U.S. Department of the Interior
Bureau of Land Management
Little Snake Field Office
455 Emerson Street
Craig, CO 81625-1129

ENVIRONMENTAL ASSESSMENT

EA-NUMBER: DOI-BLM-CO-N010-2011-0006 EA

CASEFILE/PROJECT NUMBER/LEASE NUMBER: COC-74733

PROJECT NAME: Craig Dome/Bell Rock 3D Seismic Survey

LEGAL DESCRIPTION: Sixth Principal Meridian

Federal Acreage Portions of:

Township	Range	County	Sections
T6N	R90W	Moffat	6
T7N	R91W	Moffat	25, 35
T6N	R91W	Moffat	3, 18, 29, 30
T6N	R92W	Moffat	7, 16, 19, 20, 23, 29, 31, 33, 34, 35, 36
T7N	R92W	Moffat	34

APPLICANT: Gulfport Energy Corporation/Quicksilver Corporation

CONTRACTOR: Geokinetics, Inc. will be the geophysical service contractor.

PLAN CONFORMANCE REVIEW: The proposed action is subject to the following plan:

Name of Plan: Little Snake Resource Management Plan and Record of Decision (ROD) approved on April 26, 1989; and the Colorado Oil and Gas Leasing & Development EIS and the ROD signed on November 5, 1991.

Remarks: The proposed Craig Dome/Bell Rock 3D seismic survey is located primarily within MU 1 of the BLM-designated Resource Management Units (MUs) described on the Little Snake Resource Management Plan and Record of Decision, 1989. Resource Management Unit 1 (MU-1) is the "Eastern Yampa River" unit. MU 1 management objectives are to realize the potential for development of coal, oil, and gas resources.

The proposed action has been reviewed for conformance with this plan (43 CFR 1610.5, BLM 1617.3). The proposed action is in conformance with the objectives for this management unit.

PURPOSE AND NEED: The purpose for this action is to consider the applicants proposal for conducting seismic activities to gather information on their oil and gas leases. BLM is considering this approval because the activity is an integral part of BLM's oil and gas program under authority of the Mineral Leasing Act of 1920, as amended; the Federal Land Policy and Management Act of 1976, as amended; and the Federal Onshore Oil and Gas Leasing Reform Act of 1987, as amended. Additionally, 3D seismic activity is recognized as a valid and existing right of mineral lease owners.

The need is to further locate and identify oil and natural gas reservoirs that may be present in geologic formations beneath the surface of the project area. A 3D seismic survey provides information about underground geology by utilizing a 3D seismograph data collection system to analyze and three-dimensionally image subsurface geologic structures and stratigraphy. This information is needed to provide for future precise, organized, and responsible development of the mineral resource.

PUBLIC SCOPING PROCESS: The action in this EA is included in the NEPA log posted on the LSFO web site: http://www.blm.gov/co/st/en/BLM_Information/nepa/lsfo.html. The Notice of Intent is posted in the Little Snake Field Office for a 30-day public review period and may be viewed during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except holidays.

No comments were received.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:

PROPOSED ACTION:

Gulfport Energy Corporation/Quicksilver Corporation is proposing to conduct an exploratory, three-dimensional (3D), geophysical seismic survey for the Craig Dome/Bell Rock 3D project in Moffat County, Colorado (Attachment 1). The survey is located between Townships 6 – 7N and Ranges 90 – 92W. The surface ownership is composed of 79.827 square miles of private surface ownership (83.32%), 3.926 square miles of BLM administered surface (4.09%), 1.865 square miles of Moffat County administered surface (1.94%) and 9.84 square miles of Colorado State administered surface (10.27%).

The receiver orientation will be SW to NE, with a receiver interval of 220 feet and a line spacing of 880 feet. The source orientation will be SW to NE, with a source interval of 311.127 feet and a line spacing of 1320 feet. In 6N 91W and 6N 90W, the survey will contain an imbedded spread where the receiver effort will be doubled. The receiver effort will have a line every 440 feet. The source energy will be generated primarily with the vibroseis method with some dynamite fill (shot holes) on steep slopes where source locations cannot be relocated to be acquired utilizing the vibroseis method.

Geokinetics recognizes the operation will occur during fire season and will take all precautions to

prevent starting a wildfire. If smoke were reported, they would register the best location information possible (GPS coordinates, road intersections, and legals). Craig Interagency Dispatch would be contacted. Emergency Response Plan and contact information has been submitted to Craig Interagency Dispatch.

Additional details are provided below.

Survey and Hazard Assessment: Hazard surveys will be conducted using a high-accuracy global positioning system (GPS) to accurately define the extent and location of project activities. Crews will identify culture in the area, both surface and sub-surface, to include, but not limited to: pipelines, fiber optics, water lines, houses, and sensitive sites. All culture will receive "buffers" in accordance with IAGC guidelines for non-Federal lands and the federal Geophysical requirements (43 CFR 3150) for Federal lands. The method of operation will utilize trucks, as well as utility terrain vehicles, traveling on roads, established two tracks, and source and receiver lines that have been cleared from archeological sites. Crews will mark receiver locations with pin flags, source locations will be marked with biodegradable paint. Vibrators will be equipped with GPS, eliminating the need for surveyors to mark the source locations with flagging.

Shot Hole Drilling: After review of the terrain in the project area, it is estimated that 20 percent of source points for the entire area will need to be drilled due to steep slopes and marshy areas. The locations would include the following:

Buggy Drilling: It is estimated that approximately 15 percent of the source points in the project would be drilled by buggy mounted drill equipment. Buggy drills weigh less than 20,000 lbs and are outfitted with 2 to 3 ft. wide low ground pressure tires. A 4 inch diameter bore hole would be drilled to a depth of 40 ft. and loaded with 5.5 lbs of explosives, backfilled and tamped with cuttings to depth of 3 ft. then plugged with a non-metallic perma-plug. The plugs will be tagged with the operator's name. A sufficient mound of native soil will be left over the hole to allow for settling. Buggy drill access would be via flagged drive routed. From one to four drilling buggies operating in different areas of the project would be used.

Heli-portable Drilling: It is estimated that approximately 5 percent of the project would be drilled by heli-drill equipment. Heli-portable drills will be used in areas where slope restrictions apply, or where ground is too soft to support self propelled equipment. Heli-portable drill access is by air. A helicopter deploys the drills by a long line. Each drill is operated by two people who enter the work area by helicopter and walk to point as the drill is moved. A 4 inch diameter bore hole is drilled to a depth of 40 ft. and loaded with 5.5 lbs of explosives, backfilled and tamped with cuttings to depth of 3 ft. then plugged with a non-metallic perma-plug. The plugs will be tagged with the operator's name. A sufficient mound of native soil will be left over the hole to allow for settling.

Explosive Storage: Explosives' magazines will be permitted and placed on non-federal lands. Daily inventories will be maintained. Explosives will be stored , transported, handled, and secured in accordance with U.S. Bureau of Alcohol, Tobacco and Firearms regulations 27 CFR

55 and 49 CFR 177. Geokinetics and the project drill subcontractors will maintain federal explosive licenses. These licenses will be made available upon request.

Staging: Recording equipment would initially be transported to the program site staging areas by truck using existing roads and trails. All staging areas will be on private ground. Geokinetics will consult with local land owners to identify potential staging areas at convenient locations on private property throughout the staging area. Existing well pads and maintained facilities would be given priority and all equipment and vehicle storage will be located within the perimeter of these staging areas. Smaller temporary staging areas would be located along trails and roads throughout the project area and would be used to expedite the deployment and retrieval of equipment. The helicopter would typically land at these staging areas; however, it may also land adjacent to existing roads and trails to pick up or drop off equipment.

Recording System and Equipment Deployment: Geokinetics will use a Cable Telemetry system to facilitate the recording operations. The data is transmitted through the cable to a truck mounted centralized recording system where the shot records are compiled and recorded. Equipment associated with this system would consist of geophones, cables, batteries, and date repeating boxes. This equipment will be deployed with the use of a helicopter every six receiver stations. One helicopter will be used to deploy the gear, operating only in daylight hours and will ferry the receiver-station cache bags. The helicopter will move six to eight bags at a time, suspended by a "long line" operating at approximately 100 to 300 feet above the receivers. The cache bags will be located using a GPS on the receiver line at designated pin-flagged locations, provided by the surveyors.

Access: Access will be on Highway 40, Highway 394 and Highway 13. County roads will be used for rural access and cross country travel. Approximately 75 crew members will be housed in Craig and will conduct operations for 24 hours a day.

Line Layout: Crew members will walk to the first dropped cache bag on their receiver line, prepare, and connect the cable, then manually deploy the cable and the geophones. Seismic cables are laid out along the receiver line. Geophones are laid around each station and connected to the cable. The geophones would be mounted on a 4-inch spike and placed into the soil using foot pressure. The crew members would continue in this manner at each receiver station throughout the prospect area. This operation is continued to the next cache bag. Approximately 1728 stations (11.33 square miles) would be active at any given time throughout the seismic data acquisition. Troubleshooting and line maintenance operations will utilize utility terrain vehicles (UTV's) traveling on roads, established two tracks, and source/receiver lines that have been cleared from archeological sites.

