

U.S. Department of the Interior  
Bureau of Land Management  
White River Field Office  
73544 Hwy 64  
Meeker, CO 81641

## ENVIRONMENTAL ASSESSMENT

**NUMBER:** CO-110-2007-175-EA

**CASEFILE/PROJECT NUMBER:** COC65127

**PROJECT NAME:** Williams' Well 11-7-397

**LEGAL DESCRIPTION:**

Well	T	R	Sec.	P.M.	Quarter Section	X <sup>a</sup>	Y
11-7-397	3 S.	97 W.	7	6 <sup>TH</sup> P.M.	NW¼NW¼	728609	4409645

<sup>a</sup> UTM Z12N NAD 83

**APPLICANT:** Williams Production RMT Co.

**ISSUES AND CONCERNS:** A pipeline ROW application was submitted with the APD for the well. Hard copies of photos taken during the on-site will be in the well file and at:  
S:\NEPA\onsite\_photos\Brett\Williams\WILLIAMS 06-16-05

**DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:**

***Background/Introduction:*** The Bureau of Land Management (BLM) White River Field Office (WRFO) received one Application for Permit to Drill (APD) by Williams Production RMT on 31 May 2007 for well 11-7-397. The applicant requests permission to construct an access road to the location and install a pipeline. Site characteristics of the proposed well pad location are summarized in Table 1.

**Table 1.** Well Number, Surface Owner, Dominant Vegetation, Elevation, Well, Road and NEPA Application Density, and Watershed for the Proposed Well Location

Well Number	Surface Owner	Dominant Vegetation	Elevation (ft)	Well Density (wells/mi <sup>2</sup> )	Road Density (miles of road/mi <sup>2</sup> )	Watershed	NEPA Application Density (sq. mile)
11-7-397	BLM	Pinyon-juniper, mountain big sagebrush	6,763	< 1	2.9	Black Sulfur Creek	< 1

**Proposed Action:** The Proposed Action includes constructing one well pad and drilling one natural gas well (see Table 2 for pad dimensions and total area disturbed), constructing 331 feet (0.1 mile) of access road to the proposed well location, and disturbing approximately 0.04 acre for the pipeline right-of-way (ROW). Total area disturbed, including overburden to construct the well pad, access road, and pipeline ROW, would be approximately 4.17 acres. The on-site inspection was conducted on 16 June 2005.

**Table 2.** Pad Dimensions and Acres Disturbed for the Proposed Well Pad and Access Roads

Well Number	Anticipated Construction Date	Pad Size (ft)	Disturbance <sup>a</sup> (acres)	New Access (ft)	Disturbance (acres)
11-7-397	1 August 2007	250 x 400	3.9	30 x 331	0.23

<sup>a</sup> Estimate includes total acres disturbed for pad surface, overburden, and the production facilities pad.

The Proposed Action is on BLM-administered surface and is on a federal oil and gas lease which would require a ROW to construct a pipeline. The 4-inch-diameter gathering pipeline connection would tie-in to existing gathering lines and would require a 60-foot ROW for the initial construction phase. The total length of pipeline would be 64 feet. After construction and reclamation were completed, the permanent ROW would be reclaimed to 30 feet. The pipeline would commence at the well head and extend southeast for 64 feet to the tie-in point at a staked pipeline. Total area disturbed to construct the well pad, access road, and pipeline would be approximately 4.17 acres (Table 3).

**Table 3.** Disturbance Estimates for the Proposed Action

Pad Size (ft)	Disturbance <sup>a</sup> (acres)	New Access (feet)	Disturbance (acres)	Pipeline <sup>b</sup> (feet)	Disturbance (acres)	Total Disturbance (acres)
250 x 400	3.9	30 x 331	0.23	30 x 64	0.04	4.17

<sup>a</sup> Estimate includes total acres disturbed for pad surface, overburden, and the production facilities pad.

<sup>b</sup> ROW width is based on permanent ROW of 30 feet.

The road would be constructed to address on-the-ground conditions with the goal of minimizing surface disturbance and would conform to accepted BLM practices for this area. All access roads and surface-disturbing activities would conform to standards outlined in the BLM Gold Book, *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (BLM 2006a).

All roadside and well location cut and fill slopes would be revegetated immediately after construction with the seed mixture(s) specified in the Conditions of Approval.

All reserve pits would be fenced to BLM specifications. These specifications would be provided to the Operator as part of the Conditions of Approval. Produced waste water could be confined to the pit for a period of 90 days after initial production. During the 90-day period, the required waste analysis would be submitted for the Authorized Officer's (AO's) approval, pursuant to Onshore Oil and Gas Order No. 7 (NTL-2B). A permanent steel tank would be installed in the

ground next to the production facilities to contain any produced water for the duration of the well.

Reserve pits would be backfilled after pit fluids were allowed to evaporate. The backfilling of the reserve pit would be done in such a manner that the mud and associated solids would be confined to the pit and not squeezed out and incorporated into the surface materials. There would be a minimum of 3 feet of cover (overburden) on the pit.

All remaining cuttings would be solidified and buried in place, or disposed of in an approved manner. The stockpiled ground cover would be evenly distributed over the disturbed areas. The recommended seed mix to be used on all disturbed areas would be determined by the WRFO, and the dirt contractor would be provided with an approved copy of the surface use plan.

Williams would build a temporary lined pit to store frac water while completing the well. The frac pit would be reclaimed immediately following completion. Chemical pesticides or any other control agent that represents a potential soil, air, or water pollutant would not be utilized for any purpose on public lands without express written authorization from the AO.

The Operator or his contractor would notify the BLM at least 48 hours before starting reclamation work that involves earth-moving equipment and upon completion of restoration measures.

During the Environmental Assessment (EA) process for this area, cultural resource clearance inventories were submitted under separate cover by Grand River Institute on 24 June 2005. Threatened and endangered species surveys were completed by SWCA Environmental Consultants (SWCA) for the proposed location.

Construction of the well pad, access road, and pipeline would begin around 1 August 2007. The anticipated duration for construction-related activities is 30 days, which includes drilling and completion.

**No Action Alternative:** Under the No Action Alternative, the application would be denied and the well pad and access road would not be constructed.

**ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD:** Due to the small scale of the proposed project, no additional alternatives were considered.

**NEED FOR THE ACTION:** The purpose of the Proposed Action is to manage the exploration and development of mineral resources on public lands in a manner that avoids, minimizes, reduces, or mitigates potential impacts to other resource values.

**PLAN CONFORMANCE REVIEW:** The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: White River Record of Decision and Approved Resource Management Plan (ROD/RMP).

Date Approved: July 1, 1997.

Decision Number/Page: Pages 2-5 through 2-6.

Decision Language: “Make federal oil and gas resources available for leasing and development in a manner that provides reasonable protection for other resource values.”

## **AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES / MITIGATION MEASURES**

**STANDARDS FOR PUBLIC LAND HEALTH:** In January 1997, Colorado BLM approved the Standards for Public Land Health. These standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. Because a standard exists for these five categories, a finding must be made for each of them in an environmental analysis. These findings are presented in the specific elements listed below.

### **CRITICAL ELEMENTS:**

#### **AIR QUALITY**

*Affected Environment:* The Project Area is sparsely populated and therefore has relatively few residential air emissions that primarily arise from small communities and ranches. Vehicle traffic is also relatively low in the area but does affect the air quality to some degree from exhaust emissions and dust (particulate matter) generated by driving on unpaved roads. Historically, there have been limited industrial facilities in the area; however, oil and gas development in the Piceance Basin is rapidly increasing.

Despite the increase in industrial emissions, overall air quality conditions in the Project Area are likely to remain good due to effective atmospheric dispersion conditions and limited transport of air pollutants from outside the area. Background air pollutant concentration data have been compiled for EAs in the vicinity of the Project Area (BLM 2006b, BLM 2006c). These data are considered to be the best available representation of background air pollutant concentrations near the Project Area and include impacts from existing sources both inside and outside the Project Area. The data show that maximum pollutant concentrations are well below state and federal standards for most pollutants. Maximum concentrations of ozone approaching the federal standard were observed.

The federal government established the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants under the Clean Air Act and its amendments. These six criteria pollutants are carbon monoxide, ozone, sulfur dioxide, nitrogen dioxide, lead, and particulate matter. The federal government also authorizes local, state, and tribal air quality regulatory agencies to establish regulations that are more stringent than federal requirements. The state of Colorado has adopted the NAAQS but has also established a more stringent Colorado Ambient Air Quality Standard (CAAQS) standard for sulfur dioxide.

Specific air quality monitoring data is not available for the Project Area. Only the cities of Grand Junction and Parachute contain monitoring stations in the vicinity of the Project Area. Both stations monitor for particulate matter, and Grand Junction also monitors for carbon monoxide. Other criteria pollutants are not monitored on the Western Slope. Monitoring data at Grand Junction and Parachute indicates that the area is in attainment, meaning that the ambient concentrations of criteria pollutants are less than the applicable air quality standards (NAAQS and CAAQS).

The Clean Air Act and its amendments established the mandatory federal Prevention of Significant Deterioration (PSD) Class I and Class II designations. Mandatory federal Class I areas include existing wilderness areas greater than 5,000 acres in size and national parks greater than 6,000 acres in size. All other locations in the country where ambient air quality is within the NAAQS (including attainment and unclassified areas) were designated as PSD Class II areas. Both classes are protected under the Clean Air Act, but Class I areas are identified for somewhat more stringent protection from air pollution damage than Class II areas, except in specified cases. For instance, the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD) has designated Dinosaur National Monument as a State Category 1 Area, with the same sulfur dioxide increments as a federal PSD Class I area. Given the attainment status of the Project Area, it is designated as PSD Class II. The Flat Tops Wilderness Area, designated as PSD Class I, is located approximately 25 miles east of the Project Area. Dinosaur National Monument, which is subject to PSD Class I requirements, is located approximately 60 miles northwest of the Project Area. New development projects in PSD areas that would be a major source of pollutants (defined as either 250 tons/year or 150 tons/year depending on the source) require demonstration of the “Best Available Control Technology (BACT)”, an air quality analysis, an additional impact analysis, and public involvement.

*Environmental Consequences of the Proposed Action:* Direct air quality impacts associated with project activities would likely occur. Impacts would result from the use of engines and turbines during construction and development. This machinery is usually powered by diesel, which produces a variety of emissions when combusted. These emissions include particulates and gases such as nitrogen oxides, carbon monoxide, carbon dioxide, and various volatile organic compounds (VOCs). These gas emissions further contribute to visibility degradation, ozone levels, and additional particulate formation. Surface disturbance of the land, drilling activities, and increased vehicle traffic on unpaved roads would also directly increase fugitive dust and particulates. Short-term increases in non-criteria pollutants such as visibility, nitric oxide, air toxics, and total suspended particulates (TSP) may also occur during construction and development activities.

According to the CDPHE, nitrogen dioxide, VOCs, and fugitive dust emissions from the oil and gas industry are increasing and are relatively uncontrolled in Colorado due to their minor source status (CDPHE 2007a). Impacts from the Proposed Action would cumulatively contribute to this trend. It is estimated that VOC contributions related to oil and gas development comprise 68% of anthropogenic emissions in Rio Blanco County (CDPHE 2007a). The State of Colorado has recognized that the oil and gas sector is rapidly growing and is contributing to Colorado’s air quality issues (CDPHE 2007a). To minimize the contribution of this industry, the State Air

Quality Control Commission (AQCC) adopted more stringent oil and gas industry regulations in December 2006.

Other potential cumulative impacts would include an increase in disturbed area within the region, which unless mitigated, could expose bare soils and contribute to particulate matter in the air. The cumulative effects of an overall increase in these pollutants could also potentially lead to reduced visibility. Because the historic air quality has been good, small changes in air quality may have noticeable effects, especially on visibility.

*Environmental Consequences of the No Action Alternative:* There would be no environmental consequences associated with the No Action Alternative.

*Mitigation:* All activities would be required to comply with all applicable local, state, and federal air quality laws, statutes, regulations, standards, and implementation plans. Documentation of this compliance would be provided to the BLM. Further mitigation of air quality impacts would also be required, including:

- the limitation of vehicle speeds on associated access roads to 15 miles per hour (mph) or speeds such that a dust plume is not visible at the appropriate designated speed for that road;
- application of a BLM-approved dust suppressant would be required during dry periods when dust plumes are visible at speeds less than or equal to 15 mph;
- surfacing of access roads constructed on soils susceptible to wind erosion with gravel or other appropriate material;
- suspension of land clearing, grading, earth moving, and excavation activities when wind speed exceeds 20 mph;
- restoration of disturbed areas including regrading to original contours, revegetation with a BLM-approved seed mixture, and post-seeding placement of woody debris in appropriate areas to increase effective ground cover and retain soil moisture;
- maintenance of construction equipment in good operating condition to ensure engines run efficiently; and
- maintenance of emission controls on vehicles and construction equipment to ensure effective pollutant emission reductions.

## **CULTURAL RESOURCES**

*Affected Environment:* The proposed well pad location, access route, and well tie-in pipeline route have been inventoried at the Class III (100% pedestrian) level (Conner and Davenport 2005, Compliance Dated 7/21/2005) with no new cultural resources identified in the inventoried area. There are no other known sites located within the vicinity of the proposed well location.

*Environmental Consequences of the Proposed Action:* The proposed well pad location, access, and pipeline would not impact any known significant cultural resources. However, previously unrecorded sites within 308 meters could be adversely impacted by vibrations from construction and drilling or increased unauthorized collection due to increased and improved access to the area.

*Environmental Consequences of the No Action Alternative:* There would be no impacts to cultural resources under the No Action Alternative.

*Mitigation:* If subsurface cultural resources are located during clearing of the well pad location, access road, or well tie in pipeline, all construction on the well pad must cease immediately. The AO would be notified immediately. Within five working days the AO would contact the Operator regarding:

- whether the subsurface features or materials found during construction appear eligible for the National Register of Historic Places (NRHP);
- the mitigation measures the Operator would likely have to undertake before the site can be used (assuming that in situ preservation is not necessary); and
- a timeframe for the AO to complete an expedited review under 36 CFR 800-11 to confirm, through the State Historic Preservation Officer (SHPO), that the findings of the AO are correct and that the mitigation is appropriate.

At any time, if the Operator wishes to relocate the construction activities to avoid the expense of mitigating subsurface cultural resources and/or the delays associated with the process, the AO would assume the responsibility of recording and/or stabilizing the exposed materials, if required. Mitigation technical guidelines and procedures would be provided by the AO. The Operator may resume construction once the AO has verified that mitigation is complete.

Pursuant to 43 CFR 10.4 (g) the holder of the authorization must notify the AO, by telephone, followed by written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Pursuant to 43 CFR 10.4 I and (d), activities in the vicinity of the discovery must stop and the discovery must be protected for 30 days or until the AO provides notice to proceed.

## **INVASIVE, NON-NATIVE SPECIES**

*Affected Environment:* Noxious weeds are non-native plant species that are invasive and/or can become monocultures, and can cause harm to land value, native ecology, agricultural interests, wildlife habitat, livestock forage, riparian resources, and aesthetic and visual values of land.

The state of Colorado maintains an official state list of noxious weed species. Weeds are prioritized (Classes A, B, and C) depending on noxious and invasive tendencies. Class A species are noxious weeds that have the potential to pose a significant threat to local economies, ecosystems, and habitats. Class A species currently are not present in the state or have a limited distribution; preventing invasions and eradicating existing infestations is the highest priority.

Class B weeds are species that are limited to portions of the state. In areas with severe infestations, management plans should be designed to contain the infestation and prevent further spread. Class C weeds are species that are widespread throughout the state. Table 4 lists 20 noxious weeds present, or potentially present, in the Project Area. Of these, 19 species appear on the state noxious weed list and 19 species on the noxious weed list for Rio Blanco County. Management decisions for these species should be determined at the local level based on feasibility of control and severity of infestation.

