U.S. Department of the Interior
Bureau of Land Management
Glenwood Springs Energy Office
2425 South Grand Avenue, Suite 101
Glenwood Springs, CO 81601

ENVIRONMENTAL ASSESSMENT

NUMBER: CO140-2007-168EA

CASEFILE NUMBER: Federal Leases COC27743 (1981) (Bottomhole), COC62163 (1999) (Bottomhole), and COC62162 (1999)

PROJECT NAME: West Parachute Clustered Plan of Development **(**part of the Pilot Project for Alternative Mitigation Practices)

LOCATION: Section 31, Township 6 South, and the NW¼, Section 6, Township 7 South, Range 95 West, Sixth Principal Meridian

APPLICANT: Williams Production RMT Company ("Williams")

DESCRIPTION OF THE PROPOSED ACTION AND NO ACTION ALTERNATIVE

Proposed Action: Williams is proposing a 2-year program of natural gas development in the Grand Valley Natural Gas Field located just east of the town of Parachute, Colorado (Figure 1). The proposal, referred to as the West Parachute Clustered Plan of Development (CPOD), is part of a development strategy described in the *Pilot Project for Alternative Mitigation Practices* (Williams 2007). This strategy emphasizes highly clustered development and the use of Efficiency Drilling Rigs and Simultaneous Operations (SIMPOS) to allow drilling and completion activities to be conducted simultaneously. The goal of the strategy is to reduce the amount of time required to develop or "drill-out" the area.

The West Parachute CPOD would be the third in a series of CPODs to be implemented in the region. The impacts of the first two, the Grand Valley and Rulison CPODs, were evaluated in environmental assessment CO140-2007-001 (BLM 2007a). If approved, the implementation of the West Parachute CPOD would coincide with the completion of the previously approved Grand Valley CPOD, so that Williams would "rollover" their drilling activities to the new area.

The West Parachute CPOD proposal consists of constructing, drilling, completing, and operating up to 61 new wells from three existing and one new surface location. Natural gas, produced water, and condensate would be transported by pipeline to a central collection facility. All of the facilities would be on Federal land with the exception of two frac pads. As with the prior CPODs, this proposal would be developed using Efficiency Drilling Rigs, capable of drilling up to 22 wells per pad, and simultaneous operations (SIMOPS) that allow completion of some wells while other wells are being drilled. Details of the proposal are presented in Appendix A.

Williams is also proposing to drill year-round by requesting an exception to a 5-month big game winter range timing limitation (TL) that is currently stipulated under the terms of Federal Lease COC62162. This stipulation prohibits surface use from December 1 to April 30. The exception, which is requested for the 2007-2008 winter season, would be consistent with a prior approval for a TL exception associated with the Grand Valley and Rulison CPODs. To support the issuance of the TLs in these cases, a multi-

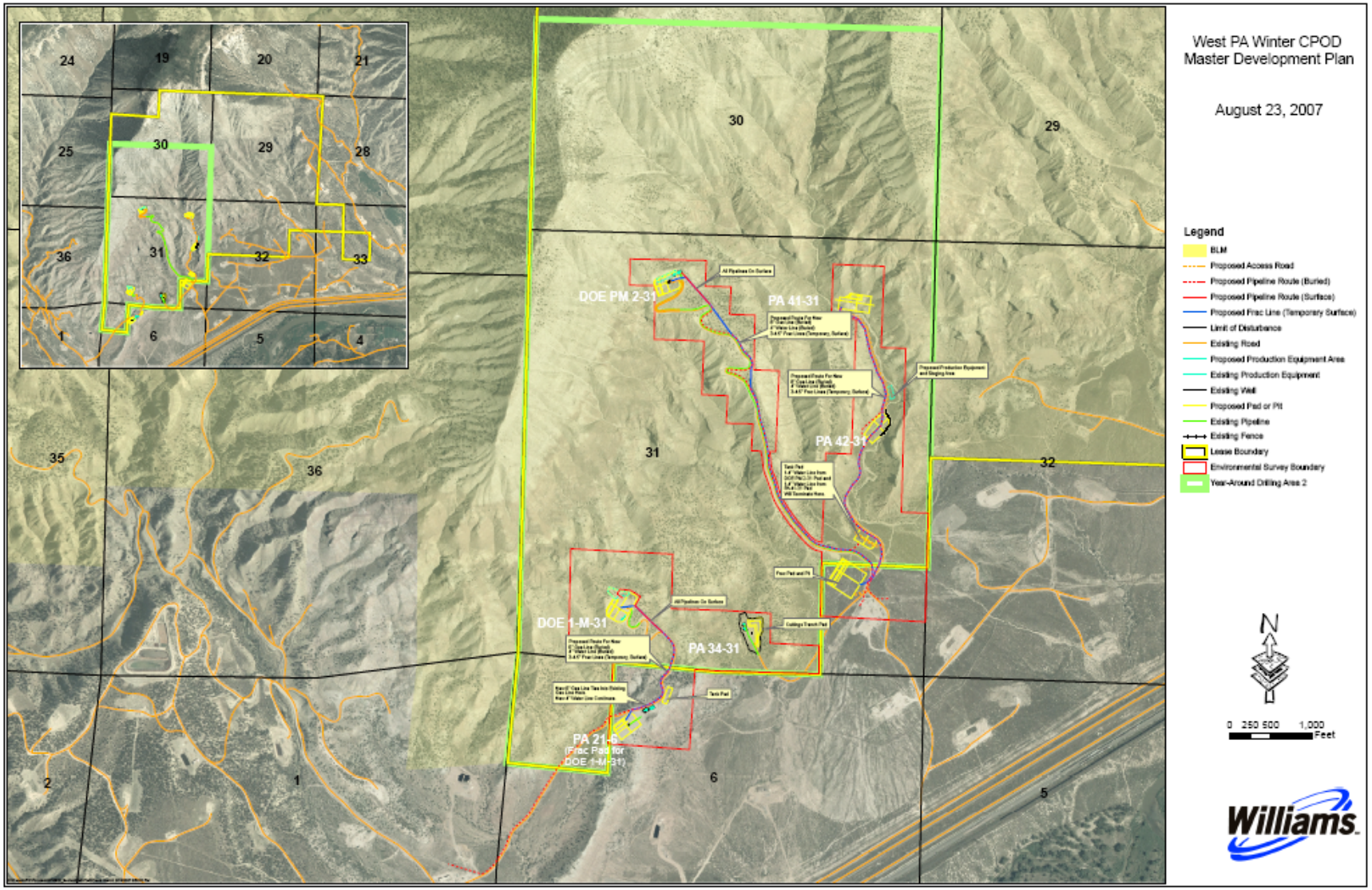

Figure 1. The West Parachute CPOD Proposal.

year, regional monitoring study to assess the impacts of winter drilling on mule deer (*Odocoileus hemionus*) was proposed and initiated by the Colorado Division of Wildlife (CDOW; BLM 2007). The study is currently in the first year of monitoring and data collection. Under the current proposal, the study would continue. Decisions on future requests for TL exceptions (i.e., beyond the 2007-2008 winter season) in the West Parachute CPOD area would be made in consultation with the CDOW.

To further support the issuance of an exception to the winter timing limitation, the proposal includes additional wildlife-related Best Management Practices (BMPs) and mitigation activities as described in the *Pilot Project for Alternative Mitigation Practices* (Williams 2007). These activities include:

- Remote telemetry for monitoring and measuring gas production to reduce traffic
- Collocating production units, tanks and other infrastructure to reduce surface disturbance/fragmentation
- Recycling water using treatment facilities, thereby reducing demand on water resources
- Conducting fracture stimulation remotely (i.e., from other locations) to reduce water truck traffic

Oil and gas development on Federal lands within the West Parachute CPOD area was previously analyzed and approved in the Wheeler to Webster Geographic Area Plan (GAP, BLM 2002). However, it has determined that the current proposal is outside the scope of that analysis for the following reasons:

- The CPOD includes new pads, expansion of existing pads, pipelines, access roads, and other surface facilities that were not part of the original Wheeler to Webster GAP analysis.
- The NEPA analysis was conducted more than 5 years ago, exceeding the time period for use of a Statutory Categorical Exclusion (SCE) pursuant to Section 390 of the Energy Policy Act of 2005.
- The West Parachute CPOD includes a proposal for an exception to the winter drilling Timing Limitation lease stipulation.

Based on these factors, it has been determined that the prior analysis is inadequate to support the approval of the newly proposed developments and additional site-specific analysis pursuant to the National Environmental Policy Act (NEPA) must be conducted.

The proposed action would be implemented consistent with Federal oil and gas lease COC62162 (the surface location of all proposed wells), Federal regulations (43 CFR 3100), and the operational measures included in the APDs or attached to the APDs as Conditions of Approval (COAs). The COAs to be applied to this project are presented in Appendix A.

No Action Alternative: The no action alternative constitutes denial of the APDs associated with the proposed action. Under this scenario, none of the developments presented in the proposed action would take place. However, operations and maintenance activities associated with the existing wells in the area would continue.

Under this alternative an exception to the winter TL would not be required, because the developments proposed in the West Parachute CPOD would not occur. However, the mule deer monitoring study,

which is regional in scope and therefore not dependant on the approval of the West Parachute CPOD, would continue.

PURPOSE AND NEED FOR THE ACTION: The purpose of the action is to develop oil and gas resources on Federal leases COC27743, COC62162, and COC62163 and consistent with existing Federal lease rights. The action is needed to increase the development of oil and gas resources for commercial marketing to the public.

An additional purpose of the action is to evaluate the impacts on mule deer from winter drilling using highly clustered oil and gas development. The need has arisen from concerns over the application of the seasonal restrictions on Federal lands in conjunction with traditional well development (with only one or a few wells per pad). Seasonal restrictions has resulted in a pattern of drilling activity whereby operators drill on Federal lands until restrictions become effective and then move to adjacent fee lands where these restrictions do not apply. Because the fee lands often contain comparable types of winter habitat, this pattern of drilling has called into question the effectiveness of timing restrictions on a regional scale. The continuation of the monitoring study will result in the accumulation of data that will provide the basis for comparative analysis with the effects of the current practice and thereby inform future management of Federal lease development.

SUMMARY OF LEASE STIPULATIONS: All three of the leases proposed for development contain stipulations designed to protect resource values. However, the stipulations attached to two of the three Federal leases (COC27743 and COC62163) do not apply because no surface developments would occur there. All of the surface developments proposed would occur on Federal Lease COC62162 and those stipulations would apply to the proposed action (Table 1)

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: Record of Decision for the Approval of Portions of the Roan Plateau Resource Management Plan Amendment and Environmental Impact Statement (BLM 2007b).
>
> Date Approved: June 8, 2007
>
> Decision Number/Page: Pages ROD-39
>
> Decision Language: Goal OG-1: Allow the environmentally responsible development of oil and gas resources in the Planning Area.
>
> > Objective OG-1.1: Make oil and gas resources available for development to meet national, regional, and local needs.
> >
> > Objective OG-1.2: Ensure that oil and gas development is carried out in a manner that is consistent with the goals and objectives for natural and cultural resources in the planning area.

STANDARDS FOR PUBLIC LAND HEALTH: In January 1997, Colorado BLM approved the Standards for Public Land Health. The five 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. The environmental analysis must address whether impacts resulting from the proposed action or alternatives being analyzed would

Table 1. Lease Stipulations and Lease Notices, Federal Lease COC62162 (1999)	
Description of Lands	***Stipulations***
Section 31: Lots 1-12; N½SE¼, SW¼SE¼	**Controlled Surface Use (CSU):** VRM Class II Areas: Protection may include special design requirements, relocation of operations by more than 200 meters, and other measures to retain overall landscape character. Such measures would be designed to blend the disturbance in with the natural landscape so that it does not attract attention from KOPs.
Section 31: Lots 1-12; NE¼SE¼, W½SE¼	**CSU:** Erosive Soil and Slopes > 30%: Special design, construction, operation and reclamation measures will be required to limit the amount of surface disturbance, reduce erosion potential, maintain site stability and productivity, and insure successful reclamation in identified areas of highly erosive soils of slopes greater than 30%. Highly erosive soils in the "severe" and "very severe" classes – NRCS mapping. Areas identified in the RMP are included (Erosion hazard areas and water quality management areas). The SUPO of the APD for wells on erosive soils or slopes >30% MUST include specific measures to comply with the GSRA Reclamation policy, such as stabilizing the site to prevent settling, slumping, and highwall [cutslope] degradation, and controlling erosion to protect the site and adjacent areas from accelerated erosion and sedimentation and siltation of nearby surface waters. Specific performance objectives for the plan include: • Limitation of disturbance to 3.0 acres for pad • Limitation of interim "in use" area to 0.5 acres; and • Maximizing area of interim reclamation that is shaped to a grade of 3:1 (h:v) or less; any planned highwall [cut slope] must be demonstrated to be safe and stable and include enhanced reclamation and erosion prevention measures as needed. Operator must submit evaluation of site's reclamation potential based on problematic characteristics of the site (slope, aspect, vegetation, depth of soils, soil salinity and alkali content) [Other special measures are included.]
Section 31: Lots 1-12; N½SE¼, SW¼SE¼	**Timing Limitation L:** No surface use (does not apply to operation and maintenance of production facilities) from December 1 to April 30 for the purpose of protecting Big Game Winter Habitat (Mule Deer, Elk, Pronghorn Antelope and Bighorn sheep) which includes severe big game winter range and other high value winter habitat as mapped by CDOW.
Section 31: Lots 1-11; N½SE¼	**No Surface Occupancy (NSO: Steep slopes:** To maintain site stability and site productivity, on slopes greater than 50% (does not apply to pipelines). **Exception criteria:** if lessee demonstrates that operations can be conducted w/o causing unacceptable impacts and that less restrictive measures will protect the public interest, an exception may be approved by the authorized officer. A request must include an engineering plan and reclamation plan which provides a high level of certainty that such operations can be conducted consistent with the objectives of the GSRA Reclamation policy. Must demonstrate previous success with reclamation in similar sites.
Section 31: Lots 1, 3-5, 7, 8, and 10; N½SE¼	**NSO: I70 Viewshed.** Exception would be granted if protective measures can be designed to accomplish VRM Class II objectives.
ALL LANDS within lease	**Lease Notice (LN:** Within high value or crucial big game winter range, the operator is required to implement specific measures to reduce impacts of oil and gas operations on wildlife and their habitat. Such measures shall be developed in concert with BLM during the preparation of the EA. May include completion of habitat improvement projects designed to replace habitat lost through construction; reduction of human disturbance; using telemetry to collect well data; and access well site locations during times of day when wildlife is not likely to be present. Measures to reduce impacts would generally be considered when well [pad] density exceeds four wells [pads] per 640 acres, or when road density exceeds 3 miles per 640 acres.
ALL LANDS within lease	Special design and construction may be required in order to minimize visual impacts of drilling activities within 5 miles of all communities or populations centers throughout the GSRA, major BLM or county roads and state or Federal highways.

would maintain, improve, or deteriorate land health conditions relative to these resources.