Recording Operations: Once enough recording equipment has been deployed (18 lines by 96 stations on each line), the crew would commence with the vibroseis operation. A fleet of three vibes will navigate to a predetermined source location using GPS. Vibes will emit energy into the ground simultaneously through vibration and recorded.

Geokinetics, Inc. will utilize AHV IV buggy vibrators. These vibrators weigh approximately 62,500 pounds are nearly 30 feet in length, 11 feet in length, and 10 feet in height. The vibrators will be equipped with large forestry tires (66x43x25 inches) that help to distribute their weight evenly over the substrate to minimize impacts.

Demobilization: The recording equipment will be retrieved on foot and bagged, reversing the placement procedure, and moved to staging by helicopter in preparation for demobilization. Project clean up will proceed concurrently with data acquisition. All flagging, flagging, lathe and related seismic debris will be gathered daily as the field groups and crew members complete data-acquisition portions of the project. The debris will be collected at points on roads or trails and transported by vehicle or helicopter to staging areas where personnel will organize materials, handle equipment, and dispose of used/unusable materials. A follow up or "trash" crew would make a complete sweep of the project area to ensure that no trash or equipment has been left behind upon completion of data acquisition and prior to a filing of a completion report. Disposal will occur at approved facilities or local land-fills.

NO ACTION ALTERNATIVE: Under the No Action Alternative the application would be denied. Implementation of the No Action Alternative would likely result in the continuation of current land uses and the maintenance of resource development trends on BLM-administered lands in the project area. The BLM has leased a majority of the Federal minerals, including oil and gas, within the boundaries of the project area. These Federal leases grant to the lessee the right to explore, drill, and remove the leased resource in the leasehold. Although selection of this alternative would preclude implementation of the proposed geophysical seismic exploration project, this alternative would not preclude other oil and gas exploration or development on BLM-administered lands based on future analyses and approval of specific proposals. In addition, oil and gas exploration activities could still occur on state and private lands in the project area.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

For the following resources and issues, those brought forward for analysis will be addressed below.

Resource/Issue	N/A or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Air Quality			X
Areas of Critical Environmental Concern	X		
Cultural Resources			X
Environmental Justice/ Socio-Economics			X
Flood Plains			X
Fluid Minerals		X	
Forest Management	X		
Hydrology/Ground			X
Hydrology/Surface			X
Invasive/Non-Native Species			X
Native American Religious Concerns			X
Migratory Birds			X
Paleontology			X
Prime and Unique Farmland			X
Range Management		X	
Realty Authorizations			X
Recreation/Transportation		**x**	
Soils			X
Solid Minerals			X
T&E and Sensitive Animals			X
T&E and Sensitive Plants			X
Upland Vegetation			X
Visual Resources		X	
Wastes, Hazardous or Solid			X
Water Quality - Ground			X
Water Quality - Surface			X
Wetlands/Riparian Zones			X
Wild and Scenic Rivers	X		
Wild Horse & Burro Mgmt	X		
Wilderness Characteristics/WSA's	X		
Wildlife - Aquatic			X
Wildlife - Terrestrial			X

AIR QUALITY

Affected Environment: There are five Federal Class I areas within 100 kilometers or adjacent to the Little Snake Resource Management Area (LSRMA) boundary, all of which occur in Colorado. The Class I areas are Rocky Mountain National Park and the Mount Zirkel, Flat Tops, Rawah, and Eagles Nest Wilderness areas. There are no federal Class I areas in Utah or Wyoming within 100 km of the LSRMA boundary. There are no non-attainment areas nearby that would be affected by either alternative.

The federal government has established the National Ambient Air Quality Standards (NAAQS) under the federal Clean Air Act (CAA) and its amendments for six criteria pollutants: 1) carbon monoxide, 2) ozone, 3) sulfur dioxide, 4) nitrogen dioxide, 5) lead, and 6) particulate matter (PM_{10} and $PM_{2.5}$). Although the Environmental Protection Agency (EPA) retains oversight authority, the federal government has delegated enforcement of the CAA to the states. In Colorado, the Air Pollution Control Division of the Department of Public Health and Environment acts as the lead agency. EPA air data Air Quality Index data collected from within the resource area (Steamboat Springs) and in the vicinity of the resource area (Sweetwater County, WY, Piceance Basin, CO) indicate that ambient air quality standards for all six the criteria pollutants for the region are in compliance with NAAQS. Although visibility in the form of regional haze can be seen in some parts of the region, average visibility is typical of clear skies associated with remote areas in the Western United States.

Environmental Consequences, Proposed Action: Impacts to air quality from implementation of the Proposed Action would likely be temporary, localized, and short-term. Although a temporary increase in emissions and fugitive dust would be anticipated due to an increase in vehicular use in the area, the degree at which this would impact the air quality is difficult to predict due to variables such as vehicle speed, distance traveled, road conditions, and specific vehicle emissions based on the manufacturer. An increase in emissions is also difficult to quantify due to varying environmental conditions, such as wind, soil moisture, temperature, and precipitation – all of which have an effect on air quality.

No major source of pollutants is anticipated under the Proposed Action. However, under the Proposed Action, an increase in fugitive dust emissions due to vehicles traveling on roads and the use of buggy operations may occur during dry conditions. This potential impact would end once seismic exploration operations within the project area cease.

Implementation of the Proposed Action and associated use of gasoline and diesel powered vehicles and drilling equipment would result in short-term increases in emissions released to the atmosphere. Vehicle movement would also contribute to short-term increases in atmospheric particulate levels from an incremental increase in dust evolution for the anticipated life of the project. However, both vehicle generated emissions and dust levels would be minimized by measures to be employed as integral parts of the proposed project implementation plan including those listed below:

Mitigative Measures:

- All vehicles and equipment would be properly maintained to minimize exhaust emissions.
- BLM-approved dust control measures would be applied as necessary on BLM roads.

Environmental Consequences, No Action: No additional impacts to air quality beyond those impacts from ongoing actions in the area and the region would occur.

CULTURAL RESOURCES

Affected Environment: Cultural resources, in this region of Colorado, range from late Paleo-Indian to Historic. For a general understanding of the cultural resources in this area of Colorado, see *An Overview of Prehistoric Cultural Resources, Little Snake Resource Area, Northwestern Colorado*, Bureau of Land Management Colorado, Cultural Resources Series, Number 20, *An Isolated Empire, A History of Northwestern Colorado*, Bureau of Land Management Colorado, Cultural Resource Series, Number 2 and *Colorado Prehistory: A Context for the Northern Colorado River Basin*, Colorado Council of Professional Archaeologists.

Environmental Consequences, Proposed Action: Geophysical seismic surveys authorized by the BLM are undertakings under Section 106 of the National Historic Preservation Act. BLM has the legal responsibility to take into account the effects of its actions on historic properties located on Federal land. BLM Manual 8100 Series, the Colorado State Protocol and BLM Colorado Handbook of Guidelines and Procedures for Identification, Evaluation, and Mitigation of Cultural Resources provide guidance on how to accomplish Section 106 requirements with the appropriate cultural resource standards.

A literature and records search (Williams and Delmas 2011) was conducted of the Craig Dome project area to provide the BLM-LSFO with information to design a Class III inventory if deemed necessary and to identify any important cultural resources within the area of potential effect. Two archaeological sites (5MF.4084 and 5MF.4086) which have been determined eligible for the National Register were identified within the project area. Subsequently the project area was expanded to include the Bell Rock project area. A Class III inventory of the source lines and a subset of the receiver lines was determined necessary due to the potential to impact historic properties. This study resulted in the discovery of three historical archaeological sites and two prehistoric isolates; reevaluation of five archaeological sites and four prehistoric isolates (Williams and others 2011). Three of the archaeological sites (5MF.3436, 5MF.4084, and 5MF.4086) were recommended as eligible for the National Register. The area of potential effect was redesigned to avoid these three historical properties by at least 100 meters. The proposed undertaking will have no effect on historic properties. It may proceed as described with the following standard mitigative measures in place.

Mitigation Measures, Proposed Action:

1. Any cultural and/or paleontological (fossil) resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or

Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and the authorized officer will make any decision as to proper mitigation measures after consulting with the holder.