**Table 4.** Noxious Weed Species Potentially Present in the Project Area

Common Name	Scientific Name	Colorado Noxious Weed List <sup>1</sup>	Rio Blanco Noxious Weed List <sup>2</sup>	Present in Project Area
Russian knapweed	<i>Acroptilon repens</i>	B	X	
Common burdock	<i>Arctium minus</i>	C	X	
Cheatgrass	<i>Bromus tectorum</i>	C		X
Hoary cress	<i>Cardia draba</i>	B	X	
Plumeless thistle	<i>Carduus acanthoides</i>	B	X	
Musk thistle	<i>Carduus nutans</i>	B	X	
Diffuse knapweed	<i>Centaurea diffusa</i>	B	X	
Spotted knapweed	<i>Centaurea maculosa</i>	B	X	
Black knapweed	<i>Centaurea nigra</i>		X	
Canada thistle	<i>Cirsium arvense</i>	B	X	
Field bindweed	<i>Convolvus arvensis</i>	C	X	
Houndstongue	<i>Cynoglossum officinale</i>	B	X	
Leafy spurge	<i>Euphorbia esula</i>	B	X	
Halogeton	<i>Halogeton glomeratus</i>	C	X	X
Black henbane	<i>Hyoscyamus niger</i>	B	X	
Perennial pepperweed	<i>Lepidium latifolium</i>	B	X	
Dalmatian toadflax	<i>Linaria dalmatica</i>	B	X	
Yellow toadflax	<i>Linaria vulgaris</i>	B	X	
Scotch thistle	<i>Onopordum acanthium</i>	B	X	
Common mullein	<i>Verbascum thapsus</i>	C	X	

<sup>1</sup>U.S. Department of Agriculture (USDA) 2007

<sup>2</sup>State of Colorado Department of Agriculture (CSD) 2007

Invasive and non-native species observed in the Project Area during the SWCA biological survey on 21 May 2007 were cheatgrass and halogeton. Both of these species are Class C state-listed noxious weeds.

*Environmental Consequences of the Proposed Action:* Approximately 4.17 acres of vegetation would be disturbed in conjunction with the construction of the well pad, pipeline, and access road. Where soils are disturbed and native vegetation is lost, the likelihood for non-native or invasive species to be introduced and become established is increased. Direct impacts to vegetation from weed infestations in the Project Area may include reduced species diversity, loss of wildlife habitat, and loss of rangeland productivity. Indirect impacts resulting from weed infestations in the Project Area could be changes in the fire cycle and increased economic costs from weed management efforts.



*Environmental Consequences of the No Action Alternative:* Under the No Action Alternative there would be no additional impacts to vegetation from noxious weeds within the Project Area. However, the No Action Alternative may allow present populations of noxious weeds to persist or increase as no additional weed monitoring or management efforts would occur.

*Mitigation:* In accordance with the BLM Manual 9015 – Integrated Weed Management (BLM 1992) and the BLM White River Resource Management Plan Appendix B (BLM 1997a), Management of Noxious Weeds, the following mitigation measures are recommended:

- Conduct pre-construction surveys for noxious weed infestations within the site boundaries and along access roads. Surveys should be conducted in spring, if possible.
- Consult with BLM to determine treatment for noxious weeds.
- Construction vehicles and equipment would be cleaned, power-washed, and free of soil and vegetation debris prior to entry and use of access roads to prevent transporting weed seeds.
- All seed mix, erosion control materials, and reclamation materials would be certified weed free.
- Revegetated areas would be monitored for the life of the project to evaluate the need for supplemental seeding and noxious weed control.
- The ROW and other disturbed areas would be monitored for noxious weed infestations, and new or expanding populations would be controlled or eradicated for the duration of the construction, operation, and reclamation phases.

## **MIGRATORY BIRDS**

*Affected Environment:* The Migratory Bird Treaty Act provides for protection of migratory birds, including their nests and eggs. A variety of birds that utilize pinyon-juniper woodland habitat may be present and nesting during spring and summer months. The Partners in Flight program identifies priority bird species and habitats for conservation, and establishes objectives for bird populations in physiographic areas (Partners in Flight 2000). Priority bird populations for pinyon-juniper habitat in the Colorado Plateau region include black-chinned hummingbird (*Archilochus alexandri*), gray flycatcher (*Empidonax wrightii*), Cassin's kingbird (*Tyrannus vociferans*), gray vireo (*Vireo vicinior*), pinyon jay (*Gymnorhinus cyanocephalus*), juniper titmouse (*Baeolophus ridgwayi*), black-throated gray warbler (*Dendroica nigrescens*), and Scott's oriole (*Icterus perisorum*).

Migratory bird species noted during the SWCA biological survey on 21 May 2007 included American robin (*Turdus migratorius*), mountain bluebird (*Sialia currucoides*), white-breasted nuthatch (*Sitta carolinensis*), Clark's nutcracker (*Nucifraga columbiana*), common raven (*Corvus corax*), and Townsend's solitaire (*Myadestes townsendi*). Other species observed in associated similar habitat included mourning dove (*Zenaidura macroura*), horned lark (*Eremophila alpestris*), hermit thrush (*Catharus guttatus*), plumbeous vireo (*Vireo plumbeus*), broad-tailed hummingbird (*Selasphorus platycercus*), American crow (*Corvus brachyrhynchos*), Cooper's

hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), and northern saw-whet owl (*Aegolius acadicus*).

*Environmental Consequences of the Proposed Action:* Disturbance of vegetation has the potential to impact individual migratory birds or their nests. Under the Proposed Action, approximately 4.17 acres of vegetation would be disturbed. Since the amount of vegetation disturbed is low, there most likely would be no measurable impact on the abundance or distribution of migratory birds. Noise and human presence could temporarily disrupt the courting or nesting of birds on or adjacent to the Project Area. Birds displaced by temporary activities would relocate to adjacent suitable habitat; therefore, no long-term impacts would likely occur. Construction activities are expected to begin 1 August 2007, at the end of nesting season for raptors (February 1 through August 15). Due to timing and lack of nesting habitat, the Proposed Action would not directly disrupt migratory bird nesting activities.

Raptors are easily disturbed during breeding, nesting, and fledging periods and may abandon nests due to disturbance. No raptors or nests were observed in the Project Area during SWCA biological surveys. The small trees located in the Project Area make for poor nesting habitat, but the openness and high rolling hills are ideal for perching and foraging.

Reserve pits can attract waterfowl and other migratory birds, where they can come in contact with oil-based drilling fluids resulting in negative impacts (e.g., acute or chronic toxicity, compromised insulation).

*Environmental Consequences of the No Action Alternative:* There would be no affect on migratory birds or their habitats under the No Action Alternative.

*Mitigation:* Reserve pits should be appropriately fenced, as shown in the Gold Book (BLM 2006a) to prevent access by persons, wildlife, or livestock. Netting or other methods may be required in order to prevent access and mortality of birds and other animals.

All lethal and non-lethal events involving migratory birds would be reported to the WRFO Petroleum Engineer Technician immediately.

Disruptive activity would be prohibited within 0.25 mile of functional non-sensitive raptor nesting sites (February 1 through August 15).

#### **THREATENED, ENDANGERED, AND SENSITIVE ANIMAL SPECIES** (includes a finding on Standard 4)

*Affected Environment:* The U.S. Fish and Wildlife Service (USFWS) lists seven wildlife species found in Rio Blanco County as threatened, endangered, or candidate species under the Endangered Species Act (ESA) (Table 5). In addition, the BLM WRFO lists several species as sensitive (Table 6).

**Table 5.** Federally Listed and Candidate Species for Rio Blanco County, Colorado

Species	Scientific Name	Status	Habitat
Black-footed ferret	<i>Mustela nigripes</i>	E	Open grasslands, steppe, and shrub steppe containing extensive prairie dog towns
Bonytail	<i>Gila elegans</i>	E	Colorado River system
Canada lynx	<i>Lynx canadensis</i>	T	Montane coniferous forests
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	E	Colorado River system
Humpback chub	<i>Gila cypha</i>	E	Colorado River system
Razorback sucker	<i>Xyrauchen texanus</i>	E	Colorado River system
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	C	Large, unfragmented riparian areas

Source: USFWS 2007

T = Threatened, E = Endangered, C = Candidate

**Table 6.** BLM Sensitive Animal Species for the WRFO

Species	Scientific Name	Habitat within Project Area?
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	No
Fringed myotis	<i>Myotis thysanodes</i>	No
Yuma myotis	<i>Myotis yumanensis</i>	No
Barrow's goldeneye	<i>Bucephala islandica</i>	No
Greater sage-grouse	<i>Centrocercus urophasianus</i>	Yes
White-faced ibis	<i>Plegadis chihi</i>	No
Northern goshawk	<i>Accipiter gentilis</i>	No
Ferruginous hawk	<i>Buteo regalis</i>	No
Bald eagle	<i>Haliaeetus leucocephalus</i>	No
Mountain plover	<i>Charadrius montanus</i>	No
Long-billed curlew	<i>Numenius americanus</i>	No
Black tern	<i>Chlidonias niger</i>	No
Midget-faded rattlesnake	<i>Crotalus viridis concolor</i>	Yes
Northern leopard frog	<i>Rana pipiens</i>	No
Great Basin spadefoot	<i>Spea intermontana</i>	Yes
Bluehead sucker	<i>Catostomus discobolus</i>	No
Flannelmouth sucker	<i>Catostomas latipinnis</i>	No
Mountain sucker	<i>Catostomas platyrhynchus</i>	No
Plains topminnow	<i>Fundulus sciadicus</i>	No
Roundtail chub	<i>Gila robusta</i>	No
Colorado River cutthroat trout	<i>Oncorhynchus clarki pleuriticus</i>	No

Source: BLM 2000

No federally listed species are expected to occur in the Project Area due to lack of suitable habitat. The Project Area does not include suitable nesting habitat for BLM-sensitive raptor species. No raptor nests were found during SWCA biological surveys, although raptors were observed in the vicinity. Colorado Natural Heritage Program (CNHP) records indicate a known Northern goshawk nest approximately 4 miles north of the Project Area.

According to the Colorado Division of Wildlife (CDOW) data (2007), one historic sage-grouse lek (where viable populations have not occurred in 5 years or more) is located between Duck Creek and Yellow Creek along County Road (CR) 24, just north of the Project Area. A sage-grouse brooding and production area is located near Little Corral Gulch, east of Piceance Creek. This lek was active in 2007 (Ed Hollowed pers. communication with Larry Semo June 2007). Four additional leks are located west of the Project Area, south of Box Elder Gulch and just east of the Cathedral Bluffs.

The midget-faded rattlesnake, a diminutive subspecies of the common prairie rattlesnake, is known to occur in northwestern Colorado across varied habitats, including pinyon-juniper woodland and shrubland. It is difficult to differentiate this subspecies, as Hammerson (1999) concluded that Rio Blanco County apparently constitutes an area of intergradation between *C. concolor* and *C. viridis*.

In Colorado, the Great Basin spadefoot inhabits pinyon-juniper woodlands, sagebrush, and semi-desert shrublands. It ranges from the bottoms of rocky canyons to broad dry basins and stream floodplains (CDOW 2007). CNHP records indicate known spadefoot habitat approximately 4 miles northeast of the Project Area, at the confluence of Black Sulphur and Piceance Creeks.

The four federally listed fish species associated with the Colorado River Basin are not likely to occur within the Project Area, but may occur downstream in the White River and Colorado River. None of the streams near the Project Area have adequate surface flow or other habitat characteristics necessary to maintain populations of those fishes listed by the BLM as sensitive.

*Environmental Consequences of the Proposed Action:* Land disturbance resulting from the Proposed Action is not expected to result in direct, long-term adverse effects to federally listed or BLM sensitive animal species. The Proposed Action includes the removal of young and mid-age juniper. BLM-sensitive raptor and bat species typically utilize mature stands of pinyon-juniper with well-developed forest canopies and large diameter trees that offer nesting, foraging, and roosting habitat. Therefore, these species are not likely to be present in the Project Area or impacted by habitat removal. The Proposed Action would not impact any sage-grouse leks. Construction activities may create temporary disturbance to areas used by a few species; however, they are not likely to cause a trend toward federal listing or a loss of viability of these species.

*Environmental Consequences of the No Action Alternative:* There would be no affect on threatened, endangered, or sensitive animal species under the No Action Alternative.

*Mitigation:* Pad and road construction, drilling, well completion, workover activity, and reclamation will be subject to the White River ROD/RMP approved timing limitation stipulation TL-04, which disallows disruptive activity (i.e., construction, and drilling and completion-related activities) within 0.5 miles of listed and BLM sensitive raptor nests from February 1 through August 15.

*Finding on the Public Land Health Standard for Threatened & Endangered Species:* Standard 4 of the *BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado* states that special status plants and animals and their habitats should

be maintained or enhanced to sustain public land health. The Proposed Action would have no effect on the land health standard.

#### **THREATENED, ENDANGERED, AND SENSITIVE PLANT SPECIES** (includes a finding on Standard 4)

*Affected Environment:* Communities of pinyon pine (*Pinus edulis*) and juniper (*Juniperus osteosperma*) woodland, and basin big sagebrush (*Artemisia tridentata*) shrubland are present in the Project Area. Special status plant species with known populations in the Piceance Basin all depend upon barren shale exposures of the Green River Formation (Table 7). A special status plant survey and habitat assessment was conducted during the SWCA biological surveys on 21 May 2007. The results of the survey indicated that the Project Area did not contain suitable habitat for any of the species listed in Table 7.

**Table 7.** Special Status Plant Species with Known Populations in the Piceance Creek Basin

Common Name	Scientific Name	Status
Debris milkvetch	<i>Astragalus detritalis</i>	BLM Sensitive
Park rockcress	<i>Boechera fernaldiana</i> ( <i>Arabis vivariensis</i> )	BLM Sensitive
Ephedra buckwheat	<i>Eriogonum ephedroides</i>	BLM Sensitive
Utah gentian	<i>Gentianella tortuosa</i>	BLM Sensitive
Narrow-stem gilia	<i>Gilia stenothyrsa</i>	BLM Sensitive
Dudley Bluffs bladderpod	<i>Lesquerella congesta</i>	USFWS Threatened
Piceance bladderpod	<i>Lesquerella parviflora</i>	BLM Sensitive
Narrow-leaf evening primrose	<i>Oenothera acutissima</i>	BLM Sensitive
Rollins cryptanth	<i>Oreocarya</i> ( <i>Cryptantha</i> ) <i>rollinsii</i>	BLM Sensitive
Graham beardtongue	<i>Penstemon grahamii</i>	USFWS Candidate
White River beardtongue	<i>Penstemon scariosus</i> var. <i>albifluvis</i>	USFWS Candidate
Piceance twinpod	<i>Physaria obcordata</i>	USFWS Threatened

Source: Spackman, et al. 1997

*Environmental Consequences of the Proposed Action:* No adverse impacts are expected to any special status plants from development of this location.

*Environmental Consequences of the No Action Alternative:* There would be no effect on threatened, endangered, or sensitive plant species under the No Action Alternative.

*Mitigation:* None.

*Finding on the Public Land Health Standard for Threatened & Endangered Species:* Standard 4 of the *BLM Standards for Public Land Health* states that special status plants and animals and their habitats should be maintained or enhanced to sustain public land health. The project would have no effect on the land health standard with implementation of mitigation measures.

## WASTES, HAZARDOUS OR SOLID

*Affected Environment:* According to the BLM, hazardous materials are defined as any substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. The term does not include petroleum products, crude oil, or natural gas.

The environment for hazardous materials includes air, water, soil, and biological resources that may potentially be affected by an accidental release of hazardous materials at or during transport to and from the Project Area, storage, and use in construction and operations at the proposed site. Examples of sensitive areas for hazardous materials release include areas adjacent to water bodies and areas where humans or animals reside.

There are no known hazardous or other solid wastes on the subject land, nor have hazardous materials been known to have been used, stored, or disposed of on the site.

*Environmental Consequences of the Proposed Action:* During construction and operation, a variety of by-products and waste materials would be generated. They include construction waste, drill hole cuttings, garbage, and miscellaneous solid and sanitary wastes. Solid waste includes, but is not limited to, human waste, trash, garbage, ashes, welding rods, etc. Solid waste would be generated during construction activities and during operation at the proposed pad 11-7-397. The Proposed Action would increase contributions to solid waste landfills. In addition, it is possible that trash in the Project Area could be blown off-site into adjacent lands.