These analyses are conducted in relation to baseline conditions described in land health assessments (LHAs) conducted by the BLM. The proposed action would be located in an area that was included in the Rifle-West LHA (BLM 2005). These analyses are presented below.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section provides a description of the human and natural environmental resources that could be affected by the proposed action and no action alternative. In addition, the section presents comparative analyses of the direct and indirect consequences on the affected environment stemming from the implementation of the various actions.

A variety of laws, regulations, and policy directives mandate the evaluation of the effects of a proposed action and alternative(s) on certain critical environmental elements. Not all of the critical elements that require inclusion in this EA are present, or if they are present, may not be affected by the proposed action and alternative (Table 3). Only those mandatory critical elements that are present and affected are described in the following narrative.

In addition to the mandatory critical elements, there are additional resources that would be impacted by the proposed action and alternative. These are presented under **Other Affected Resources.**

Table 2. Critical Elements of the Human Environment

Critical Element	*Present*		*Affected*		*Critical Element*	*Present*		*Affected*	
	Yes	No	Yes	No		Yes	No	Yes	No
Air Quality	X		X		Prime or Unique Farmlands		X		X
ACECs		X		X	Special Status Species*	X		X	
Cultural Resources	X			X	Wastes, Hazardous or Solid	X		X	
Environmental Justice		X		X	Water Quality, Surface and Ground*	X		X	
Floodplains		X		X	Wetlands and Riparian Zones*		X		X
Invasive, Non-native Species	X		X		Wild and Scenic Rivers		X		X
Migratory Birds	X		X		Wilderness/WSAs		X		X
Native American Religious Concerns		X		X					

* Public Land Health Standard

Critical Elements

Air Quality

Affected Environment: The proposed action area (Garfield County) has been described as an attainment area under CAAQS and NAAQS (Colorado Ambient Air Quality Standards and National Ambient Air Quality Standards). An attainment area is an area where ambient air pollution amounts are determined to be below NAAQS standards.

Proposed Action:

Environmental Consequences: The Roan Plateau RMPA and EIS describe potential effects from oil and gas development (BLM 2006:4-26 to 4-37). Analysis was completed with regard to greenhouse gas emissions, a near-field and far-field analysis for carbon monoxide, particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide, hazardous air pollutants including: benzene, ethylbenzene, formaldehyde, hydrogen sulfide, toluene, and xylenes. Sulfur and nitrogen deposition analysis, acid neutralizing capacity, and visibility screening-level analysis were also completed in the Roan Plateau RMPA and EIS. Findings indicate that no adverse long-term effects would result under that plan. Since the proposed action is within the scope of the reasonable foreseeable development (RFD) scenario analyzed in that document, it is anticipated that the proposed action would be unlikely to have adverse effects on air quality.

Activities described in the proposed action would result in localized short-term increases in vehicle and equipment emissions. Concentrations of emissions would be below applicable ambient air quality standards as analyzed in the Roan Plateau RMPA & EIS. However, it is anticipated that construction and production activities would likely produce high levels of dust in dry conditions without dust abatement. To mitigate dust generated by these activities, the operator would be required to implement dust abatement strategies as needed by watering the access road and construction areas and/or by applying a surfactant approved by the Authorized Officer (Appendix B, Number 2).

No Action Alternative

Environmental Consequences: The no action alternative would not result in dust generation or equipment emissions associated with construction and drilling activities.

Cultural Resources

Affected Environment: Six cultural resource investigations (GSFO #8396-1a & b, 9462, 9493, 9801-1, and 1107-24) have been conducted in the West Parachute CPOD area. These investigations have resulted in the documentation of two prehistoric and one historic period site. Two of the sites are considered eligible or potentially eligible for inclusion on the National Register and are considered to be "historic properties." The first of the eligible sites is a section of the Havemeyer-Wilcox Canal and the other is a prehistoric open camp. The third site was originally described as a "processing locality," but was not relocated during the most recent inventory.

Proposed Action:

Environmental Consequences: The implementation of the proposed action would have no direct impacts to known cultural resources because they were avoided during the planning phase of the proposal. Therefore, the BLM made a determination of "**No Historic Properties Affected**.**"** This determination was made in accordance with the 2001 revised regulations [36CFR 800.4(d)(1)] for Section 106 of the National Historic Preservation Act (16U.S.C 470f), the BLM/SHPO Programmatic Agreement (1997) and Colorado Protocol (1998)]. No formal consultation was initiated with the Colorado State Historic Preservation Officer (SHPO)

Indirect, long-term cumulative impacts from increased access and the presence of project personnel could result in a range of impacts to known and undiscovered cultural resources in the vicinity of the location. These impacts could range from illegal collection and excavation to vandalism.

A standard Education/Discovery Condition of Approval (COA) for cultural resource protection would be attached to the APD(s) (Appendix B, Number 3). The importance of this COA should be stressed to the

operator and its contractors, including informing them of their responsibilities to protect and report any cultural resources encountered during construction, drilling, completion, and maintenance operations.

No Action Alternative

Environmental Consequences**:** There would be no impacts under this alternative because development activities would not take place, access would not be increased, and project personnel would not be present.

Invasive Non-native Species

Affected Environment: The vegetation types found in the project area include juniper woodland, sagebrush shrubland, and salt-desert shrub. The four existing pads (including PA 21-6, planned as a frac pad for DOE 1-M-31) and proposed pad PA 41-31, are relatively free of noxious and invasive weeds, although there are small amounts of cheatgrass *(Anisantha tectorum)*, kochia (*Kochia scoparia*), halogeton (*Halogeton glomeratus*) and redstem filaree (*Erodium cicutarium*) present. Non-native species present in the area around the proposed frac and tank pads associated with DOE PM 2-31, PA 41-31 and PA 42-31 include horehound (*Marrubium vulgare*), Russian thistle (*Salsola australis*), redstem filaree, and cheatgrass. A few musk thistle (*Carduus nutans*) were observed in the wash between PA 42-31 and proposed pad PA 41-31.

Proposed Action:

Environmental Consequences: Surface-disturbing activities provide a niche for the invasion and establishment of invasive non-native species, particularly when these species are already present in the surrounding area. Because a variety of invasive non-native species are already present in the project area, the potential for invasion following construction activities is high. Mitigation measures designed to minimize the spread of these species would be attached to well APDs as conditions of approval (see Appendix B, Number 4).

No Action Alternative

Environmental Consequences: Under the no action alternative, no new construction would take place; therefore, no new infestations of invasive non-native species should occur. However, existing infestations are likely to spread if not treated. Continued operations and maintenance activities associated with existing developments present a continuing potential source of weed introductions. The same weed control requirements associated with the proposed action are applicable to these ongoing operations (see Appendix B, Number 4).

Migratory Birds

Affected Environment: Vegetation in the area consists of sparse to medium density pinyon-juniper woodlands with openings of sagebrush, saltbush, and greasewood. Understory vegetation consists primarily of native grasses and forbs with some cheatgrass. These vegetation types provide cover, forage, and nesting habitat for a variety of migratory birds. Four songbird species included on the U. S. Fish and Wildlife Service list of Birds of Conservation Concern (BCC) (USFWS 2002) are likely to occur in the juniper woodlands of the project area and may use these habitats for nesting and foraging. These four species are the pinyon jay (*Gymnorhinus cyanocephalus*), gray vireo (*Vireo vicinior*), black-throated gray warbler (*Dendroica nigrescens*), and Virginia's warbler (*Vermivora virginiae*).

During surveys conducted in May 2007, no active or inactive raptor nest sites were identified within 0.25 mile of roads, pads, pipelines, or surface facilities included in the proposed action. Generally, the juniper woodlands are marginally suitable for nesting raptors due to the low height and low density of juniper trees. Nearby sandstone bluffs provide suitable nesting habitat for raptors such as red-tailed hawks and golden eagles, but no nests were observed. Red-tailed hawks and golden eagles were observed in the project area and likely use the area for foraging.

Surveys were also conducted to determine the presence of sensitive or migratory BCC species that could potentially occur in the project area. One black-throated gray warbler was observed singing in a pinyon tree, which may indicate territorial behavior. However, no nests were observed.

Proposed Action:

Environmental Consequences: The proposed action would result in a loss of nesting, breeding, roosting, perching, and foraging habitat for migratory birds on disturbed areas and reduce habitat effectiveness adjacent to areas where disturbance-related effects could be expected. The construction of the well pad and access road as well as surface facilities would remove approximately 7 acres of pinyon-juniper and shrub vegetation and would result in reduced habitat patch size which could negatively impact bird species that require large expanses of intact habitat. This fragmentation could result in increased competition, increased exposure to predators, and a higher likelihood of nest parasitism. It is also possible that individual nests could be destroyed if well pads, roads and production facilities are constructed during the spring and summer nesting season.

In addition to the physical loss of habitat and fragmentation, it is possible that during construction activities, individual birds could be displaced to adjacent habitats due to noise and human presence. Effects of displacement could include increased risk of predation or failure to reproduce if adjacent habitat is at carrying capacity. Furthermore, impacts to birds at the species or local population level could include a change in abundance and composition as a result of cumulative habitat fragmentation from energy development in the larger area.

The development of reserve pits in the project area may be expected to attract waterfowl and other migratory birds for purposes of resting, foraging, or as a source of free water. The extent and nature of the problem is not well-defined, but management measures should emphasize the prevention of contact with produced water and drilling and completion fluids that may pose a problem (e.g., acute or chronic toxicity, compromised insulation; see Appendix B, Number 5 for mitigation). Raptors should not be negatively affected as upland foraging habitat is plentiful in the area.

Impacts to migratory species can be minimized if surface disturbing construction activities take place outside the nesting season. It is unlikely that essential habitat will be affected by the new access road and construction of PA 41- 31, due to the lack of suitable habitat for black-throated gray warblers and pinyon jays. Black-throated gray warblers almost always select mature pinyon-juniper habitat for nesting and rarely select sites outside this habitat type.

No Action Alternative:

Environmental Consequences: Under the no action alternative, the proposed action would not occur and habitat would not be further fragmented. Disturbance-related effects to birds would not occur, and there would be no potential for "take" under the Migratory Bird Treaty Act.

Native American Religious Concerns

Affected Environment: The proposed West Parachute CPOD is located within a larger area identified by the Ute Tribes as part of their ancestral homeland. Cultural resource inventories (see **Cultural Resources**) were conducted to determine if there were any areas that might be culturally sensitive to Native Americans. No sensitive areas were identified during the inventories and none are currently known in the proposed project area.

Proposed Action:

Environmental Consequences: The Ute tribes claim this area as part of their ancestral homeland. At present, no Native American concerns are known within the project area and none were identified during the inventories. The Ute Tribe of the Uintah and Ouray Bands, the primary Native American tribe in this area of the GSFO, have indicated that they do not wish to be consulted for small projects or projects where no Native American areas of concern have been identified either through survey or past consultations. Therefore, formal consultation was not undertaken. If new data are disclosed, new terms and conditions may have to be negotiated to accommodate their concerns.

Proposed Action:

Environmental Consequences: Although there would be no direct impacts from the proposed action, indirect impacts from increased access and personnel in the vicinity of the proposed project could result in impacts to unknown Native American resources ranging from illegal collection to vandalism.

A standard Education/Discovery Condition of Approval Native (COA) for the protection of Native American values would be attached to the APDs (Appendix B, Number 3). The importance of these COAs should be stressed to the operator and its contractors, including informing them of their responsibilities to protect and report any cultural resources encountered. The proponent and subcontractors should also be aware of requirements under the American Graves Protection and Repatriation Act (NAGPRA, Appendix B, Number 6).

No Action Alternative

Environmental Consequences: There would be no known impacts under this alternative because access would not be increased and project personnel would not be present.

Special Status Species

Affected Environment:

Federally Listed, Proposed, or Candidate Plant and Animal Species

According to the current species list available online from the U. S. Fish and Wildlife Service (USFWS) (http://mountain-prairie.fws.gov/endspp/CountyLists/COLORADO.htm), the following Federally listed, proposed, or candidate plant and animal species may occur within or be impacted by actions occurring in Garfield County: Uinta Basin hookless cactus (*Sclerocactus glaucus*), Parachute beardtongue (*Penstemon debilis*), DeBeque phacelia (*Phacelia submutica*), Canada lynx (*Lynx canadensis*), Mexican spotted owl (*Strix occidentalis*), yellow-billed cuckoo (*Coccyzus americanus*), razorback sucker (*Xyrauchen texanus*), Colorado pikeminnow (*Ptychocheilus lucius*), bonytail chub (*Gila elegans*), and humpback chub (*Gila cypha*). The bald eagle (*Haliaeetus leucocephalus*) was removed from the listed of threatened or endangered species in August 2007. The BLM now considers the bald eagle a sensitive species.

BLM Sensitive Plant and Animal Species

BLM sensitive plant and animal species with habitat and/or occurrence records in the area include adobe thistle (*Cirsium perplexans),* DeBeque milkvetch (*Astragalus debequaeus),* Naturita milkvetch (*Astragalus naturitensis),* Roan Cliffs blazing star (*Mentzelia rhizomata*), Piceance bladderpod (*Lesquerella parviflora*), Harrington's penstemon (*Penstemon harringtonii*), bald eagle (*Haliaeetus leucocephalus*), milk snake (*Lampropeltis triangulum taylori*), midget faded rattlesnake (*Crotalus viridis concolor*), and Great Basin spadefoot (*Spea intermontana*). In addition, four BLM sensitive fish species - the flannelmouth sucker (*Catostomus latipinnis*), bluehead sucker (*Catostomus discobolus*), roundtail chub (*Gila robusta*), and Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*) - are known to inhabit the Colorado River.

Proposed Action:

Environmental Consequences:

Federally Listed, Proposed, or Candidate Plant Species
The results of a May 2007 plant survey indicate that there are no federally listed, proposed, or candidate plant species or suitable habitat for these species in the project area. Therefore, the proposed action would have "**No Effect**" on these species.