2. The operator is responsible for informing all persons who are associated with the operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are encountered or uncovered during any project activities, the operator is to immediately stop activities in the immediate vicinity of the find and immediately contact the authorized officer (AO) at (970) 826-5000. Within five working days, the AO will inform the operator as to:

   - Whether the materials appear eligible for the National Register of Historic Places;
   - The mitigation measures the operator will likely have to undertake before the identified area can be used for project activities again; and
   - Pursuant to 43 CFR 10.4(g) (Federal Register Notice, Monday, December 4, 1995, Vol. 60, No. 232) the holder of this authorization must notify the AO, by telephone at (970) 826-5000, and with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

3. If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

Environmental Consequences, No Action Alternative: None

Mitigation Measures, No Action Alternative: None

References

Williams, John K. and Michelle Delmas
2011 *Class I Cultural Resource Inventory for the Craig Dome 3-D Geophysical Exploration Project*, Moffat County, Colorado. SWCA Project Number 11-43. BLM-LSFO 127.1.2011. OAHP# MF.LM.NR1124. SWCA Environmental Consultants, Broomfield CO

Williams, John K., Jason Burkard, Michelle Delmas, and Michael Retter
2011 *Class III Cultural Resource Inventory for the Bell Rock-Craig Dome 3d Geophysical Exploration Project*, Moffat County, Colorado. SWCA Project Number 11-43. BLM-LSFO 127.2.2011. OAHP# MF.LM.R897. SWCA Environmental Consultants, Brooomfield CO.

ENVIRONMENTAL JUSTICE and SOCIOECONOMICS

Affected Environment: Executive Order 12898 (20) requires federal agencies to assess projects to ensure there are no disproportionately high or adverse environmental, health, or safety effects on minority and low-income populations. Minorities comprise a small proportion of the population residing inside the boundaries of the Little Snake Field Office.
Oil and gas exploration and production, coal mining, as well as livestock operations and hunting are the main economic activities of the area.

Environmental Consequences, Proposed Action: The local economy may have some direct but minimal, short-term benefit from support services to seismic crews, but only a small number of people would be affected. Surface owners within the project area will be paid land use fees. Indirect benefits to the surrounding economy may occur if the interpretation of the collected data leads to the drilling of additional exploration or development wells in the project area. The indirect effects could include effects due to overall employment opportunities related to the oil and gas and service support industry in the region as well as the economic benefits to state and county governments related to royalty payments and severance taxes. The project area is already surrounded by oil and gas production and ongoing oilfield activities, so new production would likely cause minimal impact, either beneficial or adverse, to the present socioeconomic environment. Generated revenue from oil and gas production, as the result of successful drilling programs resulting from the 3D seismic project, would affect only a small number of people and not necessarily people from the socioeconomic area in the vicinity of the project.

It is not likely that the proposed project activities would generate high levels of concern, opposition, or dissatisfaction among local residents. A small, temporary increase in activity and noise disturbance may occur in rural subdivisions and areas primarily used for grazing or hunting. No minority or low income populations would be directly affected in the vicinity of the proposed action.

Environmental Consequences, No Action: No health or environmental effects on minorities or low-income populations or communities would occur.

Mitigative Measures: None

FLOOD PLAINS

Affected Environment: Within the proposed project area there are several portions of the Yampa River in which the proposed seismic survey lines intersect with FEMA-identified 100-year floodplain (T6N R91W Sec. 30; T6N R92W Secs. 31, 34, and 36). The 100-year floodplain

boundary in this area represents the flood elevation that has a 50% percent chance of being equaled or exceeded each year (frequent flooding).

Environmental Consequences, Proposed Action: Impacts to floodplains in proposed project area would be limited to vegetation compression and soil compaction, depending on moisture content of the soils by any ATV/UTV and/or buggy activity during recording operations to distribute recording equipment and personnel. Given the above average snowpack/rainfall in the spring of 2011, water levels within the floodplain are likely to still be high or just receding, leaving behind saturated soils. Prohibiting seismic work within the 100-year floodplain boundaries would eliminate a very small amount of area that is proposed for exploration but would also limit or prevent impacts to floodplain soils and vegetation. No permanent developments or structures are proposed within identified floodplains.

Environmental Consequences, No Action Alternative: No additional impacts to floodplains beyond those impacts from ongoing actions in the area would occur.

Mitigative Measures:

> The extent of disturbance and effect would be limited by avoiding off-road vehicle/buggy travel on FEMA-identified flood plains. Operator will not take vehicles or drill/shoot/shake on federal lands within FEMA-identified 100-year flood plains.

INVASIVE, NONNATIVE SPECIES

Affected Environment: Invasive and noxious weeds are present in the project area. Invasive annuals such as downy brome (cheatgrass), blue mustard and yellow alyssum commonly occur in the affected area. Invasive annual weeds are typically established in disturbed and high traffic areas, whereas, biennial and perennial noxious weeds are less common in occurrence. Downy brome is on the Colorado List C of noxious weeds. Additionally, perennial noxious weeds present in the project area include Russian knapweed, diffuse knapweed, spotted knapweed, leafy spurge, dalmatian toadflax, yellow toadflax, oxeye daisy, hound's tongue, hoary cress (whitetop), Canada thistle, musk thistle, bull thistle and other biennial thistles. The BLM cooperates with the Moffat County Cooperative Weed Management program to employ the principals of Integrated Pest Management to control noxious weeds on public lands.

Environmental Consequences, Proposed Action: Existing roads and rangeland within the project area would be traversed by vehicles that may spread weed seeds. Vehicles moving through vegetation can easily dislodge or spread any seed that may be carried, depositing it into or throughout the project area. The disturbance caused by drilling activities can also provide an avenue for weed infestations to establish. Any establishment of biennial and/or perennial weeds that may result from these operations would likely not be identified for a few years following operations. Weed infestations can easily move across ownership boundaries so activities on adjacent parcels could result in an increase in invasive species on BLM as well.

Environmental Consequences, No Action: Operations would not be conducted and invasive or noxious weeds would not be affected or introduced.

Mitigative Measures: All vehicles used on BLM lands to perform the proposed activity must be washed, especially the under-carriage, to remove mud and weed seed prior to accessing BLM land. We would also recommend that vehicles be washed following the project activities so as not to spread weed seed to other areas. The operator will be responsible for treating any sizeable weed infestations introduced as a result of the geophysical project. If noxious weed infestations develop, the operator will be required to obtain a pesticide use permit and have a licensed applicator treat the affected areas.

MIGRATORY BIRDS

Affected Environment: BLM Instruction Memorandum No. 2008-050 provides guidance towards meeting BLM's responsibilities under the Migratory Bird Treaty Act (MBTA) and the Executive Order (EO) 13186. The guidance emphasizes management of habitat for species of conservation concern by avoiding or minimizing negative impacts and restoring and enhancing habitat quality. The LSFO provides both foraging and nesting habitat for a variety of migratory bird species. Several species on the USFWS's Birds of Conservation Concern (BCC) List occupy these habitats within the LSFO. The project is located in the Northern Rockies and Southern Rockies/Colorado Plateau Bird Conservation Regions.

Specific to the project area, native plant communities are comprised primarily of mixed mountain shrub and sagebrush flats. A variety of migratory birds may utilize the vegetation communities within the project area during the nesting period (May through July) or during spring and fall migrations. The project area contains potential nesting and/or foraging habitat for the following USFWS 2008 Birds of Conservation Concern: bald eagle, golden eagle, Brewer's sparrow, sage sparrow, sage thrasher and loggerhead shrike.

Environmental Consequences, Proposed Action: Project activities would result in temporary habitat loss and displacement of migratory birds from areas near or adjacent to the seismic survey. Indirect impacts such as noise and human presence would temporarily displace migratory birds from suitable habitat. Since seismic activities would be conducted in one area at a time, impacts from noise are expected to be temporary. Birds displaced by temporary activities would relocate to adjacent suitable habitat and would likely return once seismic activities have moved out of the area.

Vegetation would be directly disturbed as a result of driving thumper trucks along sources lines. Although no vegetation would be removed as a result of this action, other impacts may occur including: crushing and killing of vegetation; introduction and spread of weeds; and soil erosion, rutting and compaction. Disturbance of vegetation has the potential to impact individual migratory birds and/or their nests.

If seismic activities are conducted during the breeding season, these activities could lead to nest destruction or abandonment. Many migratory birds will receive incidental relief from disturbance during the breeding season due to raptor and grouse timing stipulations on BLM lands. It is plausible that some nests would be destroyed in areas not protected by the aforementioned timing limitations. Since BLM lands only represent 4% of the proposed project area, the chance for nest destruction would be relatively low. Overall, the project is not expected to have a measurable influence on the abundance or distribution of migratory birds at the regional scale.

Environmental Consequences, No Action Alternative: There would be no impacts to migratory birds from this alternative.

Mitigative Measures: No additional mitigation measures would be required other than the mitigation in the Terrestrial Wildlife and T&E Animal Species Sections of this EA.

NATIVE AMERICAN RELIGIOUS CONCERNS

Letters were sent to the Uinta and Ouray Tribal Council, Southern Ute Tribal Council, Ute Mountain Utes Tribal Council, Shoshoni Tribal Historic Preservation Officer, and the Colorado Commission of Indian Affairs in the spring of 2011 discussing upcoming projects the BLM would be working on in FY10 and FY11. Letters were followed up with phone calls. No comments were received (Letters on file at the Little Snake Field Office, Craig, Colorado).