Most waste generated would be exempt from hazardous waste regulations under the exploration and production exemption of the Resource Conservation and Recovery Act (RCRA). Examples of exempt wastes include process water and hydrocarbon impacted soils. No hazardous substance, as defined by 40 CFR 355, in amounts above the threshold quantities, would be used, produced, stored, transported, or disposed of.

Potentially harmful substances used in construction and operation would be contained on site in limited quantities, and trucked to and from the site as required. With the proper procedures in place, it is anticipated that waste would not present any environmental consequences especially if materials are collected in appropriate containers and recycled or disposed off site in accordance with applicable regulations.

During construction and operation of the proposed project, accidental spills or leaks associated with equipment failures, refueling and maintenance of equipment, and storage of fuels, oil, or other fluids could cause soil and surface water and/or groundwater contamination. The severity of potential impacts from accidental material spills would depend upon the chemical released, the quantity released, and the proximity of the release to a waterbody or aquifer.

*Environmental Consequences of the No Action Alternative:* No hazardous or solid wastes would be generated or managed under the No Action Alternative.

*Mitigation:* Construction sites would be maintained in a sanitary condition at all times; waste materials at those sites would be disposed of promptly at an appropriate waste disposal

site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment. The Operator would be responsible for assuring that all waste is properly disposed of at the appropriate regulated disposal facility.

No hazardous materials would be used during any phase of the operations unless prior approval has been obtained from the BLM AO. All onsite drilling materials and chemicals would be properly stored to ensure the prevention of spills. No environmentally harmful additives would be used.

No hazardous chemicals, fuels, oils, lubricants, or noxious fluids would be disposed of at the drill sites, in the reserve pits, or down hole.

If any hazardous chemicals, fuels, oils, lubricants, and/or noxious fluids are spilled during drilling operations, they would be cleaned up immediately. The lessee/Operator would have absorbent on site for spill containment. After clean up, the chemicals, fuels, oil, lubricants and/or noxious fluids and any contaminated material would be removed from the drill site and disposed of at an approved disposal facility.

A release of any chemical, oil, petroleum product, produced water, or sewage (regardless of quantity) must be reported to the BLM – WRFO Hazardous Materials Coordinator at (970) 878-3800. The CDPHE should be notified, if applicable, through the 24-hour spill reporting line at 1 (877) 518-5608.

The holder would submit its Spill Prevention Containment and Countermeasure (SPCC) plan to the AO prior to starting construction.

## **WATER QUALITY, SURFACE AND GROUND** (includes a finding on Standard 5)

*Affected Environment:* The Project Area is located in the Colorado River Basin in the Piceance Creek drainage. Groundwater in the Project Area is associated with the Colorado Plateau aquifer system and is located in the Piceance Basin structural unit. The groundwater and surface water quality are interconnected in this region, although the exact location and extent of hydrologic connections are not well understood.

Surface Water: The Project Area is situated on a broad ridge between Dry Gulch to the east and Little Dry Gulch to the west. Dry Gulch and Little Dry Gulch are ephemeral tributaries to Black Sulphur Creek, which is a tributary to Piceance Creek. Piceance Creek is a tributary to the White River, which flows west out of Colorado into Utah to its confluence with the Green River, which ultimately drains into the Colorado River.

Under the State of Colorado Water Body Identification (WBID) system, the Project Area is located in stream segment 16 of the White River Basin. Stream segment 16 of the White River Basin is defined as all tributaries to Piceance Creek, including all wetlands, lakes and reservoirs, from the source to the confluence with the White River, except for the specific listings in Segments 17 and 20. The mainstem of Black Sulphur Creek falls within the specific listing of

Segment 20. Water quality standards for Sections 16 and 20 are contained in Regulation No. 37, Classifications and Numeric Standards for Lower Colorado River Basin (CDPHE 2007b). These standards were most recently amended in February 2007 and took effect on 1 July 2007.

Under state water quality regulations, Piceance Creek tributaries and Black Sulphur Creek are designated as “Use Protected”. There are three designated uses in the Piceance Creek Tributaries (Segment 16): Aquatic Life Warm Water-Class 2, Agriculture, and Recreation Secondary Contact. In the mainstem of Black Sulphur Creek the designated uses are Aquatic Life Cold Water – Class 1, Agriculture, and Recreation Secondary Contact. As of the last assessment, in October of 2001, all of these designated uses in the Piceance Creek Tributaries were being supported (CDPHE 2006b). In the mainstem of Black Sulphur Creek, Agriculture and Aquatic Life Cold Water – Class 1 were being attained and Recreation Secondary Contact had not been assessed.

No impairments or sources of impairments have been identified in Segments 16 or 20. Colorado Regulation No. 93, 2006 303(d) List of Water-Quality-Limited Segments Requiring Total Maximum Daily Loads (TMDLS) (CDPHE 2006a), was reviewed for information related to the Project Area drainage. Stream Segments 16 and 20, Piceance Creek tributaries and Black Sulphur Creek respectively, are not listed. Colorado Regulation No. 94, 2006 Monitoring and Evaluation List of Water Bodies Identified for Additional Water Quality Evaluation (CDPHE 2006b), was also reviewed for information related to the Project Area drainage. Stream Segments 16 and 20, Piceance Creek tributaries and Black Sulphur Creek respectively, are not listed.

Although Piceance Creek, Black Sulphur Creek, and their tributaries have not been identified as impaired, surface water quality is affected by the interaction of groundwater with higher concentrations of dissolved solids. Except for times of storm pulses or snowmelt runoff, approximately 80% of the annual flow of Piceance Creek originates as groundwater discharge (Tobin 1987). This groundwater contains concentrations of dissolved solids, bicarbonate, sulfate, and sodium that are discharged into the surface water and transported downstream.

Sediment loading from erosional processes is also a water quality characteristic of surface waters in the Piceance Basin. Both Dry Gulch and Little Dry Gulch, located on either side of the Project Area, are ephemeral. Sediment carried by these ephemeral streams is usually carried only a short distance and does not typically reach major or perennial streams except as a result of large or intense storms. However, during these large storm events, sediment loading and transport can be significant. Erosion and the resulting sediment loading occurs under natural conditions in the basin. The increased development and land disturbance occurring in the vicinity of the Project Area is likely resulting in larger amounts of sediment loading in the surface water.

Groundwater: The Project Area contains both alluvial and bedrock aquifers. The alluvial aquifers primarily consist of unconsolidated valley-fill deposits of sand and gravel formed along stream courses. The three principal bedrock aquifers underlying the Piceance Basin are the Uinta-Animas aquifer, the Mesaverde aquifer, and the Dakota-Glen Canyon aquifer system. The quality of the groundwater in these aquifers depends on the chemical and physical attributes of



the material through which the water passes the length of time the water is in contact material, and other conditions such as temperature and pressure.

The alluvium in the stream valleys tends to be thin, narrow, and discontinuous but contains locally important surficial aquifers. These unconsolidated alluvial aquifers are the most productive aquifers in the Piceance Basin (Environmental Protection Agency [EPA] 2004). No water quality data was available for alluvial groundwater in the vicinity of the Project Area. However, the City of Meeker is supplied by wells in the White River alluvium (Welder 1987), which suggests that the alluvial groundwater quality is sufficient for municipal use. Also, based on well records maintained by the Colorado Division of Water Resources (CDWR), the potable water wells in the Piceance Basin are generally less than 200 feet deep (EPA 2004). This further suggests that the shallower groundwater is of good quality.

The shallowest of the bedrock aquifers is the Uinta-Animas aquifer. This aquifer is also known as the upper and lower Piceance Basin sub-aquifers and is present in silty sandstone, siltstone, and marlstone. Dissolved-solids concentrations in water from the upper part of the Uinta-Animas aquifer generally range from about 500 to more than 1,000 milligrams per liter (Robson and Banta 1995). The water chemistry in this part of the aquifer is dominated by dissolved calcium, magnesium, bicarbonate, and sulfate with trace concentrations of strontium and fluoride (Tobin 1987). In the lower part of the Uinta-Animas aquifer, concentrations of dissolved constituents may exceed 10,000 milligrams per liter in parts of the Basin (Robson and Banta 1995). Dissolved sodium and bicarbonate are present, as well as fluoride, barium, boron, lithium, and chloride.

The Mesaverde aquifer is located below the Uinta-Animas aquifer, separated by a low permeability confining unit. The Mesaverde aquifer is located in the Mesaverde Group, which contains the area's coalbed methane reserves. Water quality in the Mesaverde aquifer is extremely variable. Concentrations of dissolved constituents range from less than 1,000 milligrams per liter to higher local concentrations. For instance, dissolved solids concentrations of more than 10,000 milligrams per liter were documented in the aquifer towards the central part of the Piceance Basin (Robson and Banta 1995).

The deepest of the three primary aquifers, the Dakota-Glen Canyon aquifer, consists of a series of aquifers and confining units at depths that can reach 12,000 feet in substantial parts of the Piceance Basin. In the Dakota-Glen Canyon aquifer, where the aquifer is deeply buried, the dissolved-solids concentration can exceed 35,000 milligrams per liter (Robson and Banta 1995).

*Environmental Consequences of the Proposed Action:* Impacts to surface water and groundwater could occur as a result of project activities. The magnitude and duration of these impacts depends on site-specific factors (e.g., soil, vegetation, slope) and the extent of construction activities. Impacts would likely be greatest immediately following completion of construction activities and would likely decrease thereafter due to reclamation and mitigation procedures.

Surface Water: Construction and development activities, including grading, drilling, earth moving, stockpiling, and excavation activities, may impact water quality through increased sedimentation and runoff. Soil disturbance and removal of vegetative cover increases the

potential for soil erosion which, in turn, increases sediment loading during runoff-producing storm events. The amount of runoff produced by a storm event may also increase due to soil compaction from the operation of vehicles and other construction equipment. Salts, metals, and organic substances contained in or adsorbed onto sediments can be transported into the surface waters along with the sediment and further degrade water quality. The extent of these impacts depends on the amount and type of surface disturbance at any particular time and the climatic conditions.

Road construction also contributes to water quality impacts. The compacted soil of the access road decreases the ability of the soil to infiltrate precipitation, leading to increased runoff. The road provides a “path of least resistance” and can act as a channel that concentrates runoff. Runoff on roads may be conveyed at higher velocities than would occur with overland flow on undisturbed surfaces, resulting in increased erosion and sediment loading. Sediment and other pollutants present on the road could be transported in the runoff, contributing to water quality degradation.

The water extracted and produced as a by-product of this development would be of poor water quality with high concentrations of total dissolved solids. Spills or leaks of the produced water would result in deposition of salts that if transported into the surface water, could degrade water quality.

Groundwater: Some impacts to groundwater quality resulting from hydraulic fracturing may occur, but the extent of the impact is unknown. Groundwater contamination from an aquifer of lower quality (generally located at greater depths in the Piceance Basin) to an aquifer of higher quality (generally located at a shallower depth) could result if fractures in the confining units are formed during project activities. Hydrologic connections (both natural and artificial) such as fractures, faults, and high permeability streaks greatly increase the conductivity of the aquifer system. This allows for more rapid transport and mixing of process fluids (e.g., drilling/fracturing fluids) with groundwater, as well as mixing between groundwater of varying quality that occurs in different parts of the aquifer.

Other impacts to groundwater could occur if pollutants from any leaks or spills were mobilized in runoff and infiltrated into the shallow aquifers. The storage and evaporation of produced water in reserve pits also has the potential to impact groundwater if leaks occurred.

*Environmental Consequences of the No Action Alternative:* There would be no environmental consequences from the No Action Alternative.

*Mitigation:* All activities would be required to comply with applicable local, state, and federal water quality laws, statutes, regulations, standards, and implementation plans. This compliance includes, but is not limited, to the following:

- As required of all surface disturbing activities on BLM land, activities would strictly adhere to “Gold Book” (BLM 2006a) surface operating standards for oil and gas exploration and development.
- Prior to commencing construction activities the Operator would consult with the State of Colorado Water Quality Control Division regarding applicable stormwater discharge

permits. Permit requirements may include development of a Stormwater Management Plan outlining how Best Management Practices (BMPs) would be used to control runoff and sediment transport. Written documentation that the appropriate permits have been obtained would be provided to the BLM AO. Acceptable forms of this documentation include a copy of the permit or an official verification letter from the State of Colorado Water Quality Control Division including the permit certification number.

To mitigate for water quality impacts from road runoff and drainage, corrugated metal pipes (CMPs) and drainage dips would be located in such a manner as to avoid discharge onto unstable terrain such as headwalls or slumps. CMPs are not recommended on roads that have gradients less than 10%. Based on the nature of the affected soils, drain dips would be utilized in place of CMPs in these locations. The use of drain dips on road gradients greater than 10% should be avoided. Energy dissipaters such as large gravels/small cobbles would be used at culvert and drainage dip inlets/outlets to minimize additional erosion. To mitigate water being channelized down the roadway, all activity would stop when soils or road surfaces become saturated to a depth of 3 inches. Mud blading would be prohibited (unless otherwise approved by the BLM).

To mitigate additional soil erosion at the well pad and potential increased sediment and salt loading to nearby surface waters, all disturbed areas affected by drilling or subsequent operations, except areas reasonably needed for production operations, would be reclaimed as early as possible and as nearly as practicable to their original condition. These areas would be maintained to control dust and minimize erosion.

To allow for optimal interim reclamation of the well pad, all tanks and production facilities would be situated on the access road side of the well pad (unless otherwise approved by the BLM WRFO). Interim reclamation of the well pad and final reclamation of the pipeline ROW on BLM-administered surfaces would commence as follows:

- Debris and waste materials other than de minimus amounts, including, but not limited to, concrete, sack bentonite and other drilling mud additives, sand, plastic, pipe and cable, as well as equipment associated with the drilling, re-entry or completion operations would be removed.
- Stockpiled topsoil and spoil piles would be separated and clearly labeled to prevent mixing during reclamation efforts.
- Stockpiled topsoil would be seeded with a BLM-approved seed mixture. Topsoil stockpiles that would potentially remain in place for extended periods of time (e.g., multiwell locations) would be covered with biodegradable fabrics, such as Jute netting or Curlex, and seeded with the approved seed mixture.
- Stockpiled topsoil segregated from spoil piles would be replaced during reclamation in its respective original position (last out, first in) to minimize mixing of soil horizons.
- Stockpiled soils (spoil and topsoil) would be pulled back over all disturbed surfaces affected by pipeline/road construction, drilling or subsequent operations, except areas reasonably needed for production operations. Areas on the well pad not needed for production operations would be partially reshaped as early and as nearly as practicable to

near pre-construction contours. The pipeline would be recontoured to pre-construction contours as soon as construction activities cease.

- The Operator would ensure stockpiled topsoil is evenly distributed over the top of spoil used in recontouring/partial-reshaping efforts.
- Recontoured/partially-reshaped areas would be seeded with a BLM-approved seed mixture, and all slopes exceeding 5% would be covered with wildlife friendly biodegradable fabrics such as, Jute blankets or Curlex to provide additional protection to topsoil, retain soil moisture, and help promote desired vegetative growth.
- Following seeding and placement of biodegradable fabrics, woody debris cleared during initial construction would be pulled back over the recontoured/partially-reshaped areas to act as flow deflectors and sediment traps. Available woody debris would be evenly distributed over the entire portion of the reclaimed area and would not account for more than 20% of total ground cover.