Federally Listed, Proposed, or Candidate Animal Species

The May 2007 survey also indicated that no federally listed, proposed, or candidate terrestrial animal species or their habitat are known to occur at or near the project area. Therefore, no direct or indirect impacts are anticipated and the proposed action would have **"No Effect"** on these species.

The potential for soil erosion and sedimentation would increase as a result of constructing the PA 41-31 pad and access road. If the exception to the winter wildlife timing limitation is approved, work would continue through the winter months when roads are often muddy, thereby increasing sediment laden run-off. Roads are generally drier and in better condition during the non-winter months and consequently are less prone to erosion. Although a minor, temporary increase in sediment transport to the Colorado River may occur, it is not likely that the increase would be detectable above current background levels. In any case, all of the federally listed, proposed, or candidate fish species associated the Colorado River are adapted to naturally high sediment loads. Therefore, the proposed action would have "**No Effect"** on these species.

BLM Sensitive Plant Species

The results of a May 2007 plant survey indicate the project area contains potential habitat for Debeque milkvetch and adobe thistle; however, neither species was observed. Typical habitat for Debeque milkvetch is varicolored, fine-textured, seleniferous or saline soils of the Wasatch Formation, Atwell Gulch Member at elevations of 5,100 to 6,400 feet. The closest known occurrence of Debeque milkvetch is approximately 6 miles northeast of the project area. Adobe thistle is found on barren clay outcrops derived from shales of the Mancos or Wasatch formations on open and disturbed sites in mixed shrubland and pinyon-juniper woodland, at elevations of 5,000 to 8,000 feet. It is known to occur approximately one-half mile southwest of the project area.

In addition to a loss of a small portion of potential sensitive plant habitat, indirect impacts associated with ground disturbing activities could also occur. Invasive weeds could increase from ground-disturbing

activities and potential pollinator habitat may be lost. Mitigation measures designed to minimize the spread of invasive species and to minimize loss of pollinator habitat through reclamation are presented in Appendix B (Numbers 4 and 7).

BLM Sensitive Animal Species

Nesting, foraging, and winter habitat for the bald eagle is found nearby along the Colorado River. However, habitat north of the river is limited in extent by the presence of Interstate 70, two frontage roads, and a railway and therefore does not extend into the project area. As such, no impacts to bald eagle are expected.

Direct impacts to the BLM sensitive reptile and amphibian species could include injury or mortality as a result of proposed developments and subsequent production and maintenance activities. These effects would be most likely during the active season for these species, which are April to October for the milk snake, March to October for the midget faded rattlesnake, and May through September for the Great Basin spadefoot. Indirect effects to the milk snake and midget faded rattlesnake could include a greater susceptibility to predation if the roads or pads are used to aid in temperature regulation. Overall, however, there is a low likelihood that these species would be measurably affected.

Well pad and road construction would disturb soil and remove vegetation, increasing the potential for erosion and increased sedimentation to the Colorado River. Although Colorado River cutthroat trout are especially sensitive to increased sediment loads that can potentially impair preferred spawning habitats, the Colorado River is not considered spawning habitat. Sediment may reduce aquatic insect productivity that could impact food resources for trout and other wildlife.

The discussion of potential impacts and mitigation measures associated with the endangered Colorado River fishes is also relevant to the non-game fishes listed as sensitive by BLM. Because mitigation measures would be implemented, it is unlikely that the proposed action would cause sediment loads in nearby streams and the Colorado River to increase beyond natural levels. In order to reduce the risk, Best Management Practices (BMPs), and the COAs presented in Appendix B (Numbers 7-9) would be implemented.

No Action Alternative

Environmental Consequences: Under the no action alternative, the developments described in the proposed action would not occur. Therefore, no impacts to special status species are anticipated.

Analysis on the Public Land Health Standard for Special Status Species: According to a recent land health assessment, habitat conditions within this area appear suitable for special status animal species known or likely to occur (BLM 2005). However, large portions of the landscape are being fragmented due to extensive natural gas development. Continued habitat fragmentation is of concern as large blocks of contiguous intact habitat are required by many species. Sustained development and the proliferation of roads, well pads, pipelines, compressor stations, tank farms and other surface facilities will continue to reduce habitat patch size and affect both habitat quality and quantity. The potential to impact some species would increase as development continues. The proposed action in conjunction with similar activities throughout this watershed would increase fragmentation and could increase sediment loads. Although the contribution of the proposed action is in itself small, it may further trend the area away from meeting Standard 4 for special status wildlife.

No potential habitat for federally listed plant species is present in the project area. Potentially suitable habitat for sensitive plant species is present, although no sensitive plants were found. Therefore, the proposed action should not result in a failure of the area to achieve Standard 4 for special status plants.

The no action alternative would not result in a failure of the area to achieve Standard 4 because the proposed developments would not occur.

Wastes, Hazardous or Solid

Affected Environment: BLM Instruction Memoranda numbers WO-93-344 and CO-97-023 require that all National Environmental Policy Act documents list and describe any hazardous and/or extremely hazardous materials that would be produced, used, stored, transported, or disposed of as a result of a proposed project. The Glenwood Springs Resource Area, Oil & Gas Leasing and Development, Draft Supplemental Environmental Impact Statement (June 1998), Appendix L, Hazardous Substance Management Plan, contains a comprehensive list of materials that are commonly used for oil and gas projects. It also includes a description of the common industry practices for use of these materials and disposal of the waste products. These practices are dictated by various Federal and State laws and regulations, and the BLM standard lease terms and stipulations which would accompany any authorization resulting from this analysis. The most pertinent of the Federal laws dealing with hazardous materials contamination are as follows:

- The Oil Pollution Act (Public Law 101-380, August 18, 1990) prohibits discharge of pollutants into waters of the US, which by definition would include any tributary, including any dry wash that eventually connects with the Colorado River.

- The Comprehensive Environmental Response, Compensation, and Liability Act (Public Law 96-510 of 1980) provides for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment. It also provides national, regional, and local contingency plans. Applicable emergency operations plans in place include the National Contingency Plan (40 CFR 300, required by section 105 of CERCLA), the Region VIII Regional Contingency Plan, the Colorado River Sub-Area Contingency Plan (these three are Environmental Protection Agency produced plans), the Mesa County Emergency Operations Plan (developed by the Mesa County Office of Emergency Management), and the BLM Grand Junction Field Office Hazardous Materials Contingency Plan.

- The Resource Conservation and Recovery Act (RCRA) (Public Law 94-580, October 21, 1976) regulates the use of hazardous substances and disposal of hazardous wastes. Note: While oil and gas lessees are exempt from RCRA, right-of-way holders are not. RCRA strictly regulates the management and disposal of hazardous wastes.

Emergency response to hazardous materials or petroleum products on BLM lands are handled through the BLM Grand Junction Field Office contingency plan. BLM would have access to regional resources if justified by the nature of an incident.

Proposed Action:

Environmental Consequences: Possible pollutants that could be released during the construction phase of this project would include: diesel fuel, hydraulic fluid, and lubricants. These materials would be used during construction of the road and pipeline and for refueling and maintaining equipment and vehicles. Potentially harmful substances used in the construction and operation would be kept onsite in limited

quantities and trucked to and from the site as required. No hazardous substance, as defined by 40 CFR 355 would be used, produced, stored, transported, or disposed in amounts above threshold quantities. Surface water or groundwater could be impacted under the proposed action. Pollutants that might be released during the operational phase of the project could include condensate, produced water (if the wells in the area produce water) and glycol (carried to the site and used as antifreeze.) While uncommon, an accident could occur which could result in a release of any of these materials. A release could result in contamination of surface water or soil. Improper casing and cementing procedures could result in the contamination of groundwater resources. In the case of any release, emergency or otherwise, the responsible party would be liable for cleanup and any damages. Depending on the scope of the accident, any of the above referenced contingency plans would be activated to provide emergency response. At a minimum, the BLM Grand Junction Field Office contingency plan would apply.

These laws, regulations, standard lease stipulations, and contingency plans and emergency response resources are expected to adequately mitigate any potential hazardous or solid waste issues associated with the proposed action.

No Action Alternative

Environmental Consequences: Under this alternative, alternative would result in no new surface disturbance and would have no effect on soil or hazardous wastes.

Water Quality, Surface and Ground (includes an analysis of Public Land Health Standard 5)

Surface Water

Affected Environment: The proposed activities would be located north of I-70 and northeast of the Town of Parachute within an 11,470 acre unnamed sub-watershed. Within the project area are many unnamed ephemeral drainages, some of which are tributary to the ephemeral Hayes Gulch Creek and the Colorado River. Several of these area drainages occur in close proximity to the proposed activities and are characterized as high gradient, incised, relatively unstable, and having poorly vegetated banks. Flow in these drainages occurs in response to spring snowmelt and localized short-duration high intensity storm events. This results in frequent streambank failures, channel scour, down-cutting, and aggradation.

In close proximity to the proposed 41-31 well pad is an unnamed ephemeral drainage that is tributary to another unnamed ephemeral drainage that flows directly into the Colorado River to the south. The activities associated with the proposed 41-31 well pad would occur approximately 1.7 miles upstream from the Colorado River.

The ephemeral drainages within the project area are not currently identified in the *Stream Classifications and Water Quality Standards* (CDPHE, Water Quality Control Commission, Regulation No. 37) list, the *303(d) List of Water Quality Limited Segments Requiring TMDLS* (CDPHE, Water Quality Control Commission, Regulation No. 93), or the *Monitoring and Evaluation List* (CDPHE, Water Quality Control Commission, Regulation No. 94). At this time, there are no water quality data for these drainages.
Proposed Action:

Environmental Consequences: Proposed activities would temporarily remove soil and vegetation resulting in an increase in erosion potential and offsite sedimentation. Of particular concern is construction of the access road, facilities pads, and well pad associated with the proposed 41-31 well pad. These activities would occur in close proximity to a large, unnamed ephemeral drainage, and would require filling a portion of the drainage and two small tributaries. This would involve considerable cuts and fills in

Badland soils that are classified as having very severe erosion hazards. Due to the close proximity of these activities to the nearby drainage, the likelihood of sediment being transported to this drainage from denuded fill slopes is high.

The construction of the proposed 41-31 well pad and its associated access road would also require the placement of a culvert and fill over approximately 144 feet of the drainage. This could lead to scour and channel degradation at the outlet, scour and/or aggradation at the inlet, and frequent maintenance associated with keeping the culvert clear of debris. Following drilling and completion activities that may last up to 18 months, interim reclamation would begin and would involve reclaiming the southeast corner of the well pad and reducing the culvert length to approximately 40 feet which would remain under the access road for the life of the wells.

There is also a high potential for sediment delivery to the large unnamed ephemeral drainage from the large amounts of fill that would be placed in the southeast corner of the proposed well pad, at the road crossing, and along the southern edge of the proposed well pad. Additionally, two proposed facilities pads would be located just downstream and south of the proposed 41-31 well pad and to the west of the large, unnamed ephemeral drainage. Construction of the proposed 41-31 well pad would also involve filling in two small high gradient ephemeral tributaries to the large unnamed ephemeral drainage. These activities would require capturing runoff above cut slopes and rerouting flows around the well pad and into the large drainage.

To protect the nearby large unnamed ephemeral drainage from sediment delivery, a minimum buffer of 10 feet would be maintained between the edge of disturbance and the drainage along the southern edge of the proposed 41-31 well pad and along the eastern edge of the two proposed facilities pads to the south. This buffer along with erosion control BMPs that include but are not limited to silt fences, straw wattles, sediment retention basins, seeding fill slopes, rip-rapping slope toes, and water bars would be used to minimize excessive sediment delivery to the nearby drainage. Best Management Practices and the proper engineering of access roads and well pads to BLM Gold Book standards would further aid in achieving these objectives throughout the project area. The mitigation measures presented in Appendices B (Numbers 7-9) and Appendix C (site-specific COAs) would be implemented throughout the project area to minimize excessive sediment delivery to nearby drainages and to prevent unnatural channel degradation.

No Action Alternative

Environmental Consequences: The no action alternative would result in no new disturbance and would have no effect on nearby drainages.

Waters of the U.S.

Affected Environment: Section 404 of the Clean Water Act requires a Department of the Army permit from the US Army Corps of Engineers prior to discharging dredged or fill material into waters of the United States as defined by 33 CFR Part 328. A Corps permit is required for both permanent and temporary discharges into waters of the United States. Due to the flashy nature of area drainages and anticipated culvert maintenance, the Corps of Engineers recommends designing drainage crossings for the 100-year event. Drainage crossings within the project area would be required to pass a 25-year or greater storm event in accordance with BLM Goldbook standards. A 25-year, 6-hour precipitation event in the project area would deposit approximately 1.6 inches of precipitation, while a 25-year, 24-hour precipitation event would deposit about 2.2 inches.

Proposed Action:

Environmental Consequences*:* Drainage crossings would require the use of fill material to span drainages which could result in additional sediment available for transport to the drainage if not properly stabilized. Rip rap and revegetation practices should be used to stabilize road fills at crossings. Improperly designed drainage crossings, in particular undersized or poorly aligned culverts, could result in channel degradation that may include: excessive bank erosion at culvert outlets, ponding of flows and excess sedimentation at culvert inlets, and channel scour both at inlets and outlets.

The drainage adjacent to the proposed 41-31 well pad is under the jurisdiction of the U.S. Army Corps of Engineers. The proposed activities at this location would involve the placement of approximately 8.2 cubic yards of fill into the large, unnamed ephemeral drainage and its two small tributaries to the north. These activities would be permitted under Nationwide Permit 18 for minor discharges and would not require the operator to submit a pre-construction notification prior to commencing activities. The mitigation measures presented in Appendices A (Number 3, 7-9) and B would be implemented to ensure that jurisdictional waters of the U.S. receive appropriate protection in accordance with the Clean Water Act.

No Action Alternative:

Environmental Consequences:

The no action alternative would have no effect on waters of the U.S.

Groundwater

Affected Environment: The analysis area is in the lower Piceance Basin aquifer system (Colorado Geological Survey 2003). The Piceance Basin contains both alluvial and bedrock aquifers. Unconsolidated alluvial aquifers are the most productive aquifers in the Piceance Basin (EPA 2004). These alluvial deposits are narrow, thin deposits of sand and gravel formed primarily along stream courses. The most important bedrock aquifers are known as the upper and lower Piceance Basin aquifer systems (EPA 2004). These consolidated rock aquifers are lower Tertiary Eocene in age and occur within and above the large oil shale reserves. The upper and lower aquifers are separated by the Mahogany Zone of the Parachute Creek Member. The Mahogany Zone is a poorly permeable oil shale, which retards water movement but does not stop it (EPA 2004).