PALEONTOLOGY

Affected Environment: The geologic formations at the surface are the Tertiary age Browns Park Formation (Tbp), Cretaceous age Williams Fork Formation (Kw) and Cretaceous age Lewis Formation (Kls). The Tbp formation has been classified a Class Ia for the consideration of high potential for occurrence of scientifically significant buried fossils. The Kw formation has been classified a Class I for the consideration of high potential for occurrence of scientifically significant fossils. The Kls formation has been classified as a Class II for the consideration of moderate potential for occurrence of scientifically significant fossils.

Environmental Consequences: If any such fossils are located here, construction activities could damage the fossils and the information that could have been gained from them would be lost. The significance of this impact would depend upon the significance of the fossil. This impact can be effectively mitigated by ceasing operations and notifying the Field Office Manager immediately upon discovery of a fossil during construction activities. An assessment of the significance is made and a plan to retrieve the fossil or the information from the fossil is developed.

The proposed action could also constitute a beneficial impact to paleontological resources by increasing the chances for discovery of scientifically significant fossils.

Mitigative Measures: "Standard Discovery Stip", i.e., "If fossils are discovered during construction or other operations, all activity in the area will cease and the Field Office Manager will be notified immediately. An assessment of significance will be made within an agreed timeframe. Operations will resume only upon written notification by the Authorized Officer."

References

Armstrong, Harley J. and Wolney, David G., 1989, Paleontological Resources of Northwest Colorado: A Regional Analysis, Museum of Western Colorado, Grand Junction, CO, prepared for Bur. Land Management, Vol. I of V.

Miller, A.E., 1977, Geology of Moffat County, Colorado, Colo. Geol. Surv. Map Series 3, 1:126,720.

PRIME & UNIQUE FARMLANDS

Affected Environment: There are no federal lands designated as prime and unique farmlands within the proposed project area, however there are lands identified as farmland of statewide importance present. Generally, farmlands of statewide importance include those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods.

Environmental Consequences, Both Alternatives: There would be no adverse impacts as none of these soils on public lands are or would be manipulated so as to create conditions favorable to create prime farmland within the proposed project area.

Mitigative Measures: None

Source: USDA-NRCS Soil Data Viewer version 5.2.0016: http://soildataviewer.nrcs.usda.gov/

REALTY AUTHORIZATIONS

Affected Environment: Public land in the proposed project area is encumbered with several rights-of-way. Buried natural gas pipelines and a compressor site, buried telephone lines, aerial power lines, and water monitoring well are authorized on public land in the proposed project area. Several federal oil and gas leases exist within the project area.

Environmental Consequences, Proposed Action: Seismic activities in close proximity to pipelines or power lines could result in casing failure or service interruption. Existing buried facilities could be accidentally damaged during project activities. Impacts would be temporary until any damage is repaired. With implementation of the mitigative measures below, the project should result in no adverse impacts.

Environmental Consequences, No Action Alternative: There would be no impacts to realty

authorizations from this alternative.

Mitigative Measures: Potential damage to existing rights-of-way would be minimized by the following actions:

- Avoid existing rights-of-way during the project.
- Utilize the "One Call" system to locate and stake the centerline and limits of all underground facilities in the area prior to project initiation.
- Provide 48-hour notice to the owner/operator of all facilities prior to performing any work near existing rights-of-way.
- Source points shall be located a minimum of 300 feet from oil/gas wells and pipelines, unless written permission to encroach closer has been given by the owner/operator. Spills resulting from ruptured pipelines shall be cleaned up as directed by DEQ and the facility owner/operator.
- Source points shall be offset away from powerlines, communication sites, and public water reserves, in accordance with safe operating distances.

SOILS

Affected Environment: The table below (Table 1) describes the major soil groups included within the proposed project area. Most blocks of public land within the proposed project area are quite sloped, as reflected by the soil types in the table below. The main hazard for all of these soils is erosion unless close-growing plant cover is maintained. Biological soil crusts are not present, but are not expected in the area.

Table 1. Soil Summary for the Craig Dome 3D Seismic Survey

Soil Map Unit (MU) & Soil Name (Acres in Allot.)	Map Unit Setting	Description
MU 66 Evanot loam, 1 to 12% slopes	Elevation: 6,200 to 7,200 feet Mean annual precipitation: 13 to 15" Ecological Site: Deep Loam	These bench and hillslope soils are well drained with moderately slow permeability and high runoff potential. Available water capacity is high and the soil profile is typically up to 60" deep composed mostly of loam and clay loam.
MU 78 Forelle loam, 12 to 25% slopes	Elevation: 6,200 to 7,000 feet Mean annual precipitation: 11 to 13" Ecological Site: Rolling Loam	These hillslope soils are well drained with moderate permeability and medium runoff potential. Available water capacity is high and the soil profile is typically 60" deep, composed mostly of loam and clay loam.
MU 112 Kemmerer-Moyerson complex, 20 to 40% slopes	Elevation: 6,000 to 7,000 feet Mean annual precipitation: 11 to 13" Ecological Site: Clayey Slopes	These hillslope soils are well drained with very slow to slow permeability and very high runoff potential. Available water capacity is low and the soil profile is typically up to 26 inches deep, comprised mostly of clay and silty clay.

MU 197 Torriorthents-Rock outcrop, sandstone complex , 25 to 75% slopes	*Elevation:* 6,000 - 11,280 feet *Mean annual precipitation:* 9-16” *Ecological Site:* not given	These backslope soils are well drained with moderate permeability and very high runoff potential. Available water capacity is very low and the soil profile is typically 0-18” deep.
MU 199 Torriorthents-Torripsamments complex, 12 to 40% slopes	*Elevation:* 6,000 – 7,200 feet *Mean annual precipitation:* 9-13” *Ecological Site: none given*	These hillslope soils are well to excessively drained with moderately slow to rapid permeability and high runoff potential. Available water capacity is very low and the soil profile is typically 19-30 inches deep, comprised mostly of clay and loamy sand.

Data taken from *Soil Survey of Moffat County Area, Colorado (2004).*

Environmental Consequences, Proposed Action: Buggy and ATV/UTV operations would result in off-road, cross-country travel. The use of buggies equipped with low-pressure tires and low-pressure track buggies would limit the loss of protective vegetative cover and would minimize the potential for soil compaction. Effects on soils could include some rutting of the soil beneath compressed-to-broken vegetative cover caused by the passage of the floatation-tired buggy over the ground surface. Operations during wet soil conditions could lead to rutting and compaction that can potentially contribute to a breakdown of soil structure, increased surface runoff, increased erosion, and increased stream sedimentation. The potential compaction effects on soils from a single pass to a maximum of two passes of a buggy over the same track would be mostly temporary (less than one year) due to recovery by natural wet/dry and freeze/thaw cycles. Multiple passes (2 or more) by the heavier buggy vibes would be mostly temporary (less than one year) to possibly short term (1 to 3 years) where additional time would be required for vegetative cover and soil conditions (compaction) to return to pre-compression conditions.

Operation of buggy/track drills on slopes generally less than 25% and careful operation of the buggy off-road would reduce potentials for excessive slippage and possible loss of vegetative cover along with soil loosening. Although tire slippage in isolated situations could pull vegetation from rooted positions in the soil, the vegetative material, though not rooted, would remain on the soil surface as protective litter. This would be minimized even further if soils are frozen or snow cover is present. Potential for water and wind erosion would be minimal. Rooted vegetation, though compressed, crushed, and/or broken, and un-rooted litter would also protect soil materials from runoff (water erosion) and dust generation (wind erosion) operating at times close to the surface in areas where buggies would have traveled cross-country. Use of buggy two-tracks by off-road vehicles is not likely to be an issue, as there is no legal public access of public lands within the proposed project area. In the event more excessive surface effects are caused from buggy drill passage, areas would be reseeded, on a case-by-case basis as deemed necessary by the BLM.

A total of 19 buggy-drilled shot holes are proposed on public lands, all of which occur in T6N R92W S36. A 5.5 lb charge would be inserted into a 4-inch diameter hole that is approximately 40 feet deep, resulting in very limited surface disturbance (less than 10 ft^2), as the 4-inch hole would be backfilled with native soil and plugged. Some drill cuttings may remain on the surface

and will be raked to less than 1-inch thick within a few feet of the hole. Disturbance of soils in this area affected from buggy drilling operations are expected to be minimal in extent and short-term (1 to 3 years).

Environmental Consequences, No Action: No additional impacts to soils beyond those impacts from ongoing actions in the area and the region would occur.

Mitigative Measures: Impacts to soils would be minimized by implementing the following measures:

- Cross-country travel by buggies would be limited to slopes less than or equal to 25%.
- Off-road buggy/track drills and buggy vibe operators would be instructed to travel cross-country at speeds of less than 15 miles per hour to minimize potential impacts to soils and vegetation.
- On a limited basis, ATVs/UTVs would be used to access remote receiver lines and recording equipment by traversing cross-country along accessible (low risk for ATV/UTV use) source lines. ATV/UTV activity would be confined to the source line's cleared area of potential affect (APE) for cultural resources. All other vehicles would be restricted to existing roads and trails.
- With the exception of low-pressure-tired off-road buggy drills and buggy vibes, all other vehicles would be restricted to existing roads and trails.
- Buggies and ATV/UTVs should not be operated off-road when soils or road surface becomes saturated to a depth of three inches unless otherwise approved by the BLM.
- Off-road buggy vehicle traffic would be planned to minimize the number of passes over the same ground, and to minimize the potential for excessive damage to vegetation, soil compaction, and where present, biological soil crusts.
- In the event more excessive surface effects are caused from buggy passage, areas would be reseeded, on a case-by-case basis as deemed necessary by the BLM to control soil erosion, soil loss, and sedimentation and to restore protective, productive vegetative cover.