A **Reclamation Status Report** will be submitted to the WRFO biannually for all actions that require disturbance of surface soils on BLM-administered lands as a result of the Proposed Action. Actions may include, but are not limited to, well pad and road construction, construction of ancillary facilities, or power line and pipeline construction. The Reclamation Status Report will be submitted by **15 April** and **15 August** of each calendar year, and will include the well number, API number, legal description, UTM coordinates (for well pad and recorded using the NAD83, Zone 12 datum), project description (e.g., well pad, pipeline, etc.), reclamation status (e.g., interim or final), whether the well pad or pipeline has been re-vegetated and/or re-contoured, date seeded, photos of the reclaimed site, estimate of acres seeded, seeding method (e.g., broadcast, drilled, etc.), and contact information for the person(s) responsible for developing the report. The report will be accompanied with maps showing each point (i.e., well pad), polygon, or polyline (i.e., pipeline) feature that was included in the report. In addition, scanned copies of seed tags that accompanied the seed bags will be included with the report. Internal and external review of the WRFO Reclamation Status Report, and the process used to acquire the necessary information will be conducted annually, and new information or changes in the reporting process will be incorporated into the report. The Reclamation Status Report will be submitted electronically via email and as a hard-copy to Natural Resource Specialist, Brett Smithers (brett\_smithers@blm.gov) at the following address:

BLM, White River Field Office  
220 East Market Street  
Meeker, Colorado 81641  
Attn: Brett Smithers

In an attempt to track interim and final reclamation of land use authorizations related to the development of federal mineral resources, the Operator is asked to submit Geographic Information System (GIS) data to the WRFO for any **post construction** point, polyline, or polygon feature that was included in the APD and associated with the Proposed Action. GIS point, polyline, and polygon features may include, but are not limited to, proposed access roads to be constructed, existing roads to be upgraded, pipeline ROW corridors, ancillary facilities (e.g., compressor stations, produced water treatment and evaporation facilities, etc.), and well pad footprint (i.e., a polygon that shows the total area disturbed for the working surface of the

pad and the overburden) for each APD. Geospatial data should be submitted as ArcView feature datasets (i.e., shapefiles), ArcInfo coverages, or as ArcView compatible data files. GIS point, polyline, and polygon feature data shall be submitted for each APD submitted for review that includes new disturbance. GIS data shall be submitted electronically to BLM, WRFO Natural Resource Specialist, Brett Smithers ([brett\\_smithers@blm.gov](mailto:brett_smithers@blm.gov); Phone: [970] 878-3818) in the UTM, NAD83, Zone 13 projection. If the Operator is unable to send the data electronically, the Operator shall submit the data on compact disk(s) to:

BLM, White River Field Office  
220 East Market Street  
Meeker, Colorado 81641  
Attn: Brett Smithers

If for any reason the location or orientation of the geographic feature associated with the Proposed Action changes, the Operator is asked to submit updated GIS data to BLM, WRFO within 2 weeks of the change, and this information should accompany the Sundry Notice.

Upon final abandonment of the well pad, new access roads, and completion of pipeline, 100% of all disturbed surfaces would be restored to pre-construction contours, and revegetated with a BLM-approved seed mixture. Natural drainage patterns would be restored and stabilized with a combination of vegetative (seeding) and non-vegetative (straw bails, woody debris, straw waddles, biodegradable fabrics) techniques. All available woody debris would be pulled back over recontoured areas (woody debris would not account for more than 20% of total surface cover) to help stabilize soils, trap moisture, and provide cover for vegetation. Monitoring and additional reclamation efforts would persist until reclamation is proven successful (as determined by the BLM).

Groundwater: Surface casing and cementing would be installed in wells to protect aquifers from contamination due to hydraulic fracturing or contact with oil and gas products. Any groundwater produced from the Fort Union or Mesaverde Formations would be removed from the site and disposed of due to poor water quality.

The use of spill-guards (or equivalent spill prevention equipment) under and around pumping equipment would be required for the well location to intercept contaminants prior to contacting soils and infiltrating into groundwater. All pits would be lined to protect shallow groundwater from pit contents. All wastes associated with construction and drilling would be properly treated and disposed of. Efforts would be taken to avoid direct soil contact with diesel fuels or other pollutants which could be leached into the groundwater.

## **WETLANDS AND RIPARIAN ZONES** (includes a finding on Standard 2)

*Affected Environment:* The areas adjacent to the Project Area location do not support riparian or wetland communities.

*Environmental Consequences of the Proposed Action:* The Proposed Action would have no effects on riparian or wetland communities.

*Environmental Consequences of the No Action Alternative:* The No Action Alternative would have no effects on riparian or wetland communities.

*Mitigation:* None.

*Finding on the Public Land Health Standard for Riparian Systems:* The Proposed Action would have no potential for influencing riparian attributes addressed in the Standards.

## **CRITICAL ELEMENTS NOT PRESENT OR NOT AFFECTED:**

No Areas of Critical Environmental Concern (ACECs), floodplains, prime and unique farmlands, Wilderness, or Wild and Scenic Rivers exist within the Project Area. There are also no Native American religious or environmental justice concerns associated with the Proposed Action.

## **NON-CRITICAL ELEMENTS**

The following elements **must** be addressed due to the involvement of Standards for Public Land Health.

### **SOILS** (includes a finding on Standard 1)

*Affected Environment:* Soils in the Project Area vary depending on the topography, slope orientation, and parent material from which the soil is derived. The topographic pattern of the Project Area consists of a ridge top with drainages on either side. Soil types in the area are interrelated to dominant vegetation and can be associated with certain climatic patterns or ecotones depending on elevation. Soils in the area support the dominant vegetation community, pinyon-juniper woodland (U.S. Department of Agriculture [USDA] 1982).

Soil types in the Project Area consist of the Redcreek-Rentsac complex (Natural Resources Conservation Services [NRCS] 2007). Redcreek-Rentsac complex (5 to 30 % slopes) is found on mountain sides and ridges. The native vegetation is mainly pinyon and juniper trees with an understory of shrubs and grasses. Elevation is 6,000 to 7,400 feet. The average annual precipitation is 14 to 18 inches, the average annual air temperature is 42 to 45 degrees Fahrenheit (F), and the average frost-free period is 85 to 105 days. This unit is 60% Redcreek sandy loam and 30% Rentsac channery loam. The Redcreek soil is shallow and well drained. Permeability of the Redcreek soil is moderately rapid. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate to high. The Rentsac soil is shallow and well drained. Permeability of the Rentsac soil is moderately rapid. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate to high (USDA 1982).

*Environmental Consequences of the Proposed Action:* Clearing and grading of the well pad, pipeline ROW, and access road would remove protective vegetation cover from the affected soils, accelerating the erosion process. Grading, trenching, and backfilling activities could cause

mixing of the soil horizons and could result in reduced soil fertility and revegetation potential. Water erosion of soils associated with construction activities would likely result in a net loss of valuable topsoil by sheet, rill, and gully erosion. Dissolution of calcium carbonate (calcareous soils) may promote development of sink holes and gully formation on and adjacent to disturbed areas if drainage relief structures are not properly designed and installed. Eroded topsoil and subsoil may increase salt loading and sedimentation to surface waters down gradient of the Project Area. Increased sedimentation/salt loads could adversely impact water quality and aquatic life.

Unauthorized use of newly constructed access roads during wet conditions would deteriorate road surfaces, thereby decreasing effectiveness of drainage structures. Improper drainage from newly constructed access roads would result in elevated erosion rates down gradient and complicate reclamation efforts.

Any leaks or spills of potentially toxic substances (e.g., diesel fuel, fracturing fluids, produced water) could compromise the productivity of affected soils. Decreased soil productivity would hinder reclamation efforts leaving soils further exposed to erosional processes.

*Environmental Consequences of the No Action Alternative:* There would be no additional impacts to soils within the Project Area under the No Action Alternative.

*Mitigation:* Mitigate soil loss from roadway and surrounding area by restricting road access to authorized personnel only (e.g., gate and sign newly constructed access roads).

The Operator would be responsible for segregating topsoil material and backfilling of topsoil in its respective original position (last out, first in) to assist in the reestablishment of soil health and productivity. Erosion and sediment control measures would be installed on all slopes exceeding 5% to mitigate soil loss. Erosion and sediment control measures would be maintained until upland areas are stabilized.

Mud blading would be prohibited and all activity would cease when soils or road surfaces become saturated to a depth of 3 inches unless otherwise approved by the BLM. All disturbed surfaces would be restored to natural contours and revegetated with a BLM-approved seed mixture. Interim reclamation would follow the mitigation outlined in the Water Quality portion of this document.

All reserve pits would be lined to prevent contents of reserve pits from seeping into surrounding soils, contaminating local groundwater, reducing soil productivity, and compromising reclamation success.

*Finding on the Public Land Health Standard for Upland Soils:* Soils in the vicinity of the Proposed Action currently meet the standards. By following all suggested mitigation techniques and reclamation procedures, the Proposed Action would have no effect on the land health standard.

## VEGETATION (includes a finding on Standard 3)

*Affected Environment:* Vegetation within the proposed Well 11-7-397 location and access routes includes young and mid-age pinyon pine and juniper woodland and big sagebrush shrubland. The pinyon-juniper woodland ecological system occurs on dry mountains and foothills of the Colorado Plateau region from the Western Slope of Colorado to the Wasatch Range, south to the Mogollon Rim and east into the northwest corner of New Mexico. These woodlands occur on warm, dry sites on mountain slopes, mesas, plateaus, and ridges. Understory layers are variable and may be dominated by shrubs, graminoids, or be absent. Associated species include big sagebrush, mountain mahogany (*Cercocarpus* spp.), blackbrush (*Coleogyne ramosissima*), bitterbrush (*Purshia tridentata*), Gambel oak (*Quercus gambelii*), blue grama (*Bouteloua gracilis*), and James' galletta (*Pleuraphis jamesii*) (Southwest Regional Gap Analysis Program [SWReGAP] 2007).

The inter-mountain basins big sagebrush ecological system occurs throughout much of the western U.S., typically in broad basins between mountain ranges, plains, and foothills between 1500 to 2300 meters in elevation. Soils are typically deep, well-drained and non-saline. These shrublands are dominated by basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) and/or Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*). Scattered juniper, greasewood (*Sarcobatus vermiculatus*), and saltbush (*Atriplex* spp.) may be present in some stands. Rubber rabbitbrush (*Ericameria nauseosa*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), antelope bitterbrush (*Purshia tridentata*), or snowberry (*Symphoricarpos* spp.) may codominate disturbed stands. Perennial herbaceous components typically contribute less than 25% vegetative cover. Common graminoid species include Indian ricegrass (*Achnatherum hymenoides*), blue grama, thickspike wheatgrass (*Elymus lanceolatus*), Idaho fescue (*Festuca idahoensis*), needle-and- thread (*Hesperostipa comata*), basin wildrye (*Leymus cinereus*), James's galletta, western wheatgrass (*Pascopyrum smithii*), Sanberg bluegrass (*Poa secunda*), and bluebunch wheatgrass (*Pseudoroegneria spicata*) (SWReGAP 2007).

*Environmental Consequences of the Proposed Action:* Approximately 4.17 acres of vegetation would be disturbed and/or removed in conjunction with the construction of the well pad and access road. The pinyon-juniper woodland community is dominant in the Project Area and, therefore, would be most impacted by the Proposed Action. Direct impacts of vegetation removal include short-term loss of vegetation including the modification of vegetation structure, plant species composition, and aerial extent of cover types. Removal of vegetation results in increased soil exposure, loss of wildlife habitat, reduced plant diversity, and loss of livestock forage. Indirect impacts would include the increased potential for non-native/noxious plant establishment and introduction, accelerated wind and water erosion, changes in water runoff due to road/facility construction, soil impacts that affect plant growth (soil erosion or siltation), shifts in species composition and/or changes in vegetative density away from desirable conditions, and changes in visual aesthetics.

*Environmental Consequences of the No Action Alternative:* Under the No Action Alternative there would be no impacts to the vegetation within the Project Area.



*Mitigation:* For the well location, access road, and pipeline, the Operator would promptly revegetate all disturbed areas not necessary for production, including roadside and pad cut and fill slopes with Native Seed Mix #3 (BLM 1997a). Seed mixture rates are Pure Live Seed (PLS) pounds per acre. Revegetation would commence immediately after construction and would not be delayed until the following fall. Drill seeding is the preferred method of application. Debris would not be scattered on the pipeline until after seeding operations are completed and would not exceed 20% ground cover.

Seed Mix #	Species (Variety)	Lbs. PLS per Acre	Ecological Sites
3	Western wheatgrass (Rosanna)	2	Gravelly 10"-14", Pinyon/Juniper Woodland, Stony Foothills, 147 (Mountain Mahogany)
	Bluebunch wheatgrass (Secar)	2	
	Thickspike wheatgrass (Critana)	2	
	Indian ricegrass (Nezpar)	1	
	Fourwing saltbush (Wytana)	1	
	Utah sweetvetch	1	

The Operator would be responsible for excluding livestock grazing from all reclaimed portions of the well pad. To eliminate livestock utilization of reclaimed areas prior to successful reclamation, a barbed wire fence built to BLM specifications would be constructed around all reclaimed portions of the well pad including cut and fill slopes immediately after interim reclamation is concluded (within 2 weeks) unless otherwise instructed by the BLM. A BLM-specified cattleguard would be placed at the time of fence construction where the well access road bisects the fenceline. Once reclaimed plant species were fully established on disturbed sites as determined by the BLM (e.g., Desired Plant Community [DPC], Public Land Health Standards), the fence and cattleguard would be completely removed by the Operator after a minimum of two growing seasons. This would allow for reclaimed plant species to establish without grazing pressure from livestock.

The Operator would be responsible for achieving a reclamation success rate for interim reclamation and final abandonment (on all disturbed areas associated with well pad, pipeline, and access roads) of sufficient vegetative ground cover from reclaimed plant species within three growing seasons after the application of seed. Additional reclamation efforts would be undertaken at the Operator's expense. Reclamation achievement would be evaluated using the Public Land Health Standards, including indicators of rangeland health. Rehabilitation efforts must be repeated if it is concluded that the success rate is below an acceptable level as determined by the BLM.

A Reclamation Status Report would be submitted to the WRFO biannually for all actions that require disturbance of surface soils on BLM-administered lands as a result of the Proposed Action. The Reclamation Status Report would be submitted by 15 April and 15 August of each calendar year, and would include the well number, legal description, project description (e.g., well pad or pipeline), reclamation status (e.g., interim or final), whether the well pad or pipeline has been re-vegetated and/or re-contoured, date seeded, photos of the reclaimed site, estimate of acres seeded and seeding method. Internal and external review of this plan and the process used to acquire the necessary information would be conducted annually, and new information or changes in the reporting process would be incorporated into the plan.

If construction/development occurs between 15 April and 15 November, the Operator would be required to water or surface access roads to reduce airborne dust and damage to roadside vegetation communities.

*Finding on the Public Land Health Standard for Plant and Animal Communities* (partial, see also Wildlife, Aquatic and Wildlife, Terrestrial): Standard 3 of the *BLM Standards for Public Land Health* states that plant and animal communities of native and desirable species should be maintained at viable population levels to sustain public land health. With implementation of mitigation measures and successful revegetation, the Proposed Action would have no effect on the land health standard.

#### **WILDLIFE, AQUATIC** (includes a finding on Standard 3)

*Affected Environment:* The Project Area is located between Dry Gulch and Little Dry Gulch, which are ephemeral tributaries to Black Sulphur Creek. Due to lack of substantial aquatic habitat, little aquatic wildlife is expected to occur in the Project Area.

*Environmental Consequences of the Proposed Action:* Surface disturbance and vegetation removal could lead to increased erosion, sedimentation, and risk of contaminants reaching surface waters, which could damage important habitat for aquatic species. Water depletions are not expected to result from project activities. With mitigation measures in place to protect water resources within the Project Area, there would be no effect on Colorado River endangered fish species or other aquatic wildlife from pollution or sedimentation.

*Environmental Consequences of the No Action Alternative:* There would be no effect on aquatic wildlife under the No Action Alternative.

*Mitigation:* BMPs would be used throughout the life of the project to avoid stormwater pollution.

Disturbed areas, except areas reasonably needed for production operations, would be reclaimed as early and as nearly as practicable to their original condition and would be maintained to control dust and minimize erosion and salt loading to nearby surface waters.

*Finding on the Public Land Health Standard for Plant and Animal Communities* (partial, see also Vegetation and Wildlife, Terrestrial): Standard 3 of the *BLM Standards for Public Land Health* states that plant and animal communities of native and desirable species should be maintained at viable population levels to sustain public land health. With implementation of mitigation measures and successful revegetation, the Proposed Action would have no effect on the land health standard.

#### **WILDLIFE, TERRESTRIAL** (includes a finding on Standard 3)

*Affected Environment:* Big game species present in the Project Area include elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), and mountain lion (*Felis concolor*). The Project

Area falls within elk winter range and mule deer summer range. Mule deer severe winter range is located to the northeast. Small game includes greater sage-grouse, which is discussed in the Threatened, Endangered, and Sensitive Animal Species section. Raptors and other birds that typically inhabit pinyon-juniper habitat in western Colorado are discussed in the Migratory Bird section. Portions of the Piceance Creek State Wildlife Area are located along Ryan Gulch and Piceance Creek.

*Environmental Consequences of the Proposed Action:* Surface disturbances associated with the Proposed Action would result in the direct loss of big game habitat, including mule deer severe winter habitat. Human activity associated with drilling activities and increased traffic could result in increased mortality from vehicle collisions and temporarily displace elk and mule deer into areas of decreased disturbance.

Increased noise, dust, and human presence could result in temporary alteration of the behavior and home ranges of terrestrial wildlife within the Project Area. Populations of mobile wildlife species likely would temporarily disperse to adjacent undisturbed habitat. Therefore, the Proposed Action would not result in measurable direct effects to any species.

*Environmental Consequences of the No Action Alternative:* There would be no effect on terrestrial wildlife under the No Action Alternative.

*Mitigation:* Activities that may disrupt big game behavior or habitat utility during sensitive time frames are subject to timing limitations (December 1 through April 30) on severe winter ranges, as directed by the White River ROD/RMP (BLM 1997b). This stipulation applies to all surface-disturbing activities.

*Finding on the Public Land Health Standard for Plant and Animal Communities* (partial, see also Vegetation and Wildlife, Aquatic): Standard 3 of the *BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado* states that plant and animal communities of native and desirable species should be maintained at viable population levels to sustain public land health. The Project Area presently meets the public land health standards for terrestrial animal communities. With implementation of mitigation measures and successful revegetation, the proposed project would have no effect on the land health standard.

**OTHER NON-CRITICAL ELEMENTS:** For the following elements, only those that are applicable and present with potential impacts are brought forward for analysis in the EA.

Non-Critical Element	N/A or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Access and Transportation			X
Cadastral Survey	X		
Fire Management			X
Forest Management			X
Geology and Minerals			X
Hydrology/Water Rights			X

Non-Critical Element	N/A or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Law Enforcement		X	
Noise		X	
Paleontology			X
Rangeland Management			X
Realty Authorizations			X
Recreation			X
Socio-Economics		X	
Visual Resources			X
Wild Horses	X		

## ACCESS AND TRANSPORTATION

*Affected Environment:* County Road (CR) 5 is the primary access road to the general vicinity of the Project Area and is paved. The north end of CR 5 is accessed from Colorado Highway 64 between Meeker and Rangeley. The south end of CR 5 is accessed from Colorado Highway 13, north of Rifle. From CR 5, the Project Area is accessed by CR 26 and CR 29.

Average daily traffic numbers for major roads that would access the Project Area were compiled from the Colorado Department of Transportation (CDOT) data and are provided in Table 8.

**Table 8.** Average Daily Traffic for Major Access Roads in the Proposed Project Area

Road	Baseline Average Daily Traffic <sup>1</sup>
Colorado Highway 13 between Rifle and Junction with south end of Rio Blanco CR 5 (Piceance Creek Road)	3,100
Colorado Highway 13 between south end of CR 5 and Colorado Highway 64 near Meeker	2,500
Colorado Highway 64 between Meeker and north end of CR 5	800
Colorado Highway 64 between north end of CR 5 and Colorado Highway 139	1,600

<sup>1</sup>Colorado Department of Transportation, 2006 (Published April 2007). Annual Average Daily Traffic, Short Duration Counter

*Environmental Consequences of the Proposed Action:* Access to the Project Area would be provided by construction of an access road connecting the site to existing county roads. The proposed access road would be approximately 331 feet (<0.1 mile) long, all on BLM-administered surface. The Proposed Action would increase traffic on existing roadways. The increased vehicle traffic associated with the Proposed Action would include heavy equipment and loads.

During construction, numerous workers and contractors would commute regularly to and from the job site. Construction of the access road to the site would cause a disruption to the flow of traffic along CR 87 for a short period of time. After construction at the site was completed, smaller crews or individuals would commute periodically for maintenance and other associated activities.

The county roads in the vicinity of the Project Area were originally designed for rural and agricultural uses and were not intended for the repeated heavy loads associated with the current increase in oil and gas development. The increasing traffic volume, frequency, and vehicle size on these rural roads has and would likely continue to result in an increase in the costs associated with road repair and maintenance. If road maintenance activities are not commensurate with the levels of road usage, surface damage to roads may occur.

*Environmental Consequences of the No Action Alternative:* There are no environmental consequences associated with the No Action Alternative.

*Mitigation:* All activities would be required to comply with applicable local, state, and federal transportation laws, statutes, regulations, standards, and plans. The access road would be constructed to address all on-the-ground conditions with the goal of minimizing surface disturbance and would conform with generally accepted BLM practices for the area. Activities would strictly adhere to “Gold Book” (BLM 2006a) surface operating standards for oil and gas exploration and development.

All non-county roads used to access the well would be maintained in their current condition or better. Continuous inspection would be performed, and preventative maintenance measures would be taken on a biannual basis. These measures may include grading, cleaning of drainage structures, erosion control and slope stabilization, and road closures during periods of excessive soil moisture.

Further mitigation of impacts to access and transportation would be achieved through management practices including:

- encouragement and/or arrangement for employees and contractors to carpool to and from the site;
- requiring contractors and employees to comply with all posted speed limits;
- compliance with county and state weight restrictions and limitations;
- controlling dust along unsurfaced access roads and minimizing the tracking of mud onto paved roads; and
- post-construction restoration of unsurfaced roads to equal or better conditions than existed before construction.

## **FIRE MANAGEMENT**

*Affected Environment:* According to the White River ROD/RMP, the objective of fire management in the area is to protect public health, safety, and property as well as allow fire to carry out important ecological functions. Prescribed fire, which includes both management and natural ignition sources, may be used to achieve land or resource management objectives.

The mature plant communities and relatively dry climate of the Piceance Basin make this area prone to fire especially during the heat of summer when rains are infrequent and dry thunderstorms are common. Fires in this area move quickly as they gain momentum from the flashy fuels and considerable fuel loads associated in mature undisturbed pinyon-juniper woodland habitats. Most of these communities are rejuvenated by fire to maintain healthy, diverse plant communities. Emphasizing the natural fire disturbance regimes would provide for the maximum plant species composition diversity, restore plant vigor, and production. Fire would provide the means to change the plant communities from woodland dominated sites to perennial grass to early successional stages. Natural fire probably maintains woodlands at a constant overall acreage, but human interference by fire suppression and reduction of fine/ladder fuels has extended the range of these woodlands.

Well 11-7-397 and access road are located on a north- to northwest-facing gently sloped ridge top which is a very old fire scar consisting of predominately an open canopy of a scattered mature pinyon-juniper woodland forest intermixed with dense sagebrush. Tree heights generally average about 15 to 20 feet with a dense understory of scattered sagebrush, mountain mahogany, rabbitbrush, and forbs with little bare ground exposure. There is a high fuel component throughout the Project Area with moderate to heavy dead and down debris allowing for hot fire to spread quickly and get into the canopy.

*Environmental Consequences of the Proposed Action:* The Proposed Action could adversely impact the fire cycle and the proper role of fire burning naturally within the ecosystem. These disturbances would break up continuous fuels and reduce the potential of a natural mosaic burn. Vegetation removal and soil disturbance could provide an opportunity for noxious weeds and cheatgrass to invade the Project Area, which could result in a shift from the natural fire regime to an unnatural, more frequent, fire regime and the loss of key ecosystem components (BLM 2006b). In addition, the proposed access road may be used by the general public for a variety of reasons. This increased public use could increase the potential for a human-caused wildland fire.

*Environmental Consequences of the No Action Alternative:* No impacts associated with the Proposed Action would occur. Although, fire suppression has greatly increased the fuel buildup and enhanced the maturity and encroachment of shrubs and woodlands, thus producing older age plant communities with decreased diversity in structure and species composition. Large areas of mature vegetation would continue a downward decline in diversity of plant species, especially of herbaceous species. These conditions could potentially produce larger and more intense fires, and would cost more to suppress.

*Mitigation:* The Operator would be responsible for developing a fire management plan as an integral part of the overall safety plan that would include evacuation procedures and designate escape routes. This includes coordination with the BLM and Rio Blanco County Emergency Response teams to develop fire suppression priorities, identify management restrictions, and determine appropriate fire suppression strategies. Further mitigation of impacts to the fire cycle should be achieved through management practices including:

- notify the BLM, and affected landowners, of any fires during construction, maintenance, or operation;

- inform site personnel of fire prevention practices concerning smoking materials, welding, etc., and make hand tools available, including shovels and fire extinguishers, for fire control;
- furnish all motor vehicles and equipment with fire-extinguishing equipment and stage fire fighting equipment and water tanks on site in readily accessible areas;
- construct defensible space as necessary and determine design criteria in coordination with BLM fire staff;
- perform all welding activities in areas where vegetation and other flammable materials have been removed;
- control noxious weeds and cheatgrass as discussed in the Invasive, Non-Native Species section;
- seed disturbed areas as discussed in the Vegetation and Soils sections;
- redistribute large, woody material salvaged during clearing operations on BLM WRFO-administered lands and disperse materials over the portion of the ROW from which the trees and brush were originally removed to meet fire management objectives (not to exceed 20% total ground cover in any given area of evenly distributed material) and to provide wildlife habitat, seedling protection, and deter vehicular traffic; and
- refer to the BLM Fire Management Activity Plan (FMAP) for additional mitigation requirements.

## FOREST MANAGEMENT

*Affected Environment:* The pinyon-juniper woodland forest habitat occurs on dry mountains and foothills of the Colorado Plateau Region from the western slope of Colorado to the Wasatch Range of Utah. These woodlands occur on warm, dry sites on mountain slopes, mesas, plateaus, and ridges that are reflected within the Project Area in the Piceance Basin. The most common species associated in the area are pinyon pine and Utah juniper. The stand composition, site characteristics, and productivity are highly variable and are based on moisture relationships (BLM 1997a).

Within the BLM WRFO, the forest management program has been divided into two sections, Timberland Management and Woodland Management. Timberlands consist of those lands that support stands of trees predominated by Douglas-fir (*Pseudotsuga menziesii*), spruce-fir (*Picea* and *Abies* spp.), lodgepole pine (*Pinus contorta*), and aspen (*Populus tremuloides*). Woodlands consist of those lands that support stands of trees predominated by pinyon-juniper and Gambel oak. There are approximately 24,125 acres of timberlands and approximately 622,590 acres of woodlands in the WRFO (BLM 1997a). The objective of the BLM for forestry is to manage the timberlands and woodlands to maintain productivity, extent, forest structure, and enhancement of other resources. Under the 1997 plan 27,600 acres of suitable woodland habitat in the Piceance Geographic Reference Area (GRA) are available for commercial harvest of juniper posts and poles with a yearly allowable harvest of 45 acres (BLM 1997a). This would allow maintenance of stand structure relative to old growth type, on approximately 80% of the commercial woodland within the Piceance and Douglas/Cathedral GRA (BLM 1997a). Cutting woodlands

for oil and gas development would make woodland products available for removal by individuals. Access and availability to these now disturbed woodlands would decrease human pressures on other undisturbed remote areas.

*Environmental Consequences of the Proposed Action:* The Proposed Action would not impact pinyon-juniper woodlands because the well pad and access road occurs within a very old fire scar with only submature regeneration. Impacts would further delay woodland succession by approximately 60+ years and be long-term until woodlands re-vegetate successfully. Following reclamation of access road, pad 11-7-397 and associated disturbances, these woodlands could be re-colonized by pinyon and junipers within 30 years and would develop old growth characteristics between 150 and 300 years.

*Environmental Consequences of the No Action Alternative:* There would be no removal of trees under the No Action Alternative, which would maintain stand integrity and woodland habitat health.

*Mitigation:* None.

## **GEOLOGY AND MINERALS**

*Affected Environment:* The Piceance Basin occupies approximately 7,100 square miles in northwestern Colorado (Colorado School of Mines 2007). The basin is asymmetric, with steep beds on the eastern boundary and gentle dips on the western edge. The Basin's boundaries are the White River to the north, the Cathedral Bluffs to the west, the Roan and Book Cliffs on the south, and to the east the crest of the ridge system that serves as the head of Piceance Creek. The eastern edge is not as clearly defined, but the north- to south-trending ridges, called the Grand Hogback, that run from Rio Blanco to the White River, provide a general marker for the eastern boundary of the Basin, which generally trends from southeast to northwest. The higher elevations, on the south side of this northwest-trending down warp, reach 9,000 feet, while at the north end, where Piceance Creek flows into the White River, the elevation is 5,700 feet (BLM 2007b).

The Uinta Formation (Eocene) Unit 6 is present immediately below the surface within the Project Area (Duncan 1976). The proposed well would be drilled from the Uinta Formation into the Williams Fork Formations of the Late Cretaceous Age Mesaverde Group.

The Late Eocene Uinta Formation consists of fluvial deposits that overlie the Green River Formation from the last phase of Lake Uinta. Later, the lake filled up with volcanoclastic material, followed by abundant bedded evaporites. Depths to the top of the formation range from 2,566 feet to 3,678 feet, with the average being 3,554 feet (Energy Efficiency and Renewable Energy [EERE] 2007).

Oil shale and sodium resources occur in the Parachute Creek Member of the Green River Formation. During drilling potential water, oil shale, sodium, and gas zones will be encountered from surface to the targeted zone.



Fresh water aquifers that will be encountered during drilling are the Perched in the Uinta Formation, the A-groove, B-groove, and the Dissolution Surface in the Green River Formation. These geologic zones along with the upper portion of the Wasatch are known for difficulties in drilling and cementing.

The Mesaverde Group consists of three dominant reservoir facies: lenticular, fluvial sandstones of the Williams Fork Formation; coals that occur in the basal portion of the Williams Fork Formation; and extensive shoreline-marine sandstones of the Iles Formation. The fluvial sandstones of the Williams Fork Formation are approximately 4,000 feet thick in the eastern part of the Piceance Basin, thinning to <2,000 feet on the Douglas Creek Arch and 2,200-2,900 feet in the Natural Buttes Field in the Uinta Basin. These sandstones are lithic arkoses and feldspathic arenites containing authigenic quartz and carbonate cement. They have low porosities, ranging from 7% to 12%, and low matrix permeabilities due to the abundance of authigenic clays (EERE 2007).

The Project Area is located in an area identified in the ROD/RMP as available for oil shale and sodium leasing.

*Environmental Consequences of the Proposed Action:* Drilling and completion of this well may adversely affect the fresh water aquifers if there is loss of circulation or problems surface-cementing the casing. However, the proposed drilling, cementing, and completion procedure of the Proposed Action isolates the formations and will prevent the migration of gas, water, and oil between formations. Development of this well will deplete the natural gas resources in the targeted formation and the well location may prevent an orderly future development of sodium and oil shale resources.

*Environmental Consequences of the No Action Alternative:* Under the No Action Alternative, there would be no additional impacts to the geological resources within the Project Area and the hydrocarbon resources in the targeted zones would not be developed at this time.

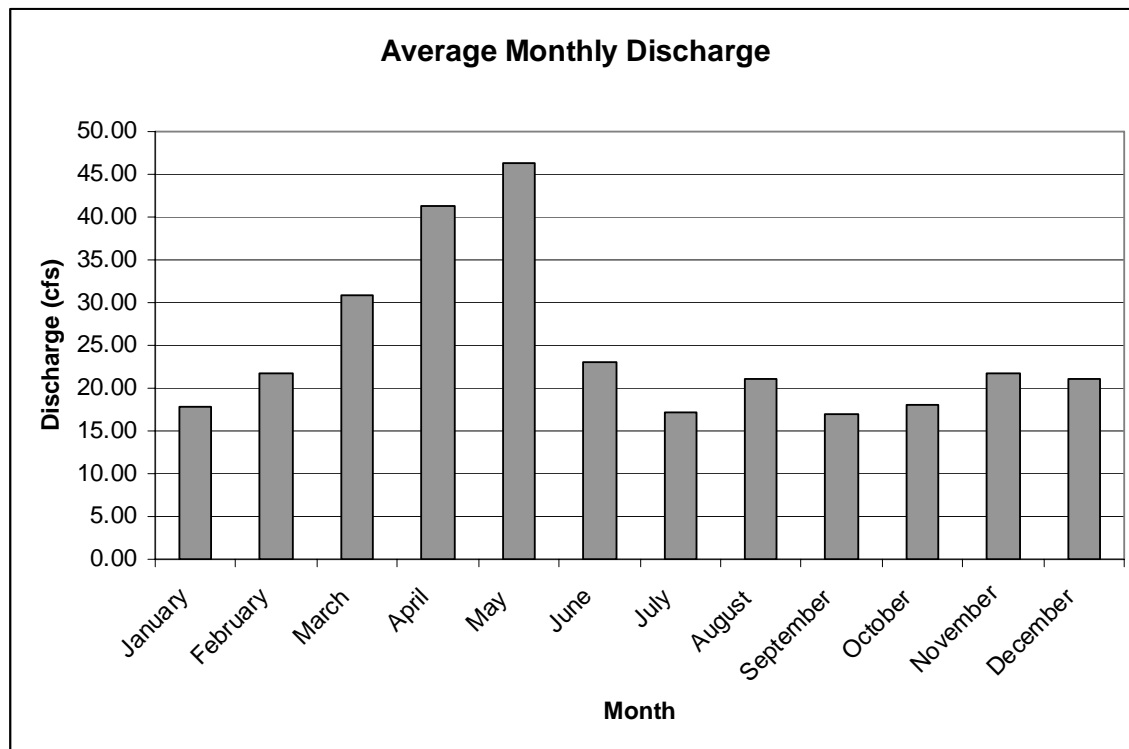
*Mitigation:* None.

## **HYDROLOGY AND WATER RIGHTS**

*Affected Environment:* The Project Area is located in the Colorado River Basin in the Piceance Creek drainage. Groundwater in the proposed Project Area is associated with the Colorado Plateau aquifer system and is located in the Piceance Basin structural unit. The Project Area has an arid to semi-arid climate with dry, sunny conditions and a wide diurnal temperature range. Average annual precipitation ranges from approximately 12 to 20 inches. The Basin receives precipitation in the form of both rainfall and snow. Approximately 98% of this precipitation is lost to evapotranspiration (Taylor 1987). Water that remains in the system becomes surface water flow or infiltrates, recharging groundwater. Groundwater and surface water hydrology are interconnected in this region, however, the exact location and extent of hydrologic connections are not well understood.

**Surface Water:** The Project Area is located on a broad ridge between Dry Gulch to the east and Little Dry Gulch to the west. Dry Gulch and Little Dry Gulch are ephemeral tributaries to Black Sulphur Creek, which is a tributary to Piceance Creek. Piceance Creek is a tributary to the White River which flows west out of Colorado into Utah to its confluence with the Green River which ultimately drains into the Colorado River. The surface water and groundwater hydrology in this system are interconnected. Except for times of snowmelt runoff and storm events, approximately 80% of the annual flow of Piceance Creek originates as groundwater discharge (Tobin 1987). Discharge from the bedrock aquifer systems recharges alluvial valley fill, springs, and streams.

Dry Gulch and Little Dry Gulch are ephemeral and collect and convey snowmelt and storm runoff waters into Black Sulphur Creek. The closest USGS gage with current data is on Piceance Creek below Ryan Gulch (USGS gage 09306200) at an elevation of 6,070 feet, approximately 8 miles from the site. An examination of this flow data shows that mean monthly flows are the highest in the spring time (Figure 2), which coincides with runoff from snowmelt and lowest in late summer and early fall. High intensity summer storm pulses also produce short-term high flows in this area.



**Figure 2.** Average monthly discharge.

The Project Area is not currently highly populated but there are large demands for water for irrigation and industrial use. Mineral development including coalbed methane extraction and oil shale development is increasing in the area and resulting in additional demands for water.

The Colorado Decision Support System (CDSS 2007) was searched to identify water rights near the Project Area. Within an approximate 1-mile radius, no water rights were identified. When the search was expanded to an approximate 2-mile radius, many water rights were found. The

sources of these water rights are Hunter Creek and Fawn Creek and the rights are associated with reservoirs, wells, ditches, and springs. Beneficial uses include storage, irrigation, municipal, stock, domestic, fishery, augmentation, and recreation.

Groundwater: The groundwater hydrology of the proposed Project Area is associated with the Colorado Plateau aquifer system and is located in the Piceance Basin structural unit. The Basin contains both alluvial and bedrock aquifers. The alluvial aquifers primarily consist of unconsolidated valley-fill deposits of sand and gravel formed along stream courses. The three principal bedrock aquifers underlying the Piceance Basin are the Uinta-Animas aquifer, the Mesaverde aquifer, and the Dakota-Glen Canyon aquifer system.

In the Piceance Basin, the primary source of natural groundwater recharge is the infiltration of snowmelt in higher elevation areas of the Basin. Sub-surface flow of the recharge occurs downward and laterally passing through a system of permeable zones and leaking through less permeable confining units. The formation of fractures and solution channels has increased the permeability of the system such that local recharge of lower parts of the formation can occur.

Alluvial deposits in the Project Area are located in the stream valleys. They tend to be thin, narrow, and discontinuous but contain locally important surficial aquifers. In the Piceance Basin, these unconsolidated alluvial aquifers are the most productive aquifers in the Basin (EPA 2004). The City of Meeker is supplied by wells in the White River alluvium, where the saturated alluvium is more than 100 feet thick (Welder 1987). Saturated alluvium also exists near the Project Area. Test holes drilled in Piceance Creek, approximately 4 miles upstream of the Black Sulphur Creek confluence penetrated about 70 feet of saturated sand and gravel (Welder 1987). However, test holes drilled on Piceance Creek about 4 miles downstream of the Black Sulphur Creek confluence penetrated as much as 70 feet of organic clay. This demonstrates that the characteristics of the alluvium in this area are not uniform and can change over a relatively short distance.

The shallowest of the bedrock aquifers is the Uinta-Animas aquifer which is composed of Lower Tertiary rock. This aquifer is also known locally as the upper and lower Piceance Basin aquifers. The upper and lower sub-aquifers are separated by the Mahogany Zone of the Parachute Creek Member, a poorly permeable layer of oil shale. The permeable portions of this aquifer are present in the silty sandstone, siltstone, and marlstone of the Uinta Formation and the dolomitic marlstone of the Parachute Creek Member of the Green River Formation. Portions of the Uinta and Green River formations are associated with oil shale reserves in the basin (Taylor 1987). Permeability in the upper and lower aquifers is increased by fractures and solution channels. Locally, groundwater flow is controlled by these fractures and solution channels; regionally, it is controlled by precipitation and stream systems (Taylor 1987). The thickness of the Uinta-Animas aquifer generally increases toward the central part of each Basin. In the central part of the Piceance Basin, the Uinta-Animas aquifer is as much as 2,000 feet thick (Robson and Banta 1995).

The Mesaverde aquifer is located below the Uinta-Animas aquifer, separated by a confining unit. The Mesaverde aquifer is located in the Mesaverde Stratigraphic Group which contains the area's coalbed methane reserves. In the Piceance Basin, the Mesaverde aquifer is present in rock of the Mesaverde Group which consists mainly of sandstone with interbedded shale and coal.

The thickness of the Mesaverde aquifer in the Piceance Basin is generally between 2,000 and 4,000 feet although localized areas of greater or lesser thicknesses have been documented.

The Dakota-Glen Canyon aquifer system underlies the Uinta-Animas and Mesaverde aquifers. This system consists of a series of aquifers and confining units in rocks ranging in age from late Cretaceous to Triassic. The depth to the top of the Dakota-Glen Canyon aquifer exceeds 12,000 feet in substantial parts of the Piceance Basin.

*Environmental Consequences of the Proposed Action:* Potential impacts to surface water and groundwater flow patterns may occur as a result of project activities. On-site groundwater extraction would occur as produced water is removed from saturated areas encountered during the drilling and extraction process. This local removal of groundwater from the system could result in minor impacts to groundwater flow at this site. Local changes in groundwater flow could potentially lead to indirect impacts on surface water in Black Sulphur Creek caused by a reduction in groundwater discharge but given the relatively slow movement of groundwater in the subsurface and the depth that produced water would be extracted, potential depletions would likely be minimal.

Direct impacts to surface water would also likely be minimal. Due to increased surface disturbance from the well pad and roads, surface water drainage patterns may be altered locally. Runoff that otherwise would have infiltrated into the ground may flow more rapidly into the nearby drainages as overland flow. This effect is likely to be localized and would not alter the overall surface water patterns in the Basin. This decrease in infiltration to groundwater would only occur locally and is not likely to significantly alter natural recharge patterns.

If induced fracture networks were to alter the natural interactions between aquifer systems (e.g., if fractures in confining units are formed), changes in groundwater and surface water flows could occur. If flow patterns are altered, natural recharge/discharge patterns could be impacted. Recharge and discharge could occur in different amounts or different locations resulting in changes to gaining and losing reaches of the stream and subsequently, channel morphology. The productivity of wells and springs located downgradient of the Project Area could also be affected. The processes governing these potential effects are complicated and the extent and magnitude of these effects is not known. However, current well design and drilling techniques consider these potential effects and incorporate controls (casing) to minimize changes to the natural connections between aquifers.

Impacts from project activities on other water rights in the area have not been quantified. As discussed above, some groundwater would be removed from the system as produced water associated with project activities. A right to use groundwater typically requires the approval of an augmentation plan to protect downstream or downgradient users. The produced water would be extracted from saturated zones in the Mesaverde group. This water is of poor quality and not drawn on for use in the area. The sources of the nearby wells are the alluvium of Fawn Creek and Hunter Creek. The hydrologic connectivity between the groundwater affected by project activities and the groundwater extracted by the alluvial wells is likely low.

Potential impacts to water quality are addressed in the section Water Quality, Surface and Ground.

*Environmental Consequences of the No Action Alternative:* There are no environmental consequences associated with the No Action Alternative.

*Mitigation:* All activities would be required to comply with all applicable local, state, and federal water laws, statutes, regulations, standards, and implementation plans. Standard drilling methods including surface casing would be implemented to minimize potential impacts from hydraulic fracturing. For additional mitigation, refer to the mitigation outlined in the Water Quality and Geology/Minerals portions of this document.

## PALEONTOLOGY

*Affected Environment:* According to published geologic mapping (Duncan 1976), Unit 6 of the Eocene Uinta Formation is present immediately below the surface within the Project Area. The following is a summarized discussion of the geology and paleontology of the Uinta Formation, as well as its paleontological sensitivity according to the Probable Fossil Yield Classification (PFYC) System (U.S. Forest Service [USFS] 1996) and BLM Condition System (Conditions 1-3).

Uinta Formation: In the Piceance Creek Basin of Colorado, the Uinta Formation has been subdivided into Units 1 through 6 or Groups A through G (Duncan 1976; Hail and Smith 1994, 1997). According to geologic mapping (Duncan 1976), the proposed well pad, access road, and pipeline are underlain by Unit 6 of the Eocene Uinta Formation. This unit consists of sandstone, siltstone, and thin lenticular marlstone above the Black Sulphur Tongue of the Green River Formation. The thickness ranges from 300 to 550 feet (Duncan 1976).

The Uinta Formation is scientifically important because it is the stratotype for the Uintan North American Land Mammal Age (NALMA) and represents nearly all of Uintan time (46.5 to 40.0 Ma) (Murphey and Evanoff 2006; Townsend 2004; Walsh 1996). Approximately 31% of modern mammalian families appear in the fossil record of North America during the Uintan NALMA (Black and Dawson 1966). Vertebrate fossils are not as common in the Uinta Formation in the Piceance Creek Basin as in parts of the Uinta Formation in the Uinta Basin, although this is at least in part reflective of the fact that it is more vegetated, difficult to access, and has not been as heavily prospected. Recent paleontological surveys associated with oil and gas development are adding significantly to the known fossil flora and fauna of this unit.

Plant fossils have been discovered in all Uinta Formation stratigraphic units in the Piceance Creek Basin, and are considered scientifically significant because plants are relatively uncommon in the Uinta Formation (although locally abundant in the Green River Formation). Fossil insects are also known from the upper portion of the Uinta Formation Group C (Robinson 1978; Hail and Smith 1994, 1997). Because of the abundant fossil material known from the Uinta Formation, this formation has high paleontological sensitivity (BLM Condition 1, PFYC Class 5).

*Environmental Consequences of the Proposed Action:* The loss of any identifiable fossil that could yield information important to prehistory, or that embodies the distinctive

characteristics of a type of organism, environment, period of time, or geographic region, would constitute a long-term, adverse impact. Direct adverse impacts on paleontological resources primarily concern the potential destruction of non-renewable paleontological resources and the loss of information associated with these resources. This includes the unlawful or unauthorized collection of fossil remains. If potentially fossiliferous bedrock or surficial sediments are disturbed, the disturbance could result in the destruction of paleontological resources and subsequent loss of information resulting in an adverse impact. However, direct adverse impacts to paleontological resources can typically be mitigated, as discussed below.

In general, for project areas that are underlain by paleontologically sensitive geologic units, the greater the amount of ground disturbance, the higher the potential for adverse impacts to paleontological resources. Due to the high paleontological sensitivity of the Uinta Formation, there is a high potential to impact scientifically significant paleontological resources during ground disturbance associated with the Proposed Action.

*Environmental Consequences of the No Action Alternative:* There would be no new impacts to paleontological resources under the No Action Alternative.

*Mitigation:* Potential adverse impacts on paleontological resources could be mitigated to below the level of significance by implementation of the following mitigation measures:

- Museum record searches would be conducted to (1) determine whether any known fossil localities occur within the study area; (2) assess the potential for disturbance of these localities during construction; and (3) further evaluate the paleontological sensitivity of the Uinta Formation within the study area.
- A paleontological monitor would be on site during all construction activities to systematically inspect the high volume of bedrock exposed during ground disturbance, permitting fossil discovery and salvage.
- All fossils collected would be cleaned, prepared, identified, and transferred to an approved repository.
- The results of the paleontological monitoring/mitigation program would be analyzed and presented in a paleontological report prepared using BLM guidelines.

## **RANGELAND MANAGEMENT**

*Affected Environment:* The proposed well is within the Fawn Creek allotment (BLM 2007a). The affected pasture is used for spring and winter use on an alternate yearly basis. Table 9 shows the permitted use for the entire allotment.

**Table 9.** Fawn Creek Allotment Permitted Use

Allotment #	Allotment Name & Permittee	Livestock		Authorized Use	% BLM	Total Acres	AUMs
		#	Kind				
06024	Fawn Creek CW Brennan	906	Cattle	5/01-6/15	70	37,923	959
		906	Cattle	6/16-10/9	5		173
		570	Cattle	10/10-11/15	70		485
		15	Horses	5/1-10/31	70		64

AUM = Animal Unit Month

*Environmental Consequences of the Proposed Action:* The Proposed Action would result in an immediate loss of about 0.11 Animal Unit Months (AUMs) of livestock forage and a long-term loss of 0.02 AUMs when only the road remains and the well pad has been revegetated. The removal of vegetation would also increase the potential for noxious weed infestations in the Project Area. However, disturbed areas previously dominated by pinyon-juniper woodland and revegetated with native grasses could provide additional forage for livestock.

*Environmental Consequences of the No Action Alternative:* Under the No Action Alternative, there would be no impacts to livestock grazing in the Project Area.

*Mitigation:* All roadside and well location cut and fill slopes would be revegetated immediately after construction with the BLM-approved seed mixture(s). Revegetation operations would start immediately following the completion of recontouring/dirt work operations.

Reserve pit fencing would comply with BLM specifications as described in the BLM Gold Book (BLM 2006a). Reserve pit fence specifications would be included as part of the Conditions of Approval.

If construction/development occurs between April 15 and November 15, the Operator would be required to water or surface access roads to reduce airborne dust and damage to roadside vegetation communities.

## REALTY AUTHORIZATIONS

*Affected Environment:* The application for the pipeline connection for well 11-7-397 is for an amendment to ROW COC676991, the Ryan Gulch Gathering System. The terms, conditions, and stipulations of the original grant remain in full force and effect.

A ROW has been requested across the following described lands (continuing up to the wellhead):

T3S, R98W    Section 7    NWNW

*Environmental Consequences of the Proposed Action:* The pipeline would be installed adjacent to existing pipelines and along existing roads. Some cross-country routing is anticipated to connect the wells. The estimated construction time would less than 2 days. The Proposed

Action does not include developing staging areas or temporary use areas on public land. The existing well site is large enough to serve as a temporary staging area, with no new disruption expected.

*Environmental Consequences of the No Action Alternative:* Under the No Action Alternative, the application would be denied and the management situation would remain the same.

*Mitigation:* Re-contouring would be completed throughout the route, and reclamation would be completed as agreed upon with the BLM AO. Upon completion, the area would be cleared of all trash and debris.

## **RECREATION**

*Affected Environment:* The Project Area is located within the White River Extensive Recreation Management Area (ERMA). The BLM manages the White River ERMA for unstructured recreation activities including hunting, dispersed camping, hiking, horseback riding, wildlife viewing, and off-highway vehicle use.

The Project Area most resembles a Recreation Opportunity Spectrum (ROS) class of Semi-Primitive Motorized (SPM). SPM physical and social recreation setting is typically characterized by a natural appearing environment with few administrative controls and low interaction between users, but evidence of other users may be present. SPM recreation experience is characterized by a high probability of isolation from the sights and sounds of humans in an environment that offers challenge and risk.

One BLM-issued Special Recreation Permit (SRP) for commercial outfitting and guiding during the fall big game hunting seasons has been authorized within the Project Area.

*Environmental Consequences of the Proposed Action:* The public would lose approximately 4.17 acres of dispersed recreation potential while the well is in operation. Recreators would likely avoid the well and disperse elsewhere within the White River ERMA. The recreational experience of hunters could be disrupted if construction occurs during hunting seasons (September through November). Increased traffic levels resulting from the new well pad and associated road could increase the likelihood of human interactions, increase the sights and sounds associated with the human environment, and create an environment that appears less natural.

*Environmental Consequences of the No Action Alternative:* The No Action Alternative would have no impact on recreation within the White River ERMA.

*Mitigation:* None.

## **VISUAL RESOURCES**



*Affected Environment:* The Project Area is located in an area classified as Visual Resource Management (VRM) Class III. The objective for Class III classified areas is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate, and any changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. Management activities may attract attention but should not dominate the view of the casual observer.

*Environmental Consequences of the Proposed Action:* The Proposed Action would not be visible to a casual observer traveling along paved routes or rivers in the area. Most people traveling along unpaved roads in the area would be energy-related personnel, local ranchers, and seasonal big game hunters. The drilling activities may be seen temporarily but would not dominate the view. The well would be located in pinyon-juniper and sagebrush habitat. All above-ground facilities would be painted to mimic and blend with the surrounding vegetation. Interim reclamation and revegetation would also minimize visual disturbance in the Project Area during production. Therefore, the level of change to the characteristic landscape would be less than moderate and the objectives of the VRM III classification would be retained.

*Environmental Consequences of the No Action Alternative:* There would be no impacts to visual resources from the No Action Alternative.

*Mitigation:* All permanent (onsite for 6 months or longer) structures, facilities and equipment placed onsite would be painted Munsell Soil Color Chart Juniper Green or equivalent within six months of installation.

**CUMULATIVE IMPACTS SUMMARY:** This action is consistent with the scope of impacts addressed in the White River ROD/RMP. The cumulative impacts of oil and gas activities are addressed in the White River ROD/RMP for each resource value that would be affected by the Proposed Action.

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**PERSONS / AGENCIES CONSULTED:** None

**INTERDISCIPLINARY REVIEW:**

Project Team		
Name	Title	Area of Responsibility
<b>BLM Oversight</b>		
Keith Whitaker	Natural Resource Specialist	Visual Resource Management
Paul Daggett	Mining Engineer	Geology and Minerals
Brett Smithers	Wildlife Biologist	Project Lead, Migratory Birds; Threatened, Endangered and Sensitive Animal Species; Wildlife; Wetlands and Riparian Zones
Ken Holsinger	Botanist	Areas of Critical Environmental Concern; Threatened and Endangered Plant Species; Fire Management; Forest Management
Chris Ham	Outdoor Recreation Planner	Recreation; Wilderness; Access and Transportation
Mary Taylor	Rangeland Management Specialist	Vegetation; Invasive, Non-Native Species; Rangeland Management
Michael Selle	Archaeologist	Cultural and Paleontological Resources
Tom Johnson	Hydrologist	Air Quality; Water Quality, Surface and Ground; Hydrology and Water Rights; Soils
Penny Brown	Realty Specialist	Realty Authorizations
Tom Johnson	HazMat Collateral	Wastes, Hazardous or Solid

SWCA (Third Party Contractor)		
Larry Semo	Senior Scientist	Senior Review, all areas; Migratory Birds; Threatened, Endangered and Sensitive Animal Species; Wildlife, Terrestrial and Aquatic
Chad Baker	Environmental Specialist	Migratory Birds; Threatened, Endangered and Sensitive Animal Species; Wildlife, Terrestrial and Aquatic; Areas of Critical Environmental Concern; Wastes, Hazardous or Solid; Threatened and Endangered Plant Species; Invasive, Non-Native Species; Vegetation
Hillary Browning	Water Resources Specialist/Planner	Air Quality; Water Quality, Surface and Ground; Hydrology and Water Rights; Geology and Minerals; Soils; Access and Transportation; Visual Resources; Forest Management; Wetlands and Riparian Zones; Fire Management; Rangeland Management

# **Finding of No Significant Impact/Decision Record (FONSI/DR)**

## **CO-110-2007-175-EA**

**FINDING OF NO SIGNIFICANT IMPACT (FONSI)/RATIONALE:** The environmental assessment and analyzing the environmental effects of the proposed action have been reviewed. The approved mitigation measures (listed below) result in a Finding of No Significant Impact on the human environment. Therefore, an environmental impact statement is not necessary to further analyze the environmental effects of the proposed action.

**DECISION/RATIONALE:** It is my decision to approve the proposed action with the mitigation measures listed below.

### **MITIGATION MEASURES:**

1. All activities will be required to comply with all applicable local, state, and federal air quality laws, statutes, regulations, standards, and implementation plans. Documentation of this compliance will be provided to the BLM. Further mitigation of air quality impacts will also be required, including:

- the limitation of vehicle speeds on associated access roads to 15 miles per hour (mph) or speeds such that a dust plume is not visible at the appropriate designated speed for that road;
- application of a BLM-approved dust suppressant will be required during dry periods when dust plumes are visible at speeds less than or equal to 15 mph;
- surfacing of access roads constructed on soils susceptible to wind erosion with gravel or other appropriate material;
- suspension of land clearing, grading, earth moving, and excavation activities when wind speed exceeds 20 mph;
- restoration of disturbed areas including regrading to original contours, revegetation with a BLM-approved seed mixture, and post-seeding placement of woody debris in appropriate areas to increase effective ground cover and retain soil moisture;
- maintenance of construction equipment in good operating condition to ensure engines run efficiently; and
- maintenance of emission controls on vehicles and construction equipment to ensure effective pollutant emission reductions.

2. If subsurface cultural resources are located during clearing of the well pad location, access road, or well tie in pipeline, all construction on the well pad must cease immediately. The AO will be notified immediately. Within five working days the AO will contact the Operator regarding:

- whether the subsurface features or materials found during construction appear eligible for the National Register of Historic Places (NRHP);
- the mitigation measures the Operator will likely have to undertake before the site can be used (assuming that in situ preservation is not necessary); and
- a timeframe for the AO to complete an expedited review under 36 CFR 800-11 to confirm, through the State Historic Preservation Officer (SHPO), that the findings of the AO are correct and that the mitigation is appropriate.

3. At any time, if the Operator wishes to relocate the construction activities to avoid the expense of mitigating subsurface cultural resources and/or the delays associated with the process, the AO will assume the responsibility of recording and/or stabilizing the exposed materials, if required. Mitigation technical guidelines and procedures will be provided by the AO. The Operator may resume construction once the AO has verified that mitigation is complete.

4. Pursuant to 43 CFR 10.4 (g) the holder of the authorization must notify the AO, by telephone, followed by written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Pursuant to 43 CFR 10.4 I and (d), activities in the vicinity of the discovery must stop and the discovery must be protected for 30 days or until the AO provides notice to proceed.

5. In accordance with the BLM Manual 9015 – Integrated Weed Management (BLM 1992) and the BLM White River Resource Management Plan Appendix B (BLM 1997a), Management of Noxious Weeds, the following mitigation measures are recommended:

- Conduct pre-construction surveys for noxious weed infestations within the site boundaries and along access roads. Surveys should be conducted in spring, if possible.
- Consult with BLM to determine treatment for noxious weeds.
- Construction vehicles and equipment will be cleaned, power-washed, and free of soil and vegetation debris prior to entry and use of access roads to prevent transporting weed seeds.
- All seed mix, erosion control materials, and reclamation materials will be certified weed free.
- Revegetated areas will be monitored for the life of the project to evaluate the need for supplemental seeding and noxious weed control.
- The ROW and other disturbed areas will be monitored for noxious weed infestations, and new or expanding populations will be controlled or eradicated for the duration of the construction, operation, and reclamation phases.

6. Reserve pits should be appropriately fenced, as shown in the Gold Book (BLM 2006a) to prevent access by persons, wildlife, or livestock. Netting or other methods may be required in order to prevent access and mortality of birds and other animals.

7. All lethal and non-lethal events involving migratory birds will be reported to the WRFO Petroleum Engineer Technician immediately.

8. Disruptive activity will be prohibited within 0.25 mile of functional non-sensitive raptor nesting sites (February 1 through August 15).

9. Pad and road construction, drilling, well completion, workover activity, and reclamation will be subject to the White River ROD/RMP approved timing limitation stipulation TL-04, which disallows disruptive activity (i.e., construction, and drilling and completion-related activities) within 0.5 miles of listed and BLM sensitive raptor nests from February 1 through August 15.

10. Construction sites will be maintained in a sanitary condition at all times; waste materials at those sites will be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment. The Operator will be responsible for assuring that all waste is properly disposed of at the appropriate regulated disposal facility.

11. No hazardous materials will be used during any phase of the operations unless prior approval has been obtained from the BLM AO. All onsite drilling materials and chemicals will be properly stored to ensure the prevention of spills. No environmentally harmful additives will be used.

12. No hazardous chemicals, fuels, oils, lubricants, or noxious fluids will be disposed of at the drill sites, in the reserve pits, or down hole.

13. If any hazardous chemicals, fuels, oils, lubricants, and/or noxious fluids are spilled during drilling operations, they will be cleaned up immediately. The lessee/Operator will have absorbent on site for spill containment. After clean up, the chemicals, fuels, oil, lubricants and/or noxious fluids and any contaminated material will be removed from the drill site and disposed of at an approved disposal facility.

14. A release of any chemical, oil, petroleum product, produced water, or sewage (regardless of quantity) must be reported to the BLM – WRFO Hazardous Materials Coordinator at (970) 878-3800. The CDPHE should be notified, if applicable, through the 24-hour spill reporting line at 1 (877) 518-5608.

15. The holder will submit its Spill Prevention Containment and Countermeasure (SPCC) plan to the AO prior to starting construction.

16. All activities will be required to comply with applicable local, state, and federal water quality laws, statutes, regulations, standards, and implementation plans. This compliance includes, but is not limited, to the following:

- As required of all surface disturbing activities on BLM land, activities will strictly adhere to "Gold Book" (BLM 2006a) surface operating standards for oil and gas exploration and development.
- Prior to commencing construction activities the Operator will consult with the State of Colorado Water Quality Control Division regarding applicable stormwater discharge permits. Permit requirements may include development of a Stormwater Management Plan outlining how Best Management Practices (BMPs) will be used to control runoff and sediment transport. Written documentation that the appropriate permits have been



obtained will be provided to the BLM AO. Acceptable forms of this documentation include a copy of the permit or an official verification letter from the State of Colorado Water Quality Control Division including the permit certification number.

17. To mitigate for water quality impacts from road runoff and drainage, corrugated metal pipes (CMPs) and drainage dips will be located in such a manner as to avoid discharge onto unstable terrain such as headwalls or slumps. CMPs are not recommended on roads that have gradients less than 10%. Based on the nature of the affected soils, drain dips will be utilized in place of CMPs in these locations. The use of drain dips on road gradients greater than 10% should be avoided. Energy dissipaters such as large gravels/small cobbles will be used at culvert and drainage dip inlets/outlets to minimize additional erosion. To mitigate water being channelized down the roadway, all activity will stop when soils or road surfaces become saturated to a depth of 3 inches. Mud blading will be prohibited (unless otherwise approved by the BLM).

18. To mitigate additional soil erosion at the well pad and potential increased sediment and salt loading to nearby surface waters, all disturbed areas affected by drilling or subsequent operations, except areas reasonably needed for production operations, will be reclaimed as early as possible and as nearly as practicable to their original condition. These areas will be maintained to control dust and minimize erosion.

19. To allow for optimal interim reclamation of the well pad, all tanks and production facilities will be situated on the access road side of the well pad (unless otherwise approved by the BLM WRFO). Interim reclamation of the well pad and final reclamation of the pipeline ROW on BLM-administered surfaces will commence as follows:

- Debris and waste materials other than de minimus amounts, including, but not limited to, concrete, sack bentonite and other drilling mud additives, sand, plastic, pipe and cable, as well as equipment associated with the drilling, re-entry or completion operations will be removed.
- Stockpiled topsoil and spoil piles will be separated and clearly labeled to prevent mixing during reclamation efforts.
- Stockpiled topsoil will be seeded with a BLM-approved seed mixture. Topsoil stockpiles that will potentially remain in place for extended periods of time (e.g., multiwell locations) will be covered with biodegradable fabrics, such as Jute netting or Curlex, and seeded with the approved seed mixture.
- Stockpiled topsoil segregated from spoil piles will be replaced during reclamation in its respective original position (last out, first in) to minimize mixing of soil horizons.
- Stockpiled soils (spoil and topsoil) will be pulled back over all disturbed surfaces affected by pipeline/road construction, drilling or subsequent operations, except areas reasonably needed for production operations. Areas on the well pad not needed for production operations will be partially reshaped as early and as nearly as practicable to near pre-construction contours. The pipeline will be recontoured to pre-construction contours as soon as construction activities cease.
- The Operator will ensure stockpiled topsoil is evenly distributed over the top of spoil used in recontouring/partial-reshaping efforts.

- Recontoured/partially-reshaped areas will be seeded with a BLM-approved seed mixture, and all slopes exceeding 5% will be covered with wildlife friendly biodegradable fabrics such as, Jute blankets or Curlex to provide additional protection to topsoil, retain soil moisture, and help promote desired vegetative growth.
- Following seeding and placement of biodegradable fabrics, woody debris cleared during initial construction will be pulled back over the recontoured/partially-reshaped areas to act as flow deflectors and sediment traps. Available woody debris will be evenly distributed over the entire portion of the reclaimed area and will not account for more than 20% of total ground cover.

20. A **Reclamation Status Report** will be submitted to the WRFO biannually for all actions that require disturbance of surface soils on BLM-administered lands as a result of the Proposed Action. Actions may include, but are not limited to, well pad and road construction, construction of ancillary facilities, or power line and pipeline construction. The Reclamation Status Report will be submitted by **15 April** and **15 August** of each calendar year, and will include the well number, API number, legal description, UTM coordinates (for well pad and recorded using the NAD83, Zone 12 datum), project description (e.g., well pad, pipeline, etc.), reclamation status (e.g., interim or final), whether the well pad or pipeline has been re-vegetated and/or re-contoured, date seeded, photos of the reclaimed site, estimate of acres seeded, seeding method (e.g., broadcast, drilled, etc.), and contact information for the person(s) responsible for developing the report. The report will be accompanied with maps showing each point (i.e., well pad), polygon, or polyline (i.e., pipeline) feature that was included in the report. In addition, scanned copies of seed tags that accompanied the seed bags will be included with the report. Internal and external review of the WRFO Reclamation Status Report, and the process used to acquire the necessary information will be conducted annually, and new information or changes in the reporting process will be incorporated into the report. The Reclamation Status Report will be submitted electronically via email and as a hard-copy to Natural Resource Specialist, Brett Smithers (brett\_smithers@blm.gov) at the following address:

BLM, White River Field Office  
220 East Market Street  
Meeker, Colorado 81641  
Attn: Brett Smithers

21. In an attempt to track interim and final reclamation of land use authorizations related to the development of federal mineral resources, the Operator is asked to submit Geographic Information System (GIS) data to the WRFO for any **post construction** point, polyline, or polygon feature that was included in the APD and associated with the Proposed Action. GIS point, polyline, and polygon features may include, but are not limited to, proposed access roads to be constructed, existing roads to be upgraded, pipeline ROW corridors, ancillary facilities (e.g., compressor stations, produced water treatment and evaporation facilities, etc.), and well pad footprint (i.e., a polygon that shows the total area disturbed for the working surface of the pad and the overburden) for each APD. Geospatial data should be submitted as ArcView feature datasets (i.e., shapefiles), ArcInfo coverages, or as ArcView compatible data files. GIS point, polyline, and polygon feature data will be submitted for each APD submitted for review that includes new disturbance. GIS data will be submitted electronically to BLM, WRFO Natural Resource Specialist, Brett Smithers (brett\_smithers@blm.gov; Phone: [970] 878-3818) in the

UTM, NAD83, Zone 13 projection. If the Operator is unable to send the data electronically, the Operator will submit the data on compact disk(s) to:

BLM, White River Field Office  
220 East Market Street  
Meeker, Colorado 81641  
Attn: Brett Smithers

If for any reason the location or orientation of the geographic feature associated with the Proposed Action changes, the Operator is asked to submit updated GIS data to BLM, WRFO within 2 weeks of the change, and this information should accompany the Sundry Notice.

22. Upon final abandonment of the well pad, new access roads, and completion of pipeline, 100% of all disturbed surfaces will be restored to pre-construction contours, and revegetated with a BLM-approved seed mixture. Natural drainage patterns will be restored and stabilized with a combination of vegetative (seeding) and non-vegetative (straw bails, woody debris, straw waddles, biodegradable fabrics) techniques. All available woody debris will be pulled back over recontoured areas (woody debris will not account for more than 20% of total surface cover) to help stabilize soils, trap moisture, and provide cover for vegetation. Monitoring and additional reclamation efforts will persist until reclamation is proven successful (as determined by the BLM).

23. Surface casing and cementing will be installed in wells to protect aquifers from contamination due to hydraulic fracturing or contact with oil and gas products. Any groundwater produced from the Fort Union or Mesaverde Formations will be removed from the site and disposed of due to poor water quality.

24. The use of spill-guards (or equivalent spill prevention equipment) under and around pumping equipment will be required for the well location to intercept contaminants prior to contacting soils and infiltrating into groundwater. All pits will be lined to protect willow groundwater from pit contents. All wastes associated with construction and drilling will be properly treated and disposed of. Efforts will be taken to avoid direct soil contact with diesel fuels or other pollutants which could be leached into the groundwater.

25. Mitigate soil loss from roadway and surrounding area by restricting road access to authorized personnel only (e.g., gate and sign newly constructed access roads).

26. The Operator will be responsible for segregating topsoil material and backfilling of topsoil in its respective original position (last out, first in) to assist in the reestablishment of soil health and productivity. Erosion and sediment control measures will be installed on all slopes exceeding 5% to mitigate soil loss. Erosion and sediment control measures will be maintained until upland areas are stabilized.

27. Mud blading will be prohibited and all activity will cease when soils or road surfaces become saturated to a depth of 3 inches unless otherwise approved by the BLM. All disturbed surfaces will be restored to natural contours and revegetated with a BLM-approved seed mixture. Interim reclamation will follow the mitigation outlined in the Water Quality portion of this document.

28. All reserve pits will be lined to prevent contents of reserve pits from seeping into surrounding soils, contaminating local groundwater, reducing soil productivity, and compromising reclamation success.

29. For the well location, access road, and pipeline, the Operator will promptly revegetate all disturbed areas not necessary for production, including roadside and pad cut and fill slopes with Native Seed Mix #3 (BLM 1997a). Seed mixture rates are Pure Live Seed (PLS) pounds per acre. Revegetation will commence immediately after construction and will not be delayed until the following fall. Drill seeding is the preferred method of application. Debris will not be scattered on the pipeline until after seeding operations are completed and will not exceed 20% ground cover.

Seed Mix #	Species (Variety)	Lbs. PLS per Acre	Ecological Sites
3	Western wheatgrass (Rosanna)	2	Gravelly 10"-14", Pinyon/Juniper Woodland, Stony Foothills, 147 (Mountain Mahogany)
	Bluebunch wheatgrass (Secar)	2	
	Thickspike wheatgrass (Critana)	2	
	Indian ricegrass (Nezpar)	1	
	Fourwing saltbush (Wytana)	1	
	Utah sweetvetch	1	

30. The Operator will be responsible for excluding livestock grazing from all reclaimed portions of the well pad. To eliminate livestock utilization of reclaimed areas prior to successful reclamation, a barbed wire fence built to BLM specifications will be constructed around all reclaimed portions of the well pad including cut and fill slopes immediately after interim reclamation is concluded (within 2 weeks) unless otherwise instructed by the BLM. A BLM-specified cattleguard will be placed at the time of fence construction where the well access road bisects the fenceline. Once reclaimed plant species were fully established on disturbed sites as determined by the BLM (e.g., Desired Plant Community [DPC], Public Land Health Standards), the fence and cattleguard will be completely removed by the Operator after a minimum of two growing seasons. This will allow for reclaimed plant species to establish without grazing pressure from livestock.

31. The Operator will be responsible for achieving a reclamation success rate for interim reclamation and final abandonment (on all disturbed areas associated with well pad, pipeline, and access roads) of sufficient vegetative ground cover from reclaimed plant species within three growing seasons after the application of seed. Additional reclamation efforts will be undertaken at the Operator's expense. Reclamation achievement will be evaluated using the Public Land Health Standards, including indicators of rangeland health. Rehabilitation efforts must be repeated if it is concluded that the success rate is below an acceptable level as determined by the BLM.

32. If construction/development occurs between 15 April and 15 November, the Operator will be required to water or surface access roads to reduce airborne dust and damage to roadside vegetation communities.

33. Disturbed areas, except areas reasonably needed for production operations, will be reclaimed as early and as nearly as practicable to their original condition and will be maintained to control dust and minimize erosion and salt loading to nearby surface waters.

34. Activities that may disrupt big game behavior or habitat utility during sensitive time frames are subject to timing limitations (December 1 through April 30) on severe winter ranges, as directed by the White River ROD/RMP (BLM 1997b). This stipulation applies to all surface-disturbing activities.

35. All activities will be required to comply with applicable local, state, and federal transportation laws, statutes, regulations, standards, and plans. The access road will be constructed to address all on-the-ground conditions with the goal of minimizing surface disturbance and will conform with generally accepted BLM practices for the area. Activities will strictly adhere to “Gold Book” (BLM 2006a) surface operating standards for oil and gas exploration and development. Further mitigation of impacts to access and transportation will be achieved through management practices including:

- encouragement and/or arrangement for employees and contractors to carpool to and from the site;
- requiring contractors and employees to comply with all posted speed limits;
- compliance with county and state weight restrictions and limitations;
- controlling dust along unsurfaced access roads and minimizing the tracking of mud onto paved roads; and
- post-construction restoration of unsurfaced roads to equal or better conditions than existed before construction.

36. All non-county roads used to access the well will be maintained in their current condition or better. Continuous inspection will be performed, and preventative maintenance measures will be taken on a biannual basis. These measures may include grading, cleaning of drainage structures, erosion control and slope stabilization, and road closures during periods of excessive soil moisture.

37. The Operator will be responsible for developing a fire management plan as an integral part of the overall safety plan that will include evacuation procedures and designate escape routes. This includes coordination with the BLM and Rio Blanco County Emergency Response teams to develop fire suppression priorities, identify management restrictions, and determine appropriate fire suppression strategies. Further mitigation of impacts to the fire cycle should be achieved through management practices including:

- notify the BLM, and affected landowners, of any fires during construction, maintenance, or operation;

- inform site personnel of fire prevention practices concerning smoking materials, welding, etc., and make hand tools available, including shovels and fire extinguishers, for fire control;
- furnish all motor vehicles and equipment with fire-extinguishing equipment and stage fire fighting equipment and water tanks on site in readily accessible areas;
- construct defensible space as necessary and determine design criteria in coordination with BLM fire staff;
- perform all welding activities in areas where vegetation and other flammable materials have been removed;
- control noxious weeds and cheatgrass as discussed in the Invasive, Non-Native Species section;
- seed disturbed areas as discussed in the Vegetation and Soils sections;
- redistribute large, woody material salvaged during clearing operations on BLM WRFO-administered lands and disperse materials over the portion of the ROW from which the trees and brush were originally removed to meet fire management objectives (not to exceed 20% total ground cover in any given area of evenly distributed material) and to provide wildlife habitat, seedling protection, and deter vehicular traffic; and
- refer to the BLM Fire Management Activity Plan (FMAP) for additional mitigation requirements.

38. Potential adverse impacts on paleontological resources could be mitigated to below the level of significance by implementation of the following mitigation measures:

- Museum record searches will be conducted to (1) determine whether any known fossil localities occur within the study area; (2) assess the potential for disturbance of these localities during construction; and (3) further evaluate the paleontological sensitivity of the Uinta Formation within the study area.
- A paleontological monitor will be on site during all construction activities to systematically inspect the high volume of bedrock exposed during ground disturbance, permitting fossil discovery and salvage.
- All fossils collected will be cleaned, prepared, identified, and transferred to an approved repository.
- The results of the paleontological monitoring/mitigation program will be analyzed and presented in a paleontological report prepared using BLM guidelines.

39. All roadside and well location cut and fill slopes will be revegetated immediately after construction with the BLM-approved seed mixture(s). Revegetation operations will start immediately following the completion of recontouring/dirt work operations.

40. Reserve pit fencing would comply with BLM specifications as described in the BLM Gold Book (BLM 2006a). Reserve pit fence specifications would be included as part of the Conditions of Approval.

41. Re-contouring would be completed throughout the route, and reclamation would be completed as agreed upon with the BLM AO. Upon completion, the area would be cleared of all trash and debris.

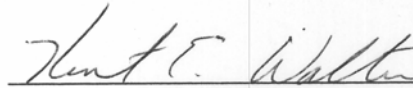
42. All permanent (onsite for 6 months or longer) structures, facilities and equipment placed onsite would be painted Munsell Soil Color Chart Juniper Green or equivalent within six months of installation.

**COMPLIANCE/MONITORING:** On-going compliance inspections and monitoring of drilling, production and post-production activities will be conducted by White River Field Office staff during construction of well pad, access road, and pipeline. Specific mitigation developed in this Environmental Assessment and the lease terms and conditions will be followed. The Operator will be notified of compliance related issues in writing, and depending on the nature of the issue(s), will be provided 30 days to resolve such issues.

**NAME OF PREPARER:** Chad Baker (SWCA Environmental Consultants)/Brett Smithers

**NAME OF ENVIRONMENTAL COORDINATOR:** Caroline Hollowed

**SIGNATURE OF AUTHORIZED OFFICIAL:**



Field Manager

**DATE SIGNED:** 09/05/07

**ATTACHMENTS:**

Figure 1: Project Location of Proposed Well Pad 11-7-397,  
Figure 2: Proposed Access Road, and Proposed Pipeline.



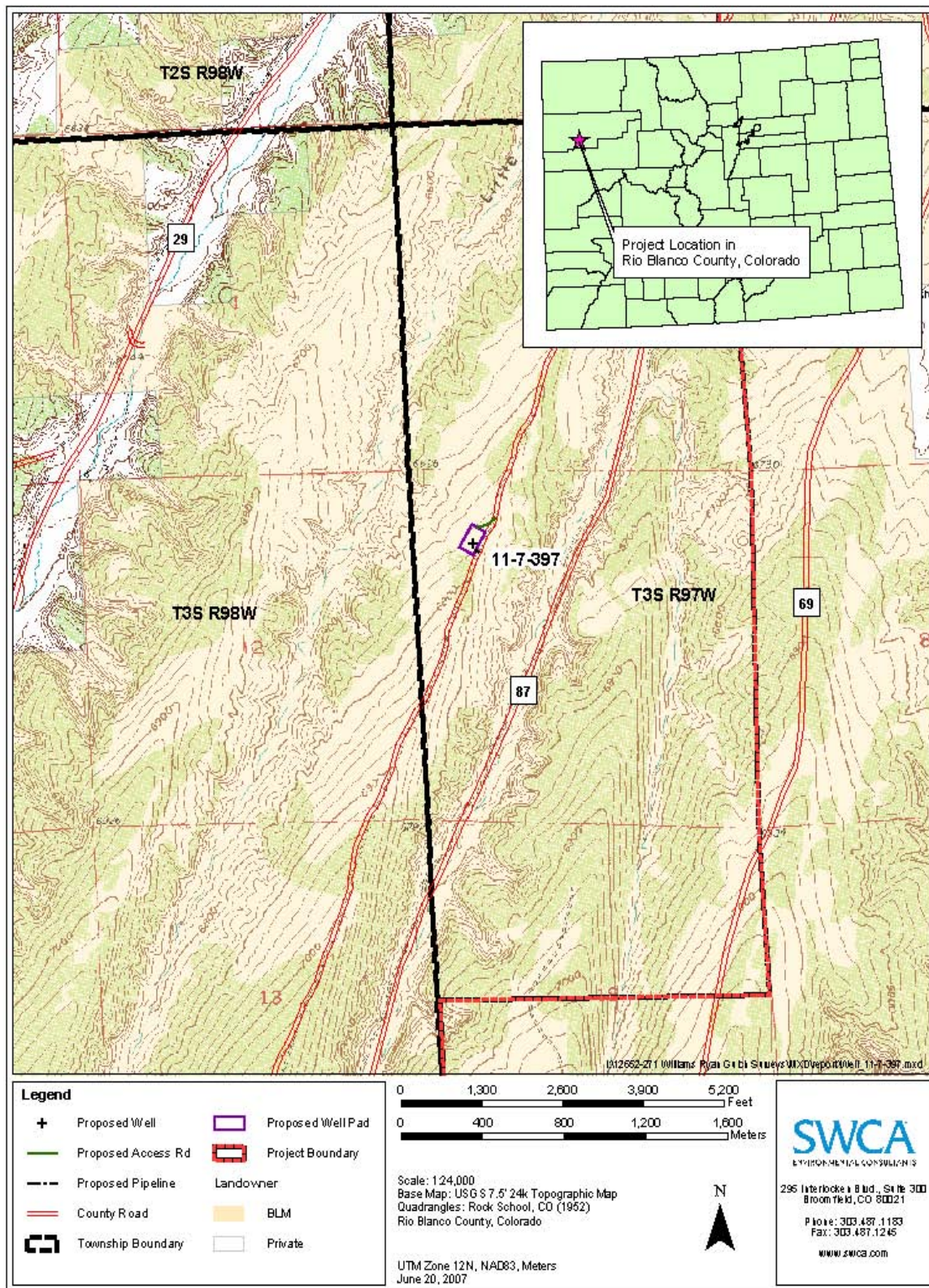


Figure 1. Project Location of Proposed Well Pad 11-7-397, Proposed Access Road, and Proposed Pipeline.



Figure 2: General Location Map CO-110-2007-175-EA