Both bedrock aquifers overlie the older Cretaceous Mesaverde Group where coal, coalbed methane, and natural gas resources are located (EPA 2004, BLM 2006a). The Mesaverde Group aquifer is at or near land surface in extensive areas and underlies the Uinta-Animas aquifer (USGS 2007b). The aquifer is of regional importance in the Piceance Basin, and portions of the Mesaverde aquifer contain coal beds that have been mined for at least a century.

Groundwater is recharged from snowmelt in upland areas that receive more precipitation than areas at lower elevations (EPA 2004). In the Piceance Basin, recharge flows from recharge areas near the margins of the basins to discharge areas near principal stream valleys. The groundwater moves laterally and/or upward discharging directly to streams, springs, and seeps by upward movement through confining layers and into overlying aquifers or by withdrawal from wells (USGS 2007b). The natural discharge areas generally are along the Colorado River and its tributaries (USGS 2007b).

The quality of the water in the Mesaverde aquifer is highly variable, with concentrations of dissolved solids ranging from less than 1,000 milligrams per liter in many of the basin-margin areas to more than 10,000 milligrams per liter in the central part of the Piceance Basin (EPA 2004). The minerals nahcolite (NaHCO3, sodium bicarbonate), dawsonite ($NaAl(OH)_2CO_3$), and halite (NaCl) are present in the groundwater, and the circulation of the groundwater with these minerals in solution has caused enlargement of the natural fractures (Taylor 1987 as cited in EPA 2004). In general, areas of the aquifer that are recharged by infiltration from precipitation or surface water sources contain relatively fresh water.

However, water quality in the Piceance Basin is generally poor because of nahcolite deposits and salt beds within the basin (Graham 2001, cited in EPA 2004). Only very shallow waters such as those from the surficial Wasatch Formation are used for drinking water (Graham 2001 as cited in EPA 2004). In general, the potable water wells in the Piceance Basin extend no deeper than 200 feet, based on well records maintained by the Colorado Division of Water Resources (CDWR). South of the Colorado River, the upper Tertiary-age aquifers have largely been eroded off, exposing a thick basal confining unit of the lower Green River and Wasatch Formations. As such, most water supply wells in the southern portion of the Piceance Basin are completed in the alluvial aquifers associated with the Colorado and Gunnison River tributaries (Colorado Geological Survey 2003).

No permitted domestic water wells are located within a 1-mile radius of the northern half of the West PA CPOD area. Two fresh water wells are located in Section 6, T7S, R95W, both outside and south of the study area. One is a commercial well permitted in 1995, which lists a well depth of 77 feet and a water level of 50 feet, and the other is a construction monitoring well permitted in 1999, with a depth of 161 feet and a water level of 92 feet. The depths of other fresh water wells in the area, specifically those found in Section 5, T7S, R95W, range from 33 feet to 300 feet deep and intersect unnamed aquifers, presumably colluvial/alluvial materials that overlie the Wasatch Formation. Well yields typically range from 1 to 150 gallons per minute (gpm).

Proposed Action:

Environmental Consequences: With the use of proper construction practices, drilling practices, and with the use of best management practices, no significant adverse impact to groundwater aquifers is anticipated to result from the proposed action. A geologic and engineering review is included in the 10-point drilling plan to ensure that the cementing and casing programs adequately protect the downhole resources.

No Action Alternative:

Environmental Consequences: The no action alternative would have no impact on groundwater.

Analysis on the Public Land Health Standard 5 for Water Quality: The proposed action would result in an increase in erosion and sediment available for transport to nearby ephemeral drainages which could have an effect on the public land health Standard 5 for water quality. To minimize potential sediment delivery to nearby drainages, site specific BMPs and the mitigation measures presented in Appendix B (Numbers 3 and 4) and Appendix C (Site-specific COAs)would be implemented. The no action alternative would have no effect on water quality and would not prevent Standard 5 from being met.

Other Affected Resources

In addition to the critical elements, the resources presented in Table 3 were considered for impact analysis relative to the proposed action and no action alternative. Resources that would be affected by the proposed action and no action alternative are discussed below.

Access and Transportation

Affected Environment: Primary access to the proposed well pad would be from I-70 at the Parachute exit. A frontage road and two graveled roads provide secondary access to the project area. In order to support the development of the new pad, approximately 1,600 feet of new road is proposed. Traffic in this area is heavy at present due to gas-field-related construction and drilling activity.

Table 3. Other Resources Considered in the Analysis.

Resource	*NA or Not Present*	*Present and Not Affected*	*Present and Affected*
Access and Transportation			X
Cadastral Survey	X		
Fire/Fuels Management	X		
Forest Management	X		
Geology and Minerals			X
Law Enforcement	X		
Paleontology			X
Noise			X
Realty Authorizations	X		
Recreation	X		
Socio-Economics	X		
Soils			X
Vegetation			X
Visual Resources			X
Wildlife, Aquatic			X
Wildlife, Terrestrial			X

Proposed Action:

Environmental Consequences: The proposed action would result in a substantial increase in truck traffic. The largest increase would be during rig-up, drilling, and completion activities. Data indicates that approximately 1,160 truck trips over a 30-day period would be required to support the drilling and completion of each well (Table 4).

Once the wells are producing, the volume of traffic would increase dramatically. During the operations phase of the project, traffic would be limited to weekly visits to the well pad for inspection and maintenance. Each well may have to be recompleted once per year, requiring three to five truck trips per day for approximately seven days.

Table 4. Traffic Associated with Drilling and Completion Activities.		
Vehicle Class	Number of trips per well	Percentage of total
16-wheel tractor trailers	88	7.6%
10-wheel trucks	216	18.6%
6-wheel trucks	452	39.0%
Pickup trucks	404	34.8%
Total	1,160	100.0%

BLM 2006
Note: trips by different vehicle types are not necessarily distributed evenly during the drilling process. Drilling and completion period is approximately 30 days.

Slight increases in traffic volume would occur on I-70 and large increases would occur on the secondary access routes. Public access to the area would not be affected by these increases since the public has no legal access. Degradation of the secondary access roads may occur due to heavy equipment travel and fugitive dust and noise would be created.

No Action Alternative:

Environmental Consequences: This alternative would not have an impact on access or transportation, because the development activities would not occur.

Geology and Minerals

Affected Environment: The project area is located within the southern Piceance Basin, an elongate northwest-southeast trending structural basin at the eastern edge of the Colorado Plateau. The basin is highly asymmetrical and deepest along its east side near the White River Uplift, where more that 20,000 feet of sedimentary rocks are present. It is bounded on the north by the Uinta Mountain Uplift and the Axial Arch, on the east by the Grand Hogback Monocline which lies along the west flank of the White River Uplift, on the southeast by the Gunnison and Uncompahgre uplifts, and on the west by the Douglas Creek Arch, which separates the Piceance Basin from the Uinta Basin in Utah. Surface exposures in the Piceance Basin are primarily sedimentary rocks of the Green River and Wasatch formations.

Mineral resources within the vicinity of the project area include oil and gas deposits, coal, and sand and gravel. Several known hydrocarbon-producing marine sands are located at the base of the Williams Fork Formation, including the Cameo coal zone, as well as an upper zone, known locally as the Mesaverde Formation. Located just above the Cameo coal zone, these massively stacked lenticular coastal plain and fluvial point bar sandstones have been effectively perforated by new fracing techniques to produce good gas flows. Limited sand and gravel deposits are found in Quaternary alluvium along stream valleys. The operator's proposed gas drilling program would target horizons within the Williams Fork Formation.

Proposed Action:

Environmental Consequences: Implementation of the proposed action would result in natural gas and associated water being produced from the hydrocarbon-bearing sands within the Mesaverde Group. The amount of natural gas that may be potentially produced from the proposed wells cannot be estimated accurately. However, if the wells become productive, initial production rates would be expected to be highest during the first few years of production, then decline during the remainder of the wells' economic lives. Natural gas production from the proposed wells would contribute to the draining of hydrocarbon-

bearing reservoirs within the Mesaverde Group in this area, an action that would be consistent with BLM objectives for mineral production.

Casing programs have been specifically designed to prevent hydrocarbon migration from gas-producing strata penetrated by the well bore during drilling, initial production and after completion of the well. Identification of potential fresh water bearing zones, aquifers, gas producing zones, and under- and over-pressured formations are incorporated into drilling scenarios for the proposed wells. Estimates of what depth these zones would be encounter are used to determine drilling fluids, fluid densities, surface casing depths, and production planning. The proposed casing and cementing program has been designed to protect and isolate all usable water zones, potentially productive zones, lost circulation zones, and abnormally high-pressure zones.

No Action Alternative:

Environmental Consequences: Under the no action alternative, the proposed action would not be approved. No new impacts on the geology and mineral resources would occur as a consequence of selecting this alternative.

Paleontology

Affected Environment: Two surface formations are present within the study area. The Wasatch Formation (including the Ft. Union equivalent at its base) and the Ohio Creek Formation are present in the NW, SW, and NE quarters of Section 31, T6S, R95W, and the northern one-half of the NW quarter of Section 6, T7S, R95W. Quaternary gravels and alluvium are found in the SE quarter of Section 31 and in the remainder of Section 6 north of I-70.

The Wasatch Formation is a Class 1 formation, defined as an area that is known to contain fossil localities. Fossils historically identified in the Wasatch are archaic mammals—including marsupials, representatives of two extinct orders of early mammals (pantodonts and creodonts), artiodactyls (deer-like, even-toed ungulates), ancestral horses and other perissodactyls (odd-toed ungulates), carnivores, and primates—as well as birds, lizards, turtles, crocodilians, gars and other fishes, freshwater clams, gastropods (snails), and other invertebrates. If present, these would be vulnerable to surface-disturbing activities. Paleontological sites have been identified near the proposed activities.

Proposed Action:

Environmental Consequences: A systematic paleontological field survey of a portion of the study area has been conducted (Rocky Mountain Paleontology 2001). Several proposed gas well surface locations and associated access roads were surveyed on lands administered by the Bureau of Land Management (BLM). The survey included pads PA 34-31 and PA 41-31, which are located within the proposed West Parachute CPOD boundary. The report recommended a paleontological clearance for PA 34-31 and construction monitoring and post-construction inspection for PA 41-31.

The result of a more recent field review of the proposed PA 41-31 pad location indicated Wasatch Formation lavender, red and gray claystones with lenticular sandstone ledges that form the sides of steep canyon walls immediately surrounding the proposed pad area. The pad is located on the east side of a narrow, unnamed box canyon and immediately adjacent to a deeply incised ephemeral drainage. There are at least three sandstone bluffs identified within the proposed pad location that would be disturbed during construction activities. Several additional smaller ephemeral drainages carry sediment from the highlands directly above the proposed pad location and converge into the deep ephemeral drainage.

Ephemeral drainages with these types of geomorphic characteristics have been known to exhibit fossil evidence in other locations where the Wasatch Formation outcrops at the surface. An examination of the BLM paleontology database indicates that there are at least three identified fossil localities in an area nearest the proposed PA 41-31 well pad, approximately 1,000 feet east in Section 32.

Potential impacts to paleontological resources would be primarily limited to the area in the northeastern quarter of Section 31, the area that underlies the proposed new PA 41-31 pad. Due to the age of the original survey, and field inspection of the proposed new facilities, a new paleontological clearance survey for the proposed PA 41-31 well pad is recommended. No additional surveys for the other well pads defined in this Plan are required. The standard paleontological condition of approval would be attached to the APDs (Appendix B, Number 10, see also Appendix C – Site-specific COAs).

No Action Alternative:

Environmental Consequences: Under the no action alternative, the proposed action would not be approved. The existing environment would remain in its current condition and there would be no impacts to paleontological resources.

Noise

Affected Environment: The proposed activities would be located northeast of the Town of Parachute and north of I-70 within a rural setting characterized by fairly recent natural gas development activities. Noise levels in the area are presently created by traffic serving existing wells and ongoing drilling and completion activities.

Proposed Action:

Environmental Consequences: Implementation of the proposed action would initially result in increased noise levels during construction of the well pads and access roads. Construction noise at 0.5 mile would be approximately 47 decibels [dB(A)], based on an average construction equipment noise level of 59 decibels [dB(A)] at 1,000 feet (see table below). At this distance, noise levels would approximate those associated with a quiet suburban setting (EPA 1974). Noise levels would drop at a constant rate at greater distances (Harris 1991). This noise level would likely persist during daytime hours during the entire construction period (3 to 4 weeks per well pad).

Table 5. Noise Levels Associated with Typical Construction Equipment

Equipment	Noise Level [dB(A)]		
	50 feet	500 feet	1,000 feet
Tractor	80	60	54
Bulldozer	89	69	63
Backhoe	85	65	59
Crane	88	68	62
Air Compressor	82	62	56
Dump Truck	88	68	62
Average (rounded to nearest whole db(A)	85	65	59
Source: BLM 1999			

Traffic noise levels would also be elevated as a consequence of the proposed action. The greatest increase would be along secondary access roads during the drilling and completion phases. Based on the La Plata County data presented in the table below, approximately 68 dB(A) of noise (at 500 feet) would be created by each fuel and water truck that travels these roads. Less noise would be created by smaller trucks, such as pickups. Although the duration of increased noise from this source would be short, it would occur repeatedly during the drilling and completion phases.

Noise impacts would decrease during the production phase. Pumping units and compressor noise levels would be approximately 50 dB(A) at 325 to 375 feet and continued small truck traffic would generate somewhat less. These levels would be less than the construction phase, but greater than background noise levels. During maintenance and workovers, noise would increase above noise levels associated with routine well production. Although noise would be much greater than background levels, especially during drilling and completion, the impact to the public would be minor because there are no residential, commercial, or ranching activities in the area.

Table 6. Noise Levels Associated with Oil and Gas Production and Development.

Source	***Reported Noise Level***
Typical compressor station	50 dB(A) (375 feet from property boundary)
Pumping units	50 dB(A) (325 feet from well pad)
Fuel and water trucks	68 dB(A) (500 feet from source)
Crane for hoisting rigs	68 dB(A) (500 feet from source)
Concrete pump used during drilling	62 dB(A) (500 feet from source)
Average well construction site	65 dB(A) (500 feet from source)
Source: La Plata County (2002)	

No Action Alternative:

Environmental Consequences: Under the no action alternative, there would be no increase in current noise levels because the developments described in the proposed action would not take place.

Soils (includes analysis of Public Land Health Standard 1)

Affected Environment: The proposed activities would be located on the following three soil map units: Badland, Nihill channery loam, and Torriorthents-Camborthids-Rock outcrop complex (USDA 1985). Following is a brief description of these soil map units.

- Badland – This soil map unit consists of steep, barren land that has been dissected by intermittent drainages. This unit occurs in soft shale, sandstone, and siltstone of the Green River, Wasatch, Mancos, and Mesa Verde Formations. This soil map is approximately 85 percent unvegetated, has very severe erosion hazard, and frequent active erosion.

- Nihill channery loam – This soil map unit is deep, well-drained, and is found on alluvial fans and the sides of valleys at elevations ranging from 5,000 to 6,500 feet and on slopes of 6 to 25 percent. This soil is derived from Green River shale and sandstone parent material. Surface runoff for this soil is slow and erosion hazard is severe. Primary uses for this soil include grazing and wildlife habitat.

- Torriorthents-Camborthids-Rock outcrop complex, steep – This soil map unit consists of sandstone and shale bedrock and soils of variable depth occurring on slopes of 15 to 70 percent. About 45 percent of this complex is Torriorthents, 20 percent is Camborthids, and 15 percent is Rock outcrop. The Camborthids occur on the lower toe slopes on foothills and mountainsides while the Torriorthents are found on the foothills and mountainsides below the Rock outcrop. The Torriorthents are shallow to moderately deep, and clayey to loamy with gravel, cobbles, and stones. The Camborthids are shallow to deep and clayey to loamy. Rock outcrop primarily consists of Mesa Verde sandstones and Wasatch shales with occasional basaltic boulders and stones. This complex is characterized by moderate to severe erosion hazard. Primary uses for this complex include grazing, wildlife habitat, and recreation.

Proposed Action:

Environmental Consequences: Some soil loss, loss of soil productivity, and increase in sediment available for transport would result from construction activities. Of particular concern is construction of the road, facilities pad, and well pad associated with the proposed 41-31 well pad. These activities would occur in close proximity to a large, unnamed ephemeral drainage and would involve considerable cuts and fills in Badland soils that are classified as having very severe erosion hazards. There is potential for slope failures on cut slopes associated with the road and well pad. In addition, the likelihood of sediment being transported to the nearby drainage from denuded fill slopes is high.

Due to the moderate to very severe erosion hazard of area soils, the proximity to nearby drainages, and activities that would occur on steep slopes; the likelihood for slope failures, continued erosion and sediment transport are relatively high. Mitigation measures and BMPs would be utilized during and following project implementation to minimize the potential impacts associated with slope failures, erosion, and sediment transport. BMPs would be implemented during and following construction activities and include but are not limited to silt fences, straw wattles, water bars, reinforcing areas prone to slope failures, sediment traps, and berms (see Appendix C for site specific mitigation).

No Action Alternative:

Environmental Consequences: The no action alternative would result in no new surface disturbance and would have no effect on soils.

Analysis on the Public Land Health Standard for Upland Soils: In 2005, the BLM Glenwood Springs Field Office conducted the Rifle-West Watershed Land Health Assessment in which they determined that the Cottonwood Gulch allotment was achieving or moving towards achieving Standard 1 for upland soils. The proposed activities with associated mitigation would likely minimize accelerated erosion and sediment transport to nearby drainages. The implementation of mitigation measures and erosion control BMPs are essential in order for Standard 1 for upland soils to be met. The no action alternative would have no affect on soils and would not prevent Standard 1 from being achieved.

Vegetation (includes an analysis of Public Land Health Standard 3)

Affected Environment: The vegetation types found in the project area include juniper woodland and salt-desert shrub. The lower elevations of the study area contain highly alkaline soils which support salt-desert shrub species including shadscale *(Atriplex confertifolia)*, rabbitbrush *(Chrysothamnus nauseosus)*, fourwing saltbush (*Atriplex canescens*), snakeweed *(Gutierrezia sarothrae)* and greasewood *(Sarcobatus vermiculatus)*. Common grasses include galleta grass *(Hilaria jamesii)*, bluebunch wheatgrass (*Pseudoroegneria spicata*), slender wheatgrass (*Elymus trachycaulus*), alkali sacaton (*Sporobolus airoides*) and non-native grasses such as crested wheatgrass (*Agropyron desertorum*) and cheatgrass.

The higher elevations of the project area and are dominated by Utah juniper *(Juniperus osteosperma)* with a Wyoming sagebrush (*Artemisia tridentata ssp. wyomingensis*) understory. A variety of native forbs and grasses are also present including Sandberg's bluegrass (*Poa secunda*), galleta grass, bottlebrush squirreltail *(Elymus elymoides)*, Indian ricegrass *(Achnatherum hymenoides)*, and coppermallow (*Sphaeralcea coccinea*).

Proposed Action:

Environmental Consequences: Total short-term surface disturbance for one new pad, expansion of three existing pads, new facilities locations, pipelines, and access roads would be 7 acres.
With implementation of reclamation practices identified in Appendix B (Number 10), establishment of desirable herbaceous vegetation on the unused portions of the pads, pipelines, and roads could be restored within 2 to 3 years. The establishment of mature shrubs could take from 5 to 25 years, and the establishment of trees would take even longer.
Interim reclamation would result in about a 75-percent reduction in surface disturbance that would remain over the long-term life of the project. Assuming each pad is reclaimed to the extent possible, total long-term surface disturbance associated with the proposed action would be approximately 3 acres.
Reclamation measures are presented in Appendix B (Number 7).

No Action Alternative:

Environmental Consequences: Under the no action alternative, no construction or development activities would take place. Therefore, additional vegetation would not be affected. Operations and maintenance activities of the existing pads would continue, but would not impact additional vegetation.

Analysis on the Public Land Health Standard for Plant and Animal Communities (partial, see also **Wildlife, Aquatic and Wildlife, Terrestrial**): The Rifle West Land Health Assessment determined that this portion of the landscape was not meeting Standard 3 (BLM 2005). Problems noted were the widespread invasion of cheatgrass with a corresponding loss of other functional groups such as perennial native grasses and forbs. Also, sagebrush communities were dominated by old, decadent sagebrush with poor recruitment. The surface disturbance associated with the proposed action has the potential to encourage expansion and dominance of the site by cheatgrass and other weeds. Provisions to revegetate the disturbed areas with native vegetation and to control noxious weeds are presented in Appendix B. If the area is successfully revegetated and weeds are controlled, the proposed action would not have a negative impact on existing vegetative communities. The density, frequency and composition of native plant species could be maintained at present levels.

The no action alternative would have no bearing on the ability of the area to meet the public land health standard for plant and animal communities because no new development would occur.

Visual Resources

Affected Environment: The proposed action would occur in the I-70 viewshed north of I-70 and would be seen from the Town of Battlement Mesa. This area is classified by the BLM as Visual Resource Management (VRM) Class II. The management objective in Class II areas is to retain the existing characteristic landscape. The level of change in any of the basic landscape elements (line, form, color, texture) should be low and not evident. The BLM's VRM emphasis has been generally to protect the scenery visible from roads, residences, and areas with high sensitivity.

The topography to the north of I-70 is smooth to rough, with the steep slopes of the plateau rising from the sage flats and irrigated lands of the Colorado River valley. The steep slopes rise up with bands of red, white, and tan earth and benches, which host the dark green pinyon and juniper stands. Numerous drainages along the steep hillsides create diagonal lines of ridges and valleys. Horizontal lines are created in the landscape by shadows of escarpment features with the vertical shadows lines of cliff faces below. The structures and roads associated with oil and gas development create geometric lines and forms on the flats of the valley bottom.

In order to assess the visual impacts of the proposed action in relation to the VRM Class II objective, two Key Observation Points (KOPs) were selected that represent typical views of the project area. KOP 1 is located off of the eastbound land of I-70, 4 miles was of the Town of Parachute (Figure 2). From this position, most viewers would be looking at the site with a 90-degree angle of view, from an inferior position to the project area, while traveling at an average of speed of 70 mph.

KOP 2 is located in Meadow Creek Road in the Town of Battlement Mesa. KOP 2 represents the panoramic view that many of the homes, the golf course, and other amenities in the community have of the steep hillsides to the north. The viewers would be in a position that is superior, equal, or inferior in elevation to the proposed action. Viewers would generally be in a stationary position with a 180-degree angle of view, observing the scenery for extended periods of time.

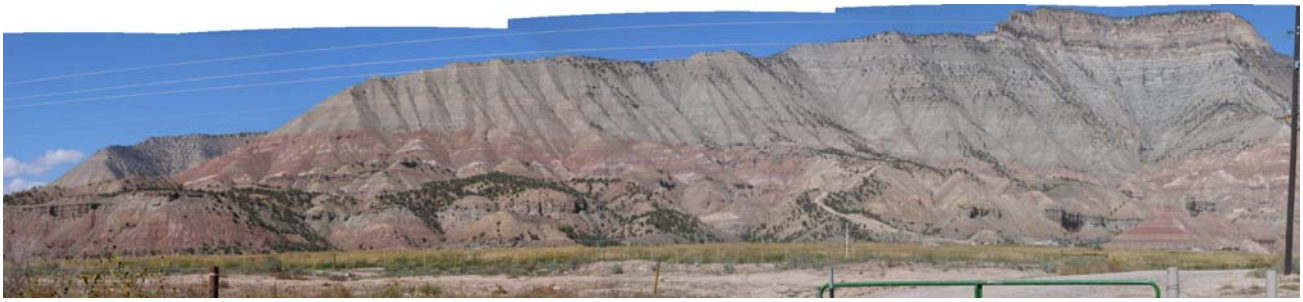

Figure 2. View from KOP 1 looking north.

Figure 3. View from KOP 2 looking north.

Proposed Action:

Environmental Consequences: Short-term visual impacts from construction, drilling, and completion activities would occur on all new pads, as well as on existing pads with proposed expansion. New pads and other surface facilities, new roads, and new pipelines would increase the presence of drilling rigs, heavy equipment (e.g., dozers, graders, etc), and vehicular traffic with an associated increase in dust, light pollution, and well flaring. Specific impacts and associated mitigation measure for each element of the proposed action is as follows (Site-specific mitigation is also presented in Appendix C):

DOE 1-M-31: The proposed action would result in the expansion of the existing pad, the addition of facilities, and the installation of a pipeline on the surface heading south down the hillside. The pad expansion would include cut-slopes of 20+ vertical feet. Visual impacts associated with this element of the proposed action would include the introduction of a new texture and color associated with the steep cut-slopes. New form, texture, and color would also be associated with the introduction of additional facilities.

In order to mitigate the visual impact, new facilities shall be painted Covert Green (18-0617 TPX) to emulate the surrounding juniper trees A gabion wall shall be used for the lower 6 feet of the cut-slopes above the pad expansion in order to gain more horizontal distance, creating a more gradual slope, for reclamation. The walls shall not be constructed with reflective wire and the fill material shall be equal to or darker in color than the surrounding unexposed soils.

PA 21-6: This element of the proposed action would involve the short-term installation of facilities associated with remote fracture stimulation. The short-term visual impacts of the proposed action would include new form, color and texture of facilities associated with the remote fracture stimulation process. Visual impacts would be mitigated if the facilities are painted Covert Green (18-0617 TPX) the surrounding juniper trees.

PA 34-31: The proposed action would result in the expansion of the existing pad. Although the area is screened from the view of the KOP locations, it is located in a Class II area. Visual impacts associated with this pad would be mitigated by painting facilities Covert Green (18-0617 TPX) to emulate the surrounding juniper trees.

DOE PM 2-31: The proposed action would result in the expansion of the existing pad, the addition of facilities, and a pipeline located on the surface heading south down the hillside. Facilities should be painted Covert Green (18-0617 TPX) to emulate the surrounding juniper trees. These facilities should be located as far north on the pad as possible.

Frac Pad and Pit: The proposed action is for the short-term installation of facilities associated with remote fracture stimulation, including structures and pad construction. The short-term visual impacts of the proposed action would include new form, color, and texture of facilities associated with the remote fracture stimulation process. The new form, color, and line introduced by the augmented ground surface would also be visually intrusive until reclaimed back to its original state. The facilities should be painted Covert Green (18-0617 TPX) to emulate the surrounding juniper trees. Disturbance of the ground plane should be minimized and the need to blade and scrape the surface reduced, therefore decreasing the short-term visual disturbance and increasing the rate of reclamation once the short-term use of the site is complete.

Tank Pad: The proposed action is for the development of a pad and the installation of eight 15.6-foot-wide by 9-foot-high tanks. The proposed tanks would create a long-term visual disturbance. Located in the foreground, there would be a marked variation in the form, line, color, and texture of the surrounding

environment. The ground surface that would be constructed for the tank location would also be significantly different than the surrounding environment, in the elements of form, line, color, and texture.

The proposed tanks should be partially located below the surface elevation and Covert Green (18-0617 TPX) to emulate the surrounding juniper trees.

PA 42-31: The proposed action would result in the expansion of the existing pad, including steep cut slopes, and the addition of facilities. The proposed action would be screened from the KOP locations by existing landforms. The large cut-slopes should be constructed to emulate the vertical walls of the surrounding drainage feature. Exposed rock faces should be stained a dark color emulating the patterning found on the adjacent vertical rock faces. Facilities should be located out of view by utilizing topographic features to the south of the site to intercept the view from the KOP locations and painted Covert Green (18-0617 TPX) to emulate the surrounding juniper trees.

PA 41-31: The proposed action is for the construction of an access road and pad as well as the potential installation of facilities. The proposed action would be screened from the KOP locations by existing landforms. However, it would still be located in a Class II designated area and best management practices should still be implemented. Facilities should be painted a dark forest grey/green, such as Covert Green (18-0617 TPX) to emulate the surrounding juniper trees.

No Action Alternative

Environmental Consequences: Under the no action alternative, the proposed action would not be approved. The existing environment would remain in its current condition and there would be no new impacts on visual resources.

Wildlife, Aquatic (includes an analysis of Public Land Health Standard 3)

Affected Environment: The proposed action would occur in an area of highly dissected terrain containing a number of ephemeral drainages. A recent survey of ephemeral streams in Colorado, Arizona, and New Mexico found 86 taxa of macroinvertibrates and 21 taxa of microinvertebrates. Vertebrate species collected included four fish taxa and six amphibian taxa (PCWMD 2006). Due to the short stream lengths and small watersheds of the ephemeral streams potentially affected by the proposed action, fish species are not expected to occur. A number of macroinvertebrates and microinvertebrates could be present as well as amphibians. A variety of both native and non-native fishes are found in the Colorado River in proximity to the project area.