T&E ANIMAL SPECIES

Affected Environment: The Yampa River and its 100-year floodplain from the CO Hwy 394 bridge downstream to the confluence with the Green River is designated critical habitat (DCH) for the Colorado pikeminnow. Within the proposed project area, there are two small portions of BLM managed 100-year floodplain along the Yampa River. No other ESA listed or proposed species inhabit or derive important benefit from BLM lands within the project area.

The general area provides habitat for greater sage-grouse, a BLM sensitive species and a candidate for ESA listing. Greater sage-grouse utilize sagebrush habitats in the project area for nesting and during the winter months. There are three leks located within the project area, one active and two inactive.

Habitat for three additional BLM sensitive species: Columbian sharp-tailed grouse, bald eagle

and Brewers's sparrow, occurs in the project area. Sagebrush stands and mixed mountain shrublands provide habitat for Columbian sharp-tailed grouse. There are several active leks near the boundary of the proposed seismic survey, and the southern portion of the project provides nesting and winter habitat for this species.

Bald eagles are known to winter and nest along portions of the Yampa River within the LSFO. Large, mature cottonwood trees along the river are used as roosting, perching and nesting sites. Upland habitats adjacent to these water ways are used as scavenging areas, primarily for winter killed mule deer and elk. BLM managed lands within the project area provide opportunistic carrion feeding sites for bald eagles.

Brewer's sparrows are a summer resident in Colorado and nest in sagebrush stands. Nests are constructed in sagebrush and other shrubs in denser patches of shrubs. This species would likely be nesting in the project area from mid-May through mid-July.

Environmental Consequences, Proposed Action:

Colorado Pikeminnow
If seismic activities were allowed to occur on floodplains, there would be potential impacts to Colorado pikeminnow DCH. Potential impacts may include physical damage to limited and important micro-habitats such as backwaters. Other impacts include crushing and killing of vegetation, which may decrease cover and soil stability and may increase soil erosion. To ensure that none of the above impacts occur, no seismic activities should occur within 200 feet of the 100 year floodplain of the Yampa River. With this mitigation, there would be 'no effect' to Colorado pikeminnow or DCH from the Craig Dome 3D seismic survey.

Greater Sage-grouse and Columbian Sharp-tailed Grouse
Project activities would result in temporary habitat loss and displacement of both grouse species from areas near or adjacent to the seismic survey. Impacts to habitat include: crushing and killing of vegetation and introduction and spread of weeds. Vegetation would likely recover in a few growing season, however, introduction of new weed infestations would degrade grouse habitat. Once weeds are established, they can out-compete grasses and forbs, which are important components of sage and sharp-tailed grouse habitat.

Indirect impacts such as noise and human presence could disrupt lek or nesting activities during project implementation. Seismic operations present additional risks to nests and broods because of the extent of the operations. Other energy related activities such as construction of a well pad or a pipeline are relatively localized activities. In comparison, seismic operations, while of shorter duration, cover a large extent of available habitat. To minimize the potential for disturbing grouse during the nesting season and preventing accidental destruction of nests, no seismic activities (including driving vibrosies trucks or OHVs) would be allowed within mapped nesting habitat from March 1 through June 30.

Bald Eagle

Bald eagles foraging within the project boundary may be temporarily displaced as the seismic survey moves through a certain area. This disturbance would be short in duration and any eagles utilizing the area should return once seismic activities have been completed in that area. The project may result in more carrion being available to bald eagles because of big-game highway mortalities. An increase in carrion near highways may pose a risk to bald eagles because they may be struck and killed by vehicles.

Brewer's Sparrow
Impacts to Brewer's sparrows are described in the Migratory Bird section of this EA.

Environmental Consequences, No Action Alternative: There would be no impacts to any of the above mentioned species from this alternative.

Mitigative Measures:

Colorado Pikeminnow: No seismic activities are allowed within 200 feet of the 100 year floodplain of the Yampa River. This mitigation applies to BLM lands located in T6N, R91W, Section 30 and T6N, R92W, Sections 31, 34, and 36.

Greater sage-grouse and Columbian sharp-tailed grouse: To minimize the potential for disturbing grouse during the nesting season and preventing accidental destruction of nests, no seismic activities (including driving vibrosies trucks or OHVs) would be allowed within mapped nesting habitat from March 1 through June 30. This mitigation does not apply to casual use, such as hiking in to an area to lay down receiving lines. This timing limitation would apply to BLM lands located in T6N, R91W, Sections 29 and 30 and T6N, R92W, Sections 19, 20, 23, 25, 29, 31, 34, 35 and 36.

T&E AND SENSITIVE PLANTS

Affected Environment: There are no federally listed threatened or endangered or BLM sensitive plant species present within the proposed project area.

Environmental Consequences, both alternatives: None

Mitigative Measures: None

UPLAND VEGETATION

Affected Environment: The proposed project would occur on seven isolated parcels of BLM surface-managed lands within the larger project area. These parcels range in size from approximately five acres to approximately 120 acres. The upland plant communities on these parcels vary greatly in species composition, but consist mostly of shrub and grass-dominated communities. Examples of dominant plants within these communities include big sagebrush

(Wyoming and basin), rabbitbrush, Hood's phlox, scarlet globemallow, needle-and-thread, western wheatgrass, streambank wheatgrass, Indian ricegrass, and Sandberg bluegrass.

Reflecting land status in the area, approximately 0.93% of these vegetative impacts would occur on BLM-administered land, 18.5% would occur on State land, 76.12% would occur on private land, and 3.48% would occur on land administered by Moffat County.

Environmental Consequences, Proposed Action: The proposed action would result in direct (tire) impacts to less than two percent of the land surface within the overall project boundary. As the vibrators travel cross-country on the source lines, they break down brush and crush other vegetation, leaving the appearance of two-track trails. The single pass of UTV tires, in contrast, would not kill brush, due to the light weight of these vehicles. The portions of the project area subject to vibrator operations would receive the most vegetative impact.

The buggy vibrator tires would have the greatest impact on woody plants, with some sometimes severely affected, but grasses and forbs would be far more resilient and unlikely to be adversely affected. Brush kill is a function of multiple factors including brush type, amount of traffic, time of year, and moisture conditions. Based on observation of past 3D projects in environments in Wyoming where relatively low-growing Wyoming big sagebrush is dominant, up to 30% of the sagebrush plants driven over might be killed, and up to another 20% of plants directly driven on might be partially killed and/or damaged (Bill Lanning, BLM Pinedale F.O. Natural Resource Specialist, personal communication). The remaining 50% of plants driven on would remain visibly unaffected.

A portion of the project area is dominated by grasses, which tend to recover more quickly from vehicle disturbance. Vehicle impacts to grasses and forbs are anticipated over the same surfaces as the brush impacts (with the affected area constituting less than 2 percent of the overall project area). Impacts to these species, however, would be very short-term in effect, as grasses and forbs are not likely to be killed by vehicle traffic, and would re-sprout from their established root systems in the spring.

Environmental Consequences, No Action: None

Mitigative Measures: None

WASTES, HAZARDOUS OR SOLID

Affected Environment: If a release does occur then the environment affected would be dependent on the nature and volume of material released. If there are no releases then there would be no affect on the environment

Environmental Consequences, Proposed Action: Consequences would be dependent on the volume and nature of the material released. In most every situation involving hazardous

materials, there are ways to remediate the area that has been contaminated. Short term consequences would occur, but they can be remedied, and long term impacts will be minimal.

Environmental Consequences, No Action: No project-related releases would occur.

Mitigative Measures: None.

WATER QUALITY – GROUND

Affected Environment: Domestic water wells are located in the throughout the proposed project area.

Environmental Consequences: Seismic surveying can affect water wells. Surface waves travel easily through loose rock and wet sand to water wells nearby.

Mitigative Measures: The geophysical service operator must follow BLM Handbook H-3150-1 "Onshore Oil and Gas Geophysical Exploration Surface Management Requirements". Illustration 16, page 3 of the handbook is a table that shows the minimum safe offset to structures for vibrator truck operations. The minimum safe distance buffer to water wells is 350 feet.

WATER QUALITY – SURFACE

Affected Environment: Proposed geophysical exploration operations on public lands are located adjacent to the Yampa River or within unnamed tributaries to the Yampa River. Water quality for the mainstem of the Yampa River (from Elkhead Creek to the Green River) must support Aquatic Life Warm 1, Recreation E, Water Supply, and Agriculture. As of 2010 this reach of the Yampa River is on the Colorado Department of Public Health and Environment's (CDPHE) Section 303(d) list of Water Quality Limited Segments because of a high priority iron impairment (CDPHE 2010). This segment is also on CDPHE's Monitoring and Evaluation List for a suspected water quality problem regarding sediment load (CDPHE 2010). Other surface water expressions in the project area that could be affected by proposed seismic survey activities are the springs and seeps described below. The operator has not identified the need for any surface water for exploration activities.

Environmental Consequences: Off road use by buggies and ATV/UTVs and, to a limited extent, buggy vibes would compress vegetation and possibly compact the underlying soil to a limited extent which could result in increased water runoff from affected areas which in turn could increase soil erosion and stream sedimentation. The use of buggy/track drills and buggy vibes off-road may create visible trails that could invite public use (OHV use) on those particular transects. This secondary use could lead to accelerated erosion from additional and repetitive public use of these trails. Accelerated erosion could result from reduced vegetative cover and increased soil compaction from repetitive compression and damage to vegetation in the tracks beneath OHV wheels. Effects to soils would likely be decreased infiltration and permeability

resulting in increased potentials for runoff and increased water erosion. Although there are no perennial streams on public lands within the project area, passage of buggy and ATV/UTV vehicles across non-flowing stream channels with banks higher than 2 feet could destabilize bank slopes and increase sediment loading to flowing streams. The project as proposed will not contribute to existing iron impairment issues.

However, off-road buggy and ATV/UTV vehicles would be operated to avoid rutting (wet) conditions and wheel/tire spinning. Off-road routes would also be hidden from others passing by points of departure from existing roads to limit potentials for others to use the tracks for recreational OHV uses. Setbacks for disturbance and effects of the seismic survey would reduce potential impacts by buffering overland flow and entrained sediment through capture of flow and sediment by undisturbed lands situated between project activities and ephemeral stream courses.

Mitigative Measures: Impacts to surface water quality would be minimized by implementing the following measures:

- Off-road buggy/track drills, buggy vibes, and ATV/UTVs should not be operated when soils or road surface becomes saturated to a depth of three inches unless otherwise approved by BLM.
- Cross-country buggy and vehicle travel would avoid crossing intermittent/ephemeral tributaries where bank heights more than 2 feet above the channel bottom are present.
- Use existing travel ways when possible and minimize operations in floodplains and riparian areas. Limit the destruction of vegetation and the removal of ground cover when vibroseis buggies are used off existing roads.
- In areas that receive noticeable impacts on vegetation and ground cover (e.g., locations that may create increased OHV use by the public), take care to restore ground cover and inhibit unauthorized motorized vehicle use. Reclamation actions taken to restore ground cover would be reported to the BLM.
- Operator will not take vehicles or drill/shoot/shake on federal lands within 350 feet of seeps and springs (see WETLANDS/RIPARIAN ZONES).
- No surface water will be taken from public lands for exploration activities.

Reference: Colorado Department of Public Health and Environment Water Quality Control Commission. 2010. Regulations #33, 37, and 93. http://www.cdphe.state.co.us/regulations/wqccregs/index.html

WETLANDS/RIPARIAN ZONES

Affected Environment: There are three identified springs on public lands within the proposed project area. BLM Springs #088-05 and 088-06, each approximately 0.1 acre in size, are located in T6N R91W Sec 18 SW¼ SE¼ . BLM Spring #088-03, also approximately 0.1 acre in size, is located T6N R91W Sec 30 SW¼NW¼. There are also several sections of the Yampa River, a perennial river, that are present within the project area. There are no other identified wetlands or riparian areas on public lands within the project area.

A field survey to find and locate springs and seeps on public lands within LSFO occurred in the early 1980s. These three springs were first inventoried in 1982 and were noted as being used by livestock and wildlife. The BLM holds absolute water rights on two of these features. No record exists of revisits to BLM Springs #088-05 and 088-06 since the initial inventory, but the project proponent has recently located and marked these springs. In July 2011, BLM staff field verified the location and functioning condition of BLM Spring #088-03.

Environmental Consequences, Proposed Action: Use of buggies in close proximity (less than 350 feet) to seeps/springs during recording activity could affect flow rates if vibrations increase particle packing and cause a net loss in effective porosity of the aquifer. Potential fracturing of confining layers from shaking around a spring/seep could allow local recharge groundwater to infiltrate deeper into the ground essentially drying out the spring/seep. Such impacts are expected to be limited due to compliance with a proposed 350 foot setback of source lines.

Environmental Consequences, No Action Alternative: There would be no impacts to wetland and riparian zones from implementation of the proposed seismic survey project.

Mitigative Measures:

- Operator will not take vehicles or drill/shoot/shake on federal lands within 350 feet of seeps and springs.
- Shot holes would not be drilled in intermittent/ephemeral channels.
- Cross-country buggy and track vehicle travel would avoid crossing intermittent/ ephemeral stream channels where bank heights more than 2 feet above channel bottom are present.
- To avoid or minimize potential stream bank destabilization that may result from source-generated ground vibration, the peak particle velocity within 200 feet of any perennial surface waters would not exceed 1.0 inches per second.
- No surface water will be taken from public lands for exploration activities.

WILDLIFE, TERRESTRIAL

Affected Environment: A variety of wildlife habitats and their associated species occur in the project area. Each habitat type provides food, cover and shelter for a variety of mammal, bird, amphibian and reptile species common to northwest Colorado. Although all of the species are important members of native communities and ecosystems, most are common and have wide distributions within the state, region and project area.

The project area provides important habitat for big game species. Mule deer and pronghorn antelope can be found throughout the area year round. Elk also utilize this area, primarily in the winter months. Severe winter habitat for elk and antelope and critical winter habitat for mule deer is located on BLM lands within the project boundary. Cliffs and rock outcrops located the project area provide nesting substrate and foraging habitats for raptor species. Generally, raptors return to areas in which they have nested in the past, often using the same nesting territories.

Nesting activities may be initiated in mid-February to late-April depending upon species. Nest occupation continues until chicks are fledged, which usually occurs from early June to mid-August.

Both golden eagles and red-tailed hawk nests have been documented in the project area, with the majority of nest sites located in cliff nesting habitat. All raptors and their nests are protected from take or disturbance under the Migratory Bird Treaty Act (16 USC, § 703 *et seq*.). Golden and bald eagles also are given additional protection under the Bald Eagle Protection Act (16 USC, §669 *et seq*.).

Environmental Consequences, Proposed Action:

General impacts for wildlife species include short-term habitat degradation and loss, individual displacement and reduced fitness. Such impacts are more significant during critical seasons, such as winter or reproduction. Populations of mobile wildlife species likely would disperse to adjacent undisturbed habitats and remain throughout the duration of seismic activities. Activities under the Proposed Action are not likely to result in measurable direct effects to species with larger home ranges. The Proposed Action may have negligible effects on individuals of terrestrial wildlife species through displacement or localized habitat disturbance, but would not constitute a threat to the viability of any terrestrial wildlife species populations. Big game species using winter ranges would likely be disturbed by project activities. Since seismic activities would be conducted in one area at a time, impacts from noise are expected to be temporary. Big game displaced by temporary activities would relocate to adjacent suitable habitat. Since the vibrator trucks would move through the project relatively quickly, portions of the project where seismic activities are not occurring would offer adequate refuge for big game species.

The potential impacts on raptors include nest abandonment and/or reproductive failure due to project activities, reductions in prey populations, mortality from vehicle collisions and temporary loss of nesting and/or foraging habitat. Avoidance of disturbance near existing nest sites would reduce potential impacts on nesting raptors. Seismic activities should not be conducted on BLM lands within ¼ mile of any raptor nest from February 1 to August 15 to prevent impacts to these species. Assuming compliance with the buffers and timing restrictions listed in the mitigation, the Proposed Action would minimal impacts on raptor species.

Environmental Consequences, No Action: There would be no impacts to terrestrial wildlife from this alternative.

Mitigative Measures: No blasting and no vibroseis vehicles would be allowed on BLM lands from February 1 through August 15 within ¼ mile of any active raptor nest. This timing limitation would apply to BLM lands located in T6N, R91W, Section 30 SW1/4 and T6N, R92W, Sections 25, 31 and 33.

WILDLIFE, AQUATIC

Affected Environment: Three small springs and the associated riparian vegetation provide habitat for aquatic wildlife. A variety of aquatic insects and possibly amphibians, such as chorus or northern leopard frogs, may utilize this habitat.

Environmental Consequences, Proposed Action: The seismic survey would have little opportunity to impact aquatic wildlife. Mitigative measures (See Riparian Section) prohibiting seismic activities within 660 feet of seeps or springs would prevent impacts riparian areas, and therefore protect aquatic wildlife.

Environmental Consequences, No Action: No impacts to aquatic wildlife would occur at this time as no seismic survey would be conducted within the proposed project area.

Mitigative Measures: None

CUMULATIVE IMPACTS SUMMARY: Cumulative impacts assess the proposed Craig Dome/Bell Rock 3D Seismic survey project in relation to past, present, and reasonably foreseeable future actions that could affect the same resources as the project. The intention of the 3D Survey is to increase the success of finding of economical oil and gas reserves in the proposed area. In this southern portion of Moffat County, operators have submitted federal and non-federal Applications to Drill with the anticipation of drilling horizontal oil and gas wells to the Niobrara shale formation.

The landscape surrounding the project area has historically been dominated by industry, ranching, livestock operations, rights of ways, and some minor housing development in and around the town of Craig. Moffat County has a well count in excess of 1500, according to COGCC records. Drilling for oil and gas in the project area (63,000 acres) has occurred since the 1940s. There have been approximately 85 wells drilled with nearly 80% tested uneconomical production. The majority of these wells have been exploratory. Cumulative impacts associated with drilling, ranching, and other land use activities have been undue surface disturbance, removal of vegetation, dust and noise related with truck traffic, visual impacts of the well locations and surface facilities, and impacts to wildlife.

The Craig Dome/Bell Rock 3D Seismic survey project is anticipated to greatly increase the success ratio of finding economical oil and gas reserves in the Niobrara shale formation, as realized in similar areas in northern Colorado and southeastern Wyoming. Horizontal drilling has been successfully proven in these areas. The Niobrara shale formation predominantly has vertical fractures. The proposed 3D Seismic survey project enables a company to better understand the fracture geometry. This, in turn, will allow a company to better plan the horizontal directional drilling program to intersect the vertical fractures at the most strategic points in the formation for the maximum release of hydrocarbons to the well bore. It is anticipated the undue impacts will be substantially reduced because of the increased success ratio of finding economical oil and gas in the Niobrara shale formation. Niobrara is the next likely major play of oil and gas development within the project area. Some major rights of ways are also anticipated. Other future activities

contributing to cumulative impacts will likely be industrial or agricultural based.

Although the project would have minor cumulative impacts on most resources, the relatively small scale and impermanence of the project combine to make the cumulative impacts negligible in comparison to the other past, present, and reasonably foreseeable impacts that would occur without the project. In fact, by having accurate 3D seismic information from resulting from this project there may be reduced cumulative impacts from further development of Federal oil and gas leases due to the more precise nature of development.

STANDARDS:

PLANT AND ANIMAL COMMUNITY (plant) STANDARD: The proposed vibroseis operations would have highly localized impacts to the plant communities, with woody shrubs such as big sagebrush receiving the greatest impacts. Crushing by buggy tires would result in localized mortality of some woody plants, while herbaceous plants such as forbs and grasses would be largely unaffected. Overall, the proposed action would not adversely affect the health of the plant communities and localized impacts would be minor within the larger communities; the proposed action would meet this standard. The no action alternative would also meet this standard as no impacts would occur.

SPECIAL STATUS, THREATENED AND ENDANGERED SPECIES (plant) STANDARD: There are no federally listed threatened or endangered or BLM sensitive plant species present within the proposed project area. This standard does not apply.

SPECIAL STATUS, THREATENED AND ENDANGERED SPECIES (animal) STANDARD: The Proposed Action would not jeopardize the viability of any special status animal population. With implementation of mitigation measures, the project would have minimal impacts to sensitive species or their habitats. The Proposed Action would not preclude this standard from being met.

PLANT AND ANIMAL COMMUNITY (animal) STANDARD: The project area provides productive habitat for a variety of wildlife species. The project would not jeopardize the viability of any function, or have any discernible effect on animal abundance or distribution at any landscape scale. With implementation of mitigation measures and successful revegetation, the proposed project would not preclude this standard from being met.

RIPARIAN SYSTEMS STANDARD: The proposed action would have no effect on the land health standard with implementation of mitigation measures.

WATER QUALITY STANDARD: Following the application of appropriate mitigation measures, the potential for adverse environmental impacts resulting from the proposed action would be successfully mitigated.

UPLAND SOILS STANDARD: With application of the recommended mitigation measures, the proposed action is unlikely to reduce the productivity of soils impacted by surface disturbing and use activities on public lands.

PERSONS/AGENCIES CONSULTED: Uintah and Ouray Tribal Council, Colorado Native American Commission, Colorado State Historic Preservation Office.

SIGNATURE OF PREPARER: /s/ Marty O'Mara

DATE SIGNED: 07/22/11

SIGNATURE OF ENVIRONMENTAL REVIEWER: /s/ Matt Anderson

DATE SIGNED: 07/22/11

Attachments:
Attachment 1, Conditions of Approval
Attachment 2, Applicant submitted map

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
DOI-BLM-CO-N010-2011-0006 EA

Based on the analysis of potential environmental impacts contained in the EA and all other available information, I have determined that the proposal and the alternatives analyzed do not constitute a major Federal action that would adversely impact the quality of the human environment. Therefore, an EIS is unnecessary and will not be prepared. This determination is based on the following factors:

1. **Impacts that may be both beneficial and adverse:**

   Beneficial, adverse, direct, indirect, and cumulative environmental impacts have been disclosed in the EA. Analysis indicated no significant impacts on society as a whole, the affected region, the affected interests, or the locality. The physical and biological effects are limited to the Little Snake Resource Area and adjacent land.

2. **Degree of effect on public health and safety:**

   Public health and safety would not be adversely impacted. There are no known or anticipated concerns with project waste or hazardous materials.

3. **Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:**

   There would be no adverse impacts to regional or local air quality, prime or unique farmlands, known paleontological resources on public land within the area, wetlands, floodplain, areas with unique characteristics, ecologically critical areas, or designated Areas of Critical Environmental Concern.

4. **Degree to which the possible effects on the quality of the human environment are likely to be highly controversial:**

   There are no highly controversial effects on the environment.

5. **Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risk:**

   There are no effects that are highly uncertain or involve unique or unknown risk. Sufficient information on risk is available based on information in the EA and other past actions of a similar nature.

6. **Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration:**

This alternative does not set a precedent for other actions that may be implemented in the future to meet the goals and objectives of adopted Federal, State, or local natural resource related plans, policies, or programs.

7. **Whether the action is related to other actions with individually insignificant but cumulatively significant impacts:**

   No cumulative impacts related to other actions that would have a significant adverse impact were identified or are anticipated.

8. **Degree to which the action may be adversely affect district, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss or destruction scientific, cultural, or historic resources:**

   Based on previous and ongoing cultural surveys and through mitigation by avoidance, no adverse impacts to cultural resources were identified or anticipated. There are no known American Indian religious concerns or persons or groups who might be disproportionately and adversely affected as anticipated by the Environmental Justice Policy.

9. **Degree to which the action may be adversely affect an endangered or threatened species or its critical habitat:**

   No adverse impacts to any threatened or endangered species or their habitat that was determined to be critical under the Endangered Species Act were identified. If, at a future time, there could be the potential for adverse impacts, treatments would be modified or mitigated not to have an adverse effect or new analysis would be conducted.

10. **Whether the action threatens a violation of federal, state, or local environmental protection law:**

    This alternative is in compliance with relevant Federal, State, and local laws, regulations, and requirements for the protection of the environment

SIGNATURE OF AUTHORIZED OFFICIAL: ___/s/ Matt Anderson for _____
Field Manager

DATE SIGNED: 07/22/11

DECISION RECORD

DECISION AND RATIONALE: It is my decision to approve the implementation of the Craig Dome/Bell Rock 3D Seismic Survey project as described in the Proposed Action and BLM additional resource-specific mitigation measures. This project will aid in a gathering accurate oil and gas reserve information in order to provide for organized and responsible future development of the resource.

MITIGATION MEASURES: The mitigation measures for this project are found in the file for this project in the file room of the Little Snake Field Office. The permit, plan of operations, location maps, and the stipulations are found in the permit's case file labeled COC74733.

COMPLIANCE PLAN(S):

Compliance Schedule
Compliance will be conducted during seismic operations phase to insure that all terms and conditions specified in the geophysical permit are followed. Inspections will include a review of all required reports and will be evaluated for accuracy.

Monitoring Plan
Seismic activities will be monitored during the term of the permit for compliance with pertinent COAs until the Notice of Completion is approved; monitoring will help determine the effectiveness of mitigation and document the need for additional mitigative measures.

Assignment of Responsibility
Responsibility for implementation of the compliance schedule and monitoring plan will be assigned to the Fluid Mineral staff in the Little Snake Field Office. The primary inspector will be the Geologist, but the Petroleum Engineer, Natural Resource Specialist, Realty Specialist, and Legal Instruments Examiner may also be involved.

SIGNATURE OF AUTHORIZED OFFICIAL: _____/s/ Matt Anderson for _____
Field Manager

DATE SIGNED: 07/22/11

Attachment 1: Conditions of Approval

1) Cross-country travel by buggies would be limited to slopes less than or equal to 25%.

2) Off-road buggy/track drills and buggy vibe operators would be instructed to travel cross-country at speeds of less than 15 miles per hour to minimize potential impacts to soils and vegetation.

3) On a limited basis, ATVs/UTVs would be used to access remote receiver lines and recording equipment by traversing cross-country along accessible (low risk for ATV/UTV use) source lines. ATV/UTV activity would be confined to the source line's cleared area of potential affect (APE) for cultural resources. All other vehicles would be restricted to existing roads and trails.

4) With the exception of low-pressure-tired off-road buggy drills and buggy vibes, all other vehicles would be restricted to existing roads and trails.

5) Buggies and ATV/UTVs should not be operated off-road when soils or road surface becomes saturated to a depth of three inches unless otherwise approved by the BLM.

6) Off-road buggy vehicle traffic would be planned to minimize the number of passes over the same ground, and to minimize the potential for excessive damage to vegetation, soil compaction, and where present, biological soil crusts.

7) In the event more excessive surface effects are caused from buggy passage, areas would be reseeded, on a case-by-case basis as deemed necessary by the BLM to control soil erosion, soil loss, and sedimentation and to restore protective, productive vegetative cover.

8) Colorado Pikeminnow: No seismic activities are allowed within 200 feet of the 100 year floodplain of the Yampa River. This mitigation applies to BLM lands located in T6N, R91W, Section 30 and T6N, R92W, Sections 31, 34, and 36.

9) Greater sage-grouse and Columbian sharp-tailed grouse: To minimize the potential for disturbing grouse during the nesting season and preventing accidental destruction of nests, no seismic activities (including driving vibrosies trucks or OHVs) would be allowed within mapped nesting habitat from March 1 through June 30. This mitigation does not apply to casual use, such as hiking in to an area to lay down receiving lines. This timing limitation would apply to BLM lands located in T6N, R91W, Sections 29 and 30 and T6N, R92W, Sections 19, 20, 23, 25, 29, 31, 34, 35 and 36.

10) All vehicles used on BLM lands to perform the proposed activity must be washed, especially the under-carriage, to remove mud and weed seed prior to accessing BLM land. We would also recommend that vehicles be washed following the project activities so as not to spread weed seed to other areas. The operator will be responsible for treating any sizeable weed infestations introduced as a result of the geophysical project. If noxious weed infestations develop, the operator will be required to obtain a pesticide use permit and have a licensed applicator treat the affected areas.

a. Any cultural and/or paleontological (fossil) resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and the authorized officer will make any decision as to proper mitigation measures after consulting with the holder.

b. The operator is responsible for informing all persons who are associated with the operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are encountered or uncovered during any project activities, the operator is to immediately stop activities in the immediate vicinity of the find and immediately contact the authorized officer (AO) at (970) 826-5000. Within five working days, the AO will inform the operator as to:

- Whether the materials appear eligible for the National Register of Historic Places;
- The mitigation measures the operator will likely have to undertake before the identified area can be used for project activities again; and
- Pursuant to 43 CFR 10.4(g) (Federal Register Notice, Monday, December 4, 1995, Vol. 60, No. 232) the holder of this authorization must notify the AO, by telephone at (970) 826-5000, and with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

b. If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

11) All vehicles and equipment would be properly maintained to minimize exhaust emissions.

12) BLM-approved dust control measures would be applied as necessary on BLM roads.

13) The extent of disturbance and effect would be limited by avoiding off-road vehicle/buggy travel on FEMA-identified flood plains. Operator will not take vehicles or drill/shoot/shake on federal lands within FEMA-identified 100-year flood plains.

14) Potential damage to existing rights-of-way would be minimized by the following actions:

a) Avoid existing rights-of-way during the project.
b) Utilize the "One Call" system to locate and stake the centerline and limits of all underground facilities in the area prior to project initiation.
c) Provide 48-hour notice to the owner/operator of all facilities prior to performing any work near existing rights-of-way.
d) Source points shall be located a minimum of 300 feet from oil/gas wells and pipelines, unless written permission to encroach closer has been given by the owner/operator. Spills resulting from ruptured pipelines shall be cleaned up as directed by DEQ and the facility owner/operator.
e) Source points shall be offset away from power lines, communication sites, and public water reserves, in accordance with safe operating distances.

15) The geophysical service operator must follow BLM Handbook H-3150-1 "Onshore Oil and Gas Geophysical Exploration Surface Management Requirements". Illustration 16, page 3 of the handbook is a table that shows the minimum safe offset to structures for vibrator truck operations. The minimum safe distance buffer to water wells is 350 feet.

16) Off-road buggy/track drills, buggy vibes, and ATV/UTVs should not be operated when soils or road surface becomes saturated to a depth of three inches unless otherwise approved by BLM.

17) Cross-country buggy and vehicle travel would avoid crossing intermittent/ephemeral tributaries where bank heights more than 2 feet above the channel bottom are present.

18) Use existing travel ways when possible and minimize operations in floodplains and riparian areas. Limit the destruction of vegetation and the removal of ground cover when vibroseis buggies are used off existing roads.

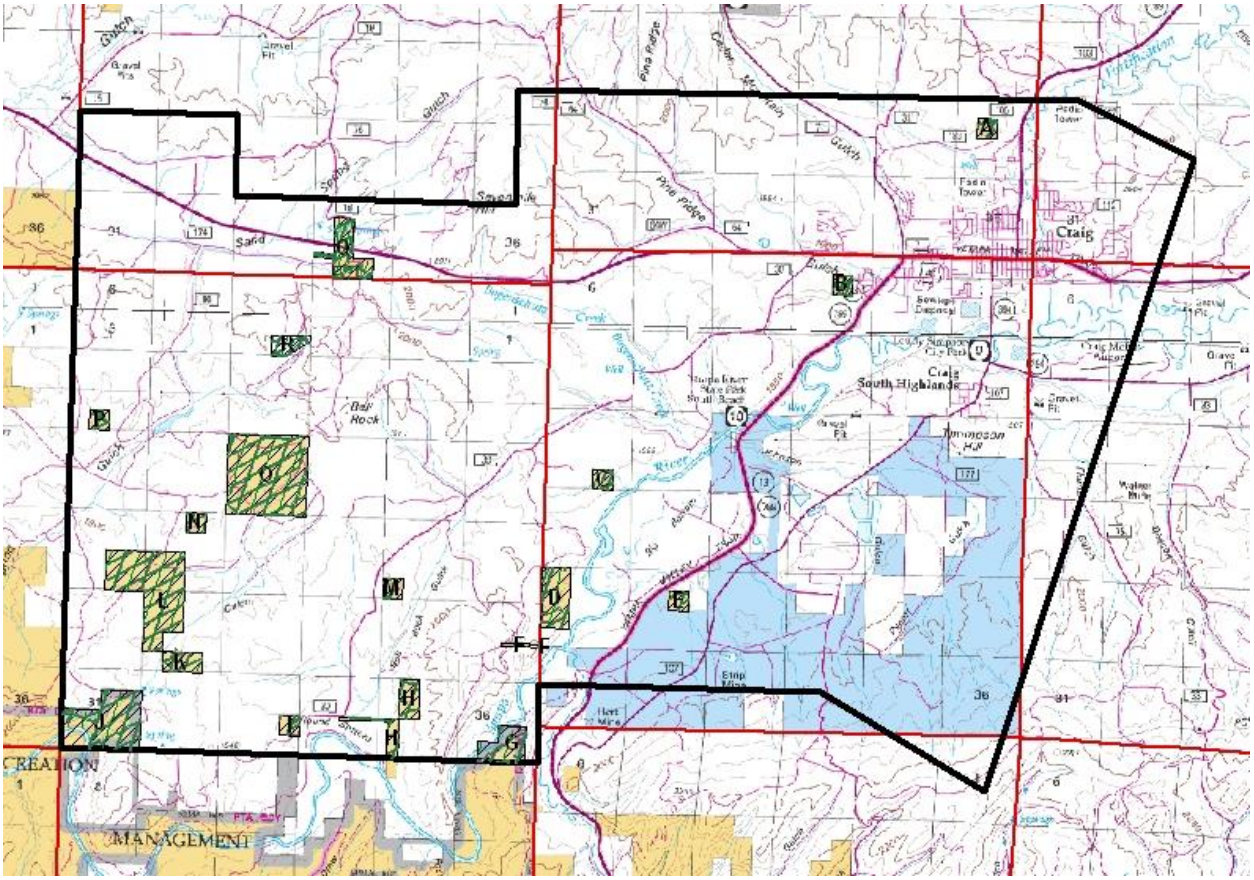
19) In areas that receive noticeable impacts on vegetation and ground cover (e.g., locations that may create increased OHV use by the public), take care to restore ground cover and

inhibit unauthorized motorized vehicle use. Reclamation actions taken to restore ground cover would be reported to the BLM.

20) No surface water will be taken from public lands for exploration activities.

21) Geokinetics shall clean up all oil, fuel or other spills, including contaminated soils. All spill-related material must be hauled to a Colorado DEQ approved disposal site. If a spill and/or release does occur, the operator must report it to the AO immediately at 970-826-5000.

22) Any and all facilities damaged, destroyed or removed in connection with this geophysical exploration operation shall be immediately restored to original condition or replaced with a similar facility.



Attachment 2: Craig Dome/Bell Rock 3-D Seismic survey area