mentioned in document.	See response to comment TU 63.
TU 65	Cathy Purves for Trout Unlimited	Project Schedule	Request that no seismic activities take place during hunting season.	Comment noted. See Response to Comment CMH 4.
TU 66	Cathy Purves for Trout Unlimited	Special Designations	Recommend BLM upgrade Sugarloaf Basin SMA to an ACEC.	ACEC designation is a land use planning decision and is beyond the scope of this EA. The proposed action and alternatives are in compliance with the existing land use management plan (1997 Green River RMP).
TU 67	Cathy Purves for Trout Unlimited	Minerals Leasing	Request BLM evaluation and implementation of Instruction Memorandum (IM) No. 2010-177 on oil and gas leasing reform prior to current document's ROD, FONSI, or approval.	See response to comment CS 6.
TU 68	Cathy Purves for Trout Unlimited	Special Designations	Seismic activities will negatively impact SMA resources.	Potential impacts to special designations are evaluated in Section 4.13 of the EA.
TU 69	Cathy Purves for Trout Unlimited	Conditions of Approval	Request BLM develop and enact control measures upon project approval.	Comment noted. Several design features and mitigation measures have been developed and are described in the EA.
TU 70	Cathy Purves for Trout Unlimited	Cumulative Impacts	Request inclusion of wind development, oil shale development, and potential solar development in Cumulative Impacts section of document.	At present, the BLM has not received any proposals for wind, oil shale, or solar projects in the project area. Therefore, any discussion of these types of projects for cumulative impacts would be speculative and are not included for analysis.

TU 71	Cathy Purves for Trout Unlimited	Cumulative Impacts	Request further discussion of Devon's Baxter project in Cumulative Impacts section of document.	The Baxter EA is described in Section 5.1 of the EA and impacts are described in a cumulative context throughout section 5.2. Additional details specific to the Baxter project are available in the project specific EA on file at the BLM Rock Springs Field Office.
TU 72	Cathy Purves for Trout Unlimited	Cumulative Impacts	Request additional detail in discussion of soils in Cumulative Impacts section of document.	See revised language in the cumulative impacts section (5.2.1).
TU 73	Cathy Purves for Trout Unlimited	Invasive and Nonnative Plant Species	Request a more detailed discussion of invasive and nonnative plant species in document.	Chapter 3 discusses noxious weeds that have the potential to occur in the project area while Chapter 4 discusses how the alternatives may impact weeds.
TU 74	Cathy Purves for Trout Unlimited	Invasive and Nonnative Plant Species	Include long-term impacts of displacement of wild forage to wildlife including sensitive and special status plant species in invasive and nonnative plant species section.	Added language to Section 4.6.1 to describe impacts on forage.
TU 75	Cathy Purves for Trout Unlimited	Socioeconomics	Project would have local social and economic impacts.	Due to the small scale and short duration of the proposed project, any social and economic effects would be minimal and therefore are not analyzed in detail in this EA.
TU 76	Cathy Purves for Trout Unlimited	Special Designations	Project is in direct conflict with objectives of the Sugarloaf Basin Special Management Area.	See Response to Comment GLMC 6.
TU 77	Cathy Purves for Trout Unlimited	Cumulative Analysis	Inadequate analysis of potential future environmental impacts if project is successful.	Comment noted. See Response to Comment PS 1.
TU 78	Cathy Purves for Trout Unlimited	Streams and Fisheries	Request inclusion of map that defines streams and fish habitat in document.	Map 3-1 lists the waterbodies in the project area. A specific map defining fish habitat in the project area is not included as the project area does not support any fisheries (Section 3.7.3)
TU 79	Cathy Purves for Trout Unlimited	Conditions of Approval	Conditions of Approval list inadequate compared to commitments outlined in body of document.	Any actions/commitments that are part of the proposed action or alternatives are not separately listed as a Condition of Approval (COA). If approved, the proposed action or alternative will be implemented as described in the EA, with all committed actions. COAs include only actions that are not considered part of the proposed action or alternative selected.
TU 80	Cathy Purves for Trout Unlimited	Conditions of Approval	Request that Conditions of Approval be detailed and updated to include buffers and setbacks, hunting season restrictions, wildlife survey results and status of actions, plant survey results and status of actions, all other survey results and status of actions, and a travel access plan.	See response to comment TU79.
TU 81	Cathy Purves for Trout Unlimited	Alternatives Selection	Urge BLM to adopt Alternative 2 if No Action Alternative is not selected.	See Response to Comment CMH 1.
TU 82	Cathy Purves for Trout Unlimited	NEPA Process	Believe an environmental impact statement is warranted.	The EA was prepared to determine whether the proposed action or alternatives would result in significant impacts. Based on the analysis in the EA, it has been determined that the project would not result in significant impacts to any resource and therefore an EIS is determined not to be necessary.