Proposed Action:

Environmental Consequences: Implementation of the proposed action could result in increases in erosion and sedimentation into nearby drainages and eventually the Colorado River. Because the proposed action includes winter use of the project areas, it is likely that roads and pads would be muddy for extended periods of time as snowfall and snowmelt occurs. Roads are generally drier and in better condition during the non-winter months and consequently are less prone to erosion. Without mitigation, vehicular use during muddy road conditions would contribute to increased erosion of sediments into nearby ephemeral washes and eventually the Colorado River. The potential increase of sedimentation into the Colorado River would likely be nominal given background sediment loads currently carried by the river. Sediment intolerant aquatic wildlife could be negatively affected as increased erosion potential would persist and impair water and habitat quality. To minimize erosion and sedimentation, mitigation measures would be implemented (Appendix B, Numbers 7-9).

No Action Alternative:

Environmental Consequences: Under the no action alternative, the proposed action would not be approved. The existing environment would remain in its current condition and there would be no new impacts on aquatic wildlife.

Analysis on the Public Land Health Standard 3 for Plant and Animal Communities (partial, see also **Vegetation and Wildlife, Terrestrial):** The proposed action and no action alternative should result in negligible impacts to aquatic wildlife and would have little bearing on the ability to maintain or meet Standard 3 for plant and animal communities.

Wildlife, Terrestrial (includes an analysis of Public Land Health Standard 3)

Affected Environment: The project area would be located in sparse to medium density pinyon-juniper woodlands with openings of sagebrush, saltbush, and greasewood. Understory vegetation consists of mostly native grasses and forbs with some cheatgrass. Given these vegetation types, the area provides cover, forage, breeding, and nesting habitat for a variety of big game and small game, as well as non-game mammals, birds, and reptiles. The project area contains severe winter range for mule deer (*Odocoileus hemionus*) and winter range and winter concentration areas for Rocky Mountain elk (*Cervus elaphus nelsoni*), as mapped by the Colorado Division of Wildlife (CDOW 2006).

Proposed Action:

Environmental Consequences: Direct impacts to terrestrial wildlife from the proposed action may include mortality, disturbance, nest abandonment/nesting attempt failure, or site avoidance/displacement from otherwise suitable habitats. These effects may be the result of approximately 7 acres of habitat loss or modification, increased noise from vehicles and operation of equipment, increased human presence, and collisions between wildlife and vehicles. Impacts would be more substantial during critical seasons, such as winter or during reproduction. Deer and elk are often restricted to smaller areas during the winter months and may expend high amounts of energy to move through snow, locate food and maintain body temperature. Disturbances during the winter can displace wildlife, depleting much-needed energy reserves and may lead to decreased over winter survival.

Additional, indirect habitat loss may occur if increased human activity (e.g., traffic, noise) associated with infrastructure cause deer and elk to be displaced or alter their habitat use patterns. Indirect habitat loss generally includes habitat within an eighth of a mile of a road or well pad (e.g., BLM 2007a).

The exception to the timing limitation (TL) stipulation described in the proposed action would likely displace animals from preferred habitats, potentially increasing stress and energy consumption by resident deer. Because drilling has been completed in the adjacent Grand Valley CPOD, displacement from the proposed West Parachute CPOD would not be cumulative to displacement associated with that project.

To support the issuance of the exception to the big game winter range timing limitations, the Rulison and Grand Valley CPOD projects (BLM 2007b) included a monitoring study to provide scientifically based data to assess impacts on mule deer from winter drilling and clustered development. The ongoing study, being conducted by CDOW, was intended to provide a basis for decisions regarding future TL exceptions associated with winter drilling. The approval of winter drilling activities in areas other than the Rulison and Grand Valley CPOD projects, including the current TL exception request for the West Parachute CPOD, was to be based on the first year of monitoring data collected by CDOW, to be presented to BLM in an interim report.

To date, BLM has not been provided quantitative data with which to independently assess potential effects of winter drilling on local mule deer distribution and habitat use. However, CDOW has concluded that, although definitive data regarding impacts to mule deer are lacking, qualitative observations by CDOW personnel support continuation of the CPOD concept during the 2007-2008 winter season. The BLM is unaware of any information that would conflict with this recommendation by CDOW and therefore concurs that the current TL exception should be granted.

Ideally, continuation of the monitoring study will provide the quantitative data necessary to inform future management of Federal leases as it pertains to the application of TL stipulations and COAs in the context of highly clustered oil and gas development.

No Action Alternative:

Environmental Consequences: Under the no action alternative, the proposed action would not be approved. The existing environment would remain in its current condition and there would be no new impacts on terrestrial wildlife. The monitoring study would continue under this alternative.

Analysis on the Public Land Health Standard for Plant and Animal Communities (partial, see also **Vegetation and Wildlife, Aquatic**): A formal land health assessment for the watershed where this project occurs was completed in 2005. In summary, the assessment found that 38,373 acres of land within the Rifle West watershed north of the Colorado River are not meeting Standard 3 for some wildlife species, most notably mule deer. Of this area, 12,549 acres are located on BLM land. The main problem with the watershed is large scale habitat fragmentation due primarily to natural gas exploration and development that has resulted in increased road, well pad, and pipeline densities. This physical loss of habitat by itself is a problem with regard to the loss of forage and cover, but is exacerbated when combined with ever increasing human use during all times of year as natural gas activity increases.

Other factors contributing to the failure to achieve Standard 3 for wildlife include: the encroachment of juniper into sagebrush habitats, a lack of forb production, poor condition of sagebrush, and poor understory conditions. Some individual sagebrush stands are hedged, and some stands are decadent with poor age-class diversity and limited regeneration or recruitment.

The proposed action would result in direct and indirect losses of habitat, further fragment remaining habitats, and result in increased human use in the area. Given the level of activity in the greater area, the proposed action may further trend the watershed away from meeting Standard 3 for some terrestrial wildlife species.

SUMMARY OF CUMULATIVE IMPACTS

The Draft and Final Roan Plateau Resource Management Plan Amendment & Environmental Impact Statements (BLM 2004, 2006) collectively analyzed six alternatives for oil and gas development in the Roan Plateau planning area. The assessment included an analysis of impacts of past, present, and reasonable foreseeable future actions, including predicted future oil and gas development, on both public and private lands. Since the Final Roan Plateau RMP Amendment and EIS presents a recent analysis of cumulative impacts in an area encompassing that of the proposed action, it is incorporated by reference.

Until relatively recently, modifications of the region have been characteristic of agricultural and ranching lands, with localized industrial impacts associated with the railroad and I-70 highway corridors and the Anvil Points mine. More recently, these changes are cumulative to the growth of residential and commercial uses, utility corridors, oil and gas developments, and other rural industrial uses. These increasing activity levels have accelerated the accumulation of impacts in the area, including 1) direct

habitat losses, 2) habitat fragmentation and losses in habitat effectiveness, 3) elevated potential for runoff, erosion, and sedimentation, 4) expansion of noxious weeds and other invasive species, and 5) increased noise and traffic and reductions in the scenic quality of the area (BLM 2006: 4-1 to 4-129).

Although none of the cumulative impacts described in the Final Roan Plateau RMP Amendment and EIS was characterized as significant, and while new technologies and regulatory requirements have educed the impacts of some land uses, it is nonetheless clear that past, present, and reasonably foreseeable future actions has had and would continue to have adverse affects on various elements of the human environment. The anticipated impact levels for existing and future actions range from negligible to locally major, and primarily negative, for specific resources. The primary reasons for this assessment are twofold: (1) the rate of development, particularly oil and gas development, is increasing in the area, resulting in an accelerated accumulation of individually nominal effects; and (2) the majority of residential and commercial expansion, as well as oil and gas development, has occurred, and is likely to continue to occur, on private holdings where mitigation measures designed to protect and conserve resources are not in effect.

It is clear that the proposed action would contribute to the collective impact. Additional ground disturbance would occur, additional habitat would be lost, air quality would be affected, noise and traffic would increase, and additional oil-and gas-related developments would be visible. Therefore, the impacts of the proposed action would move the cumulative impact incrementally closer to a threshold of significance for some resources. However, the contribution to the accumulated effects would be minor because the scale of the proposed development is relatively small, multiple wells would be developed from single pads, and mitigation measures represented by the conditions of approval for resource protection are mandated for implementation (Appendices A and B).

PERSONS AND AGENCIES CONSULTED:

Williams Production RMT Company

INTERDISCIPLINARY REVIEW:

Name	Title	Area of Responsibility
Bridget Clayton	Natural Resource Specialist	Team Leader
Mark Ennes	Planning and Environmental Coordinator	NEPA Compliance
John Brogan	Archaeologist	Cultural Resources, Native American Religious Concerns
Jeff Cook	Wildlife Biologist	Terrestrial Wildlife, Aquatic Wildlife, Migratory Birds, Special Status Species (wildlife)
Beth Brenneman	Ecologist	Vegetation, Invasive Non-native Plants, Special Status Species (plants)
Karen Conrath	Geologist	Groundwater, Geology and Minerals, Paleontological Resources
Jeff O'Connell	Hydrologist	Soil, Air, Noise, Surface Water, Waters of the U.S.
Isaac Pittman	Rangeland Management Specialist	Range
Marty O'Mara	Petroleum Engineer	Downhole Conditions of Approval
OTAK	Landscape Architect (BLM Contractor)	Visual Resources

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Williams Production RMT Company
2007. *Pilot Project for Alternative Mitigation Practices*. Williams Production RMT Company.

FONSI
CO140-2007-168 EA

The environmental assessment analyzing the environmental effects of the proposed action has been reviewed. The approved mitigation measures 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 RECORD

DECISION: It is my decision to approve the Applications for Permit to Drill (APDs) for the sixty-one (61) wells and associated developments described in the proposed action with the Conditions of Approval (COAs) identified in Appendices A and B. This decision will provide for the orderly, economical, and environmentally sound exploration and development of oil and gas resources on valid oil and gas leases.

The exception of the timing limitation stipulation attached to Federal Lease COC62162 is also approved for the 2007-2008 winter season. Requests for exceptions to this stipulation beyond the 2007-2008 winter will require separate consideration.

RATIONALE:
1. Approval of the proposed action is validating the rights granted with the Federal oil and gas leases to develop the leasehold to provide commercial commodities of oil and gas.

2. The environmental impacts have been mitigated with measures included in the attached Conditions of Approval.

MITIGATION MEASURES: Mitigation measures presented in Appendices A and B will be incorporated as Conditions of Approval for both surface and drilling operations.

NAME OF PREPARER: Bridget Kobe Clayton, Natural Resource Specialist

SIGNATURE OF PLANNING AND ENVIRONMENTAL COORDINATOR:

Planning and Environmental Coordinator — Date: 12/12/07

SIGNATURE OF AUTHORIZED OFFICIAL:

Authorized Officer — Date: 12/12/07

APPENDIX A

WEST PARACHUTE FIELD
CLUSTERED PLAN OF DEVELOPMENT

Williams Production RMT
Parachute District
1058 County Road 215
P.O. Box 370
Parachute, Colorado 81635
(970) 285-9377

MASTER DEVELOPMENT PLAN

West PA Winter CPOD

Federal Lease No(s): COC62162

Well Pads:

DOE 1-M-31
DOE PM 2-31
PA 42-31
PA 41-31

8/24/07

Attachments: **MDP Map**
APDs / Survey Plats
Sundry Notice for Infrastructure Construction On-Lease
Biota/404 Survey Cover Page(s)
Cultural Survey Cover Page

cc: Williams Project File

A. INTRODUCTION

This plan is being submitted for **3 existing well pads (DOE 1-M-31, DOE PM 2-31, PA 42-31)** in accordance with Onshore Order #1 (revised April 2007) for 41 wells. A **fourth planned well pad (PA 41-31)** for 20 wells is part of this Master Plan of Development; an amended MDP and APDs for this location will be submitted at a later date. **All four pads are part of the rollover described in the *Pilot Project for Alternative Mitigation Practices* (September 2006) as revised April 2007.** Key information is highlighted in BOLD or in YELLOW in subsequent sections of this document.

Subsection (IV)(H) of the final rule allows the operator of a lease to submit a plan to address one or more APDs and facilitate early planning. The rule also allows for subsequent APDs to be approved under the Master Development Plan (MDP) using the NEPA analysis prepared for the MDP, absent substantial deviation form the MDP or significant new information relevant to environmental effects. This MDP is intended to meet the primary objectives outline below.

- Provide natural gas to meet national demand as outlined in the Mineral Leasing Act, and Energy Policy Act of 2005.
- Promote conservation and protection of federal and state-managed natural resources.
- Provide information to comply with the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA).
- Provide information, new technologies, and Best Management Practices that minimize environmental impacts.
- Promote conservation and protection of natural resources under the multiple-use concept of Federal land management.
- Demonstrate compliance with Federal and state environmental laws and regulations.

This plan may be revised from time to time to reflect changes and/or additions, and is intended to describe information unique to this MDP. It is not intended to duplicate or reiterate regulatory requirements of information approved Master APDs.

B. LEASE DEVELOPMENT STATUS

Lease No: **COC62162** **Total Lease Acreage:** **2110.38**

Disturbance Categories	Units	No.	Acres
Wells – Existing	2 acres/pad	15	30
Wells – New (temporary disturbance)	3 acres/pad	3	9
Roads – Existing	22’ Width	21,700 ft	11
Roads – New	22’ Width	0	0

Other – Tank Farm Pad	0.1/pad	1	0.1
Total Existing / MDP Disturbed Acres (rounded up)			51
Total Disturbed Acres on Lease as % of Total Lease Acreage			2.4%

C. EARLY CONSULTATION

Consultation with BLM was not conducted for the three existing locations. Early consultation was conducted for the PA 41-31 location on May 24, 2007. Concerns were expressed by B. Barter related to drainage patterns, proximity to a potential 404 location, etc. These concerns will be addressed through designed stormwater planning submitted to BLM with the APDs and compliance with ACOE 404 regulations.

D. ON-SITE DATE

Requested Date for On-site* by:	September 15, 2007

*Subject to weather conditions and agency priorities.

E. PROPOSED ACTION

Natural gas developed has progressed significantly in the past few years. New drilling, completion, production and operations methods have significantly enhanced the ability to extract gas faster, with less surface disturbance and less environmental impacts. These technologies and the environmental benefits and impacts are discussed in detail in the Doghead Mountain EA prepared by BLM in July 2007.

Well Information

Williams is proposing to drill the number of wells from each pad listed below in **Table 1** to develop natural gas reserves on Federal leases described in Section B of this document. **Table 1A** lists the wells for each pad location. The information, status and schedules provided are the best information available. The attached **MDP map** shows the infrastructure, environmental survey requirements and ownership (if applicable) to complete the proposed actions, which is described in further detail in subsequent sections of this MDP.

Table 1. Locations, Wells, Drilling Status and Schedule

* Rig Type

Well Pad--Location	Rig Type C / E*	Existing Wells	New Wells	Completes Drilling Location	Access/Pad Construction Date (Qtr/Yr)	Drill Start Date (Qtr/Yr)	Drill Completion (Qtr/Yr)
DOE 1-M-31— SESW Sec. 31-6S-95W	E	3	11	Yes	3/07	2/08	3/08
DOE PM 2-31 – NENW Sec. 31-6S-95W	E	5	17	Yes	3/07	4/07	3/08
PA 42-31 – SENE Sec. 31-6S-95W	E	2	13	Yes	3/07	4/07	2/08
PA 41-31 – NENE Sec. 31-6S-95W	E	0	20	Yes	3/07	3/08	1/09
TOTAL	4	10	61				

C = Conventional Rig
E = Efficiency Rig (H&P or SSD)

Table 1A. Wells to be Drilled at Each Surface Location

Pad	Wells					
DOE 1-M-31	PA 24-31	PA 313-31	PA 314-31	PA 323-31	PA 413-31	PA 414-31
	PA 423-31	PA 434-31	PA 522-31	PA 524-31	PA 534-31	
DOE PM 2-31	GM 444-25	GM 43-25	PA 314-30	PA 13-30	PA 324-30	PA 424-30
	PA 524-30	PA 23-30	PA 511-31	PA 311-31	PA 411-31	PA 12-31
	PA 322-31	PA 312-31	PA 412-31	PA 422-31	PA 323-30	
PA 42-31	PA 442-31	PA 342-31	PA 32-31	PA 332-31	PA 432-31	PA 33-31
	PA 333-31	PA 433-31	PA 533-31	PA 443-31	PA 543-31	PA 343-31
	PA 542-31					
PA 41-31	Pending Submittal					

Site Access Roads, Staging Areas, Turnouts

To the extent feasible, existing roads would be used to access the proposed pad facilities. **Table 2** shows Access Roads, turnouts and staging area needs for each well pad. (See the **MDP map** for locations). These roads would average 25 feet total width, including cuts and fills.

Table 2. Access Roads, Turnouts and Staging Areas

Well Pad--Location	New or Upgraded Road Required	Length (feet)	Staging Areas	Turnouts	Comments
DOE 1-M-31—SESW Sec. 31-6S-95W	Upgrade	9,300	No	No	These roads will only be widened from approx. 15'-20' to 25' where necessary.
DOE PM 2-31 – NENW Sec. 31-6S-95W	Upgrade		No	No	
PA 42-31 – SENE Sec. 31-6S-95W	Upgrade		No	No	
PA 41-31 – NENE Sec. 31-6S-95W	New	1,600	Yes	No	Production Equipment/Staging area (detailed in Table 5)
TOTAL		9,300 (upgrade) 1,600 (new)			

Drill Cuttings Management

To the extent practical, drill cuttings will be disposed in cuttings trenches on-site. However, those sites that can not accommodate all drill cuttings generated at that site may be disposed of at alternate locations shown in **Table 3** and on the attached **MDP map**. In those cases where emergencies such as weather conditions, safety concerns, or operational constraints exist, cutting may be temporarily stored at another location in accordance with COGCC waste management and CDPHE stormwater regulations.

Table 3. Drill Cuttings Volumes, Pit/Trench Capacities and Alternate Locations

Well Pad--Location	Cuttings Anticipated (cubic yards)*	Onsite Pit Capacity (cubic yards)	Off-Site Disposal Required	Comments
DOE 1-M-31—SESW Sec. 31-6S-95W	4,235	7,880	No	
DOE PM 2-31 – NENW Sec. 31-6S-95W	6,545	2,926	Yes	Will also use cuttings trench on the PA 34-31 pad. This pit has a capacity of 15,700 cu. yds.
PA 42-31 – SENE Sec. 31-6S-95W	5,005	0	Yes	Will use cuttings trench on the PA 34-31 pad. This pit has a capacity of 15,700 cu. yds.
PA 41-31 – NENE Sec. 31-6S-95W	7,700	0	Yes	Will use cuttings trench on the PA 34-31 pad. This pit has a capacity of 15,700 cu. yds.
TOTAL	19,250			

* Based on 385 cubic yards per well

Completion Operations

Table 4 and the **MDP map** show the water needs and completion locations and methods to complete the wells for each well pad. Typically, wells that are drilled with conventional rigs are completed after the drilling rig moves offsite. For those pads that are drilled using an efficiency rig, completion may be conducted simultaneously (know as SIMOPS), and may require an off-site staging area to Frac from. In some cases water can be supplied from a remote location using high density poly pipe laid on the surface until all wells are completed. Water used in completion operations is typically recycled water.

Table 4. Water Needs and Completion Methods

Pad Location	Water Rqmts (bbls)*	Frac Location		Water/Frac Lines Needed		Line Type		Comments
		On-site	Off-Site	Yes	No	Surface	Buried	
DOE 1-M-31—SESW Sec. 31-6S-95W	231,000		x	x		x		Frac from PA 21-6 Frac pad – listed below
DOE PM 2-31 – NENW Sec. 31-6S-95W	357,000		x	x		x		Frac from PA 42-31 Frac pad– listed below
PA 42-31 – SENE Sec. 31-6S-95W	273,000		x	x		x		
PA 41-31 – NENE Sec. 31-6S-95W	420,000		x	x		x		
PA 42-31 **Frac Pad** (Proposed) – SE ¼ SE ¼ of Sec. 31-T6S-R95W								• 350'x 350' • Area total ~ 2.8 acres • Area on public land ~ 0.060 acres
PA 21-6 – **Frac Pad** – NE ¼ NW ¼ of Sec. 6-T7S-R95W								Existing pad on private land. No additional disturbance required for frac operations.
TOTAL	12,810,000							

* Assumes 21,000 bbls per well

Completion operations may take up to 30 days per well. Natural gas may be vented or flared, and water may be temporarily contained in the reserve pit (for up to 90 days) or trucked to an approved alternative disposal site during the testing period. Wells determined to be productive would be shut-in until pipelines and other production facilities are constructed, if necessary.

A Sundry Notice is attached to install roads, gas gathering and water lines in advance of approval of the APDs for drilling. Installation is anticipated to begin in late September 07.

Pad Location	Total Wells	No. Leases/ CA	Equipment	
			Onsite	Offsite
DOE 1-M-31—SESW Sec. 31-6S-95W	14	2	Separators, maintenance tank, condensate tanks	Water tanks on DOE 1-M-31 tank pad (listed below)
DOE PM 2-31 – NENW Sec. 31-6S-95W	22	3	Separators, maintenance tank, condensate tanks	Water tanks on PA 42-31 tank pad (listed below)

Production Facilities

Table 5 and the **MDP map** show the required Production Facilities and their location.

Table 5. Production Equipment

DOE PM 2-31 – NENW Sec. 31-6S-95W	22	3	Separators, maintenance tank, condensate tanks	Water tanks on PA 42-31 tank pad (listed below)
PA 42-31 – SENE Sec. 31-6S-95W	15	1		Separators, maintenance tank, condensate tanks to be placed on remote production equipment/staging area pad (listed below) **Also** Water tanks on PA 42-31 tank pad (listed below)
PA 41-31 – NENE Sec. 31-6S-95W	20	2	Separators, maintenance tank, condensate tanks	Water tanks on PA 42-31 tank pad (listed below)
DOE 1-M-31 **Tank Pad** (Proposed) - NE ¼ NW ¼ of Sec. 6-T6S-R95W				Located just north east of PA 21-6 pad. • 60’ x 200’ • Area total ~ 0.27 acres • Area on public land ~ 0 acres
PA 42-31 **Tank Pad** (Proposed) - NE ¼ SE ¼ of Sec. 31-T6S-R95W				Located south of PA 42-31 pad • 150’ x 250’ • Area total ~ 0.86 acres • Area on public land ~ 0.86 acres
Production Equipment/Staging area (Proposed) - SE ¼ NE ¼ of Sec. 31-T6S-R95W				Located north of PA 42-31 pad • 50’ x 250’ • Area total ~ 0.28 acres • Area on public land ~ 0.28 acres
TOTAL	71			

Pipelines (Gas and Water Transportation)

Gas Gathering lines and produced water lines would be installed in excavated trenches, approximately three to four feet deep, from the outlet of the separator to the gathering line using existing disturbances, where practical.

Where possible the gathering system would be located adjacent or in access roads. Williams would need up to a 10 foot wide easement for pipeline construction in addition to the road width, provided the location is not limited by topographic constraints, which is the maximum anticipated surface disturbance from the proposed pipeline construction.

Approximately 2.19 miles of gas gathering and 2.59 miles of produced water lines would need to be installed.

Description of Pipeline Plan

DOE PM 2-31

- 8" buried gas line
- 4" buried water non-metallic line
- 3 - 4.5" temporary, surface frac/flowback lines
- Total length for pipelines ~ 5,400'. Approximately 5,000' will be on public lands.

Starting from the production equipment on the DOE PM 2-31 pad, an 8" gas and a 4" water line will run off the North East edge of pad and go cross country for approximately 600' in a southerly direction to meet up with the access road to this pad. Once they meet the road, the lines will be buried in and/or alongside the existing road and will follow the access road down until the water line splits off (approximately 4,600' from the DOE PM 2-31 pad) and tie into the proposed 150'x 250' PA 42-31 tank pad. The gas line proceeds down the road (approximately 5,400' from the DOE PM 2-31 pad) to tie into an existing 12" line on private land. All lines will stay within a 25' width (including road width and probably less in some areas due to terrain constraints) in the previously disturbed area except where they run cross country. No additional disturbance will be required on the cross country sections except what is caused by 2 people walking and guiding the pipe.

3-4.5" temporary, surface frac/flowback lines will be run from the proposed 350'x 350' PA 42-31 frac pad to the DOE PM 2-31 pad. These lines will start at the PA 42-31 frac pad and run off the South East side of the pad to follow the access road to the DOE PM 2-31 pad. These lines will remain on top of the disturbance from the buried lines except for 2 sections where they will go cross country for a total of approximately 700'. No additional disturbance will be required on these cross country sections except what is caused by 2 people walking and guiding the pipe.

Construction details in Construction of Pipelines below.

PA 41-31

- 8" buried gas line
- 4" buried water non-metallic line
- 3 - 4.5" temporary, surface frac/flowback lines
- Total length for pipelines ~ 4,100'. Approximately 3,700' will be on public lands.

Starting from the production equipment on the proposed PA 41-31 pad, an 8" gas and a 4" water line will run off the South West edge of pad and be buried in or along side the access road down until the water line splits off (approximately 3,300' from the PA 41-31 pad) and tie into the

proposed 150'x 250' PA 42-31 tank pad. The gas line proceeds down the road (approximately 4,100' from the PA 41-31 pad) to tie into an existing 12" line on private land. All lines will stay within a 25' width (including road width and probably less in some areas due to terrain constraints) in the previously disturbed area. Depending on conditions of the PA 42-31 pad, the buried pipelines from the PA 41-31 pad may need to be routed around the North West side PA 42-31 pad as shown on map. This would require 5' of width off the side of the PA 42-31 pad. A 50'x 250' staging area will be required just North West of the PA 42-31 pad for storing pipe and equipment. The production equipment from the PA 42-31 pad will also be placed on this staging pad.

3 - 4.5" temporary, surface frac/flowback lines will be run from the proposed 350'x 350' PA 42-31 frac pad to the PA 41-31 pad. These lines will start at the frac pad and run off the South East side of the pad to follow the access road to the PA 41-31 pad. These lines will remain on top of the disturbance from the buried lines.

Construction details in Construction of Pipelines below.

PA 42-31

This pad will utilize all lines that will be permitted for the proposed PA 41-31 pad.

DOE 1-M-31

- 6" buried gas line
- 4" buried water non-metallic line
- 3 - 4.5" temporary, surface frac/flowback lines
- Total length for pipelines ~ 5,000'. Approximately 2,200' will be on public lands.

Starting from the production equipment on the DOE 1-M-31 pad, an 8" gas and a 4" water line will run off the North West edge of the pad and run around the east edge and then head in a South Easterly direction, cross country, for about 500' where they will meet up with the access road. From this point the lines will be buried for approximately 1,600' in or along side the existing road. The 6" gas line will tie into an existing 6" gas line that begins at the production equipment for the PA 21-6 pad. The 4" water line will continue, buried, in, or alongside the existing road for 2,900'. All lines will stay within a 25' width (including road width and probably less in some areas due to terrain constraints) in the previously disturbed area except where they run cross country. No additional disturbance will be required on these cross country sections except what is caused by 2 people walking and guiding the pipe.

3 - 4.5" temporary, surface frac/flowback lines will be run from the PA 21-6 pad to the DOE 1-M-31 pad. These lines will start at the PA 21-6 pad and run off the North East side of the pad to follow the access road to the DOE 1-M-31 pad. These lines will remain on top of the disturbance from the buried lines. These lines are approximately 2,400' in length.

Construction of pipelines

All lines will stay within a 25' width (including road width and probably less in some areas due to terrain constraints) in the previously disturbed area except where they run cross country. All pipelines will be welded or fitted together in place. Approximately 2 side boom pipe layers, 2 bulldozers, 2 track hoes, 1 fuel truck, 3 welders with trucks, and another 4 pickup trucks are anticipate to build the pipeline.

The cross country sections of pipe will be welded above the section and then a cable attached to the end of the pipes to guide it down into position on the ground surface. A small crew will be on top, keeping on existing disturbance, welding the pipe on the upper end. Two people will be in the front of the pipe, guiding it, while 2-3 people with a tractor, keeping on existing disturbance,

will be on the lower end pulling it down. Only the two people and the pipe will be on the cross country surface sections, there will be no vehicles.

F. ENVIRONMENTAL CONSIDERATIONS

New drilling, completions and production technologies for efficiency rigs provides the following environmental benefits:

- Eliminates the need for additional roads and well pads resulting in less potential construction impacts to cultural and natural resources.
- Eliminates the need to reclaim and redisturb well pads over several years to drill all wells.
- Reduces the potential for continuous longer-term drilling impacts to natural resources.
- Reduced noise levels
- Reduced fugitive dust
- Reduced impacts to ephemeral, intermittent and flowing drainages
- Re-establishes long-term wildlife habitat in a shorter time-frame.
- Reduces traffic through use of centralized collection of produced water and condensate
- Reduces accidents on steeper more remote roads.

Table 6 describes the BLM resource / environmental considerations relevant to this MDP.

Table 6. Environmental Considerations

RESOURCE / ENVIRONMENTAL ISSUE	YES	NO	COMMENTS
CULTURAL OR PALEO RESOURCES AFFECTED		X	SURVEYS WERE COMPLETED AND SENT TO BLM ON MAY 8, 2007 (GRI PROJECT NO. 2729)
NEPA – CX / DNA / EA OR EIS COMPLETED	X		THIS AREA IS ADDRESSED UNDER THE WHEELER – WEBSTER GAP EA
NOXIOUS WEEDS PRESENT	X		SURVEYS WERE COMPLETED AND SENT TO BLM ON MAY 8, 2007 (WESTWATER ENGINEERING)
PLANTS/TES AFFECTED		X	SURVEYS WERE COMPLETED AND SENT TO BLM ON MAY 8, 2007 (WESTWATER ENGINEERING)
WASTE MANAGEMENT (OFF-SITE) REQUIRED	X		(X) E&P: DRILL CUTTINGS
WATER - 404 LOCATIONS PRESENT	X		NWPS APPLICABLE: NO 12 AND 14 PRECONSTRUCTION NOTIFICATION REQUIRED: ( ) YES (X) NO
WATER - WETLANDS AFFECTED		X	NONE AFFECTED
STORMWATER PERMIT / PLAN (X) FIELD-WIDE ( ) PROJECT SPECIFIC	X		INFRASTRUCTURE AVOIDS MAJOR DRAINAGES: (X) YES ( ) NO
WILDLIFE – T&E OR SENSITIVE SPECIES AFFECTED		X	SURVEYS WERE COMPLETED AND SENT TO BLM ON MAY 8, 2007 (WESTWATER ENGINEERING)
RAPTORS PRESENT WITHIN 0.25 MILES	X		SURVEYS WERE COMPLETED AND SENT TO BLM ON MAY 8, 2007 (WESTWATER ENGINEERING)
WILDLIFE - GAME SPECIES AFFECTED	X		THIS AREA FALLS WITHIN MULE DEER WINTER RANGE AND IS PROPOSED TO BE INCLUDED IN THE PILOT PROJECT FOR ALTERNATIVE MITIGATION PRACTICES (SEPTEMBER 2006) – SEE SECTION G BELOW.

VISUAL RESOURCE PLANNING (CLASS I OR II AREAS AFFFECTED)	X		MAY BE WITHIN CLASS II AREA. BLM TO MAKE FINAL DETERMINATION.

G. REQUEST FOR EXCEPTION TO BIG GAME TIMING LIMITATIONS

Williams requests that this MDP be considered for inclusion under the *Pilot Project for Alternative Mitigation Practices* (September 2006) as revised on April 2007. This area was identified in Figure 2 of that document, and is shown on the attached MDP map.

The rationale for year-round drilling and the benefits to the environment, with an emphasis on long-term benefits to big game, are described in the Pilot Project document. The benefits of this approach are summarized in Section F, paragraph 1 of this MDP.

BMPs / Mitigation

The purpose of BMPs and mitigation to ensure wildlife, with an emphasis on big game, has sufficient winter habitat, to not be significantly affected by Williams operations.

Williams has accomplished BMPs and mitigation in proximity to the proposed West PA MDP including the following:

- Drilling will be completed in the Hayes Gulch area in December 2007. This, combined with centralized collection facilities, and gated roads will provide approximately 1717 acres of winter range for wildlife seclusion as described in the pilot document. Centralized collection facilities have been placed at the bottom of Hayes Gulch to eliminate all heavy truck traffic into the seclusion area. Another 1140 acres will be day use only, with activity occurring between 7 AM and 6 PM.
- Immediately to the south of the West Parachute MDP area, Williams is irrigating approximately 70 acres of Alfalfa on Exxon lands to winter forage. An additional 100 acres of dry land seeding has been completed (also on Exxon lands) with a seed mixed approved by the CDOW. Several ponds were also installed in these areas that were not required by BLM and CDOW.
- Over 20 acres of pinyon-juniper forest was hydroaxed and brush-hogged on Williams land immediately to the west of Hayes Gulch to increase winter forage.
- A pond was created on Exxon lands to the east to this area.
- Several hundred acres of pipelines have been seeded with the approved CDOW mix on private lands throughout winter range habitat.
- In addition, traffic monitoring is ongoing in the Hayes Gulch area, and gates will be installed to ensure wildlife seclusion during winter months.

APPENDIX B

SURFACE USE CONDITIONS OF APPROVAL

Surface Use Conditions of Approval
CO140-2007-168EA

The following Conditions of Approval (COAs) are in addition to resource protections provided by lease stipulations and applicable Federal laws.

1. Administrative Notification: At least 48 hours prior to construction, the operator shall notify the BLM representative of construction startup plans.

2. Dust Abatement. The operator shall implement dust abatement measures as needed or directed by the BLM authorized officer. The level and type of treatment (watering or application of various dust agents, surfactants, and road surfacing material) may be changed in intensity and must be approved by the BLM authorized officer. Magnesium chloride or other chemical suppressant shall not be applied within 100 feet of any drainage.

3. Cultural Resource Education/Discovery. All persons in the area who are associated with this project must be informed that if anyone is found disturbing historic, archaeological, or scientific resources, including collecting artifacts, the person or persons will be subject to prosecution.

   Pursuant to 43 CFR 10.4(g), the BLM authorized officer must be notified, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4 (c) and (d), activities must stop in the vicinity of the discovery and the discovery must be protected for 30 days or until notified to proceed by the authorized officer.

   If in connection with operations under this contract the project proponent, his contractors, subcontractors, or the employees of any of them, discovers, encounters or becomes aware of any objects or sites of cultural or paleontological value or scientific interest such as historic or prehistoric ruins, graves or grave markers, fossils, or artifacts, the proponent shall immediately suspend all operations in the vicinity of the cultural or paleontological resource and shall notify the BLM authorized officer of the findings (16 U.S.C. 470h-3, 36 CFR 800.112). Operations may resume at the discovery site upon receipt of written instructions and authorization by the authorized officer. Approval to proceed will be based upon evaluation of the resource. Evaluation shall be by a qualified professional selected by the authorized officer from a Federal agency insofar as practicable. When not practicable, the holder shall bear the cost of the services of a non-Federal professional.

   Within five working days, the authorized officer will inform the holder as to:

   - whether the materials appear eligible for the National Register of Historic Places
   - the mitigation measures the holder will likely have to undertake before the site can be used (assuming in situ preservation is not necessary)
   - a timeframe for the authorized officer to complete an expedited review under 36 CFR 800.11, or any agreements in lieu thereof, to confirm through the State Historic Preservation Officer that the findings of the authorized officer are correct and the mitigation is appropriate

   The proponent may relocate activities to avoid the expense of mitigation and/or the delays associated with this process, as long as the new area has been appropriately cleared of resources and the exposed materials are recorded and stabilized. Otherwise, the proponent will be responsible for mitigation costs. The authorized officer will provide technical and procedural guidelines for the conduct of

mitigation. Upon verification from the authorized officer that the required mitigation has been completed, the proponent will then be allowed to resume construction.

Antiquities, historic, prehistoric ruins, or objects of scientific interest that are outside the authorization boundaries but directly associated with the impacted resource will also be included in this evaluation and/or mitigation.

Antiquities, historic, prehistoric ruins, or objects of scientific interest, identified or unidentified, that are outside the authorization and not associated with the resource within the authorization will also be protected. Impacts that occur to such resources, which are related to the authorizations activities, will be mitigated at the proponent's cost including Native American consultation cost.

4. Weed Control. The operator shall regularly monitor and promptly control noxious weeds or other undesirable plants species as set forth in the Glenwood Springs Energy Office *Noxious and Invasive Weed Management Plan for Oil and Gas operators,* dated March 2007. A Pesticide Use Proposal (PUP) must be approved by BLM prior to the use of herbicides. Contact Beth Brenneman, Glenwood Springs Energy Office Ecologist, at 970-947-5232 or beth_brenneman@blm.gov.

5. Migratory Birds. It shall be the responsibility of the operator to comply with the Migratory Bird Treaty Act with respect to "take" of migratory bird species. "Take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The operator shall prevent use by migratory birds of reserve pits, produced water pits, and evaporation pits, that store or are expected to store fluids which may pose a risk to such birds (e.g., migratory waterfowl, shorebirds, wading birds, and raptors) during completion and after completion activities have ceased. Several established methods to prevent bird access are known to work. Methods may include but are not limited to netting, the use of bird-balls, or other alternative methods that effectively prevent bird access/use. Regardless of the method used, it should be applied within 24 hours after completion activities have begun. All mortality or injury to species protected by the Migratory Bird Treaty Act shall be reported immediately to the BLM project lead.

6. Native American Religious Concerns. The Native American Graves Protection and Repatriation Act (NAGPRA), requires that if inadvertent discovery of Native American Remains or Objects occurs, activity must cease in the area of discovery, a reasonable effort made to protect the item(s) discovered, and immediate notice made to the BLM authorized officer, as well as the appropriate Native American group(s) (IV.C.2). Notice may be followed by a 30-day delay (NAGPRA Section 3(d)).

7. Reclamation. Reclamation goals, objectives, timelines, measures, and monitoring methods for final reclamation of oil and gas disturbances are described in Appendix I (Surface Reclamation) of the 1998 Draft Supplemental EIS (DSEIS). The specific measures described below shall be followed during interim reclamation of disturbed surfaces associated with well pads, access roads, and pipelines. These measures, except seedbed preparation, shall also apply to temporary reclamation of topsoil storage piles and surfaces that are subject to interim reclamation but not scheduled to undergo interim reclamation for more than 1 year.

    a. Seedbed Preparation. For interim reclamation, all slopes shall be reshaped prior to seedbed preparation. Initial seedbed preparation shall consist of backfilling, leveling, and ripping all areas to be seeded to a minimum depth of 18 inches with a furrow spacing of 2 feet, followed by recontouring the surface and then spreading the stockpiled topsoil evenly. Prior to seeding, the seedbed shall be scarified and left with a rough surface. No depressions shall be left that would trap water and form ponds. Final seedbed preparation shall consist of contour cultivating to a

depth of 4 to 6 inches within 24 hours prior to seeding. NOTE: Seedbed preparation is not required for topsoil storage piles or other areas of temporary reclamation.

Requests for use of soil amendments, including basic product information, shall be submitted to the BLM for approval.

b. Seed Mixes. Selection of seed to be used in temporary or interim reclamation shall comply with the menu-based seed mixes in the letter provided to oil and gas operators dated April 16, 2007. For private surfaces, the menu-based seed mixes are recommended, but the landowner would have ultimate authority over the seed mix to be used in reclamation. The seed shall be certified free of noxious weeds. Seed may contain up to 2.0 percent of "other crop" seed by weight, including the seed of other agronomic crops and native plants; however, a lower percent of other crop seed is recommended. Seed tags or other official documentation shall be supplied to the BLM Glenwood Springs Energy Office Ecologist (Beth Brenneman, 970-947-5232 or beth_brenneman@blm.gov) at least 14 days before the date of proposed seeding for acceptance. Seed that does not meet the above criteria shall not be applied to public lands.

c. Seeding Procedures. Seeding shall be conducted no more than 24 hours following completion of final seedbed preparation. A seed mix consistent with BLM standards in terms of species and seeding rate for the specific habitat type shall be used on all BLM lands affected by the project (see Attachments 1 and 2 of the letter provided to operators dated April 16, 2007).

Where practicable, seed shall be installed by drill-seeding to a depth of 0.25 to 0.5 inch. Where drill-seeding is impracticable, seed may be installed by broadcast-seeding at twice the drill-seeding rate, followed by raking or harrowing to provide 0.25 to 0.5 inch of soil cover. Hydroseeding and hydromulching may be used in temporary reclamation or in areas where drill-seeding or broadcast-seeding/raking are impracticable. Hydroseeding and hydromulching must be conducted in two separate applications to ensure adequate contact of seeds with the soil.

If interim revegetation is unsuccessful, the operator shall implement subsequent reseedings until interim reclamation standards are met. Requirements for reseeding of unsuccessful temporary reclamation will be considered on a case-by-case basis.

d. Mulch. Mulch shall be applied within 24 hours following completion of seeding. In areas of interim reclamation that used drill-seeding or broadcast-seeding/raking, mulch shall consist of crimping certified weed-free straw or certified weed-free native grass hay into the soil. Hydromulching may be used in areas of interim reclamation where crimping is impracticable, in areas of interim reclamation that were hydroseeded, and in areas of temporary reclamation regardless of seeding method.

NOTE: As an exception to this provision, mulch is not required in areas where erosion potential mandates use of a biodegradable erosion-control blanket (straw matting).

e. Erosion Control. Cut-and-fill slopes shall be protected against erosion with the use of water bars, lateral furrows, or other measures approved by the authorized officer. Biodegradable straw matting, bales or wattles of weed-free straw or weed-free native grass hay, or well-anchored fabric silt fence shall be used on cut-and-fill slopes and along drainages to protect against soil erosion. Additional BMPs shall be employed as necessary to reduce erosion and offsite transport of sediment.

f. Site Protection. The pad shall be fenced to BLM standards to exclude livestock grazing for the first two growing seasons or until seeded species are firmly established, whichever comes later. The seeded species will be considered firmly established when at least 50% of the new plants are producing seed. The authorized officer will approve the type of fencing.

g. Monitoring. The operator shall conduct annual monitoring surveys of reclaimed areas and shall submit an annual monitoring report to the authorized officer by December 31 of each year. The monitoring program shall use the four Reclamation Categories defined in Appendix I of the 1998 DSEIS to assess progress toward reclamation objectives. The annual report shall document whether attainment of reclamation objectives appears likely. If one or more objectives appear unlikely to be achieved, the report shall identify appropriate corrective actions. Upon review and approval of the report by the BLM, the operator shall be responsible for implementing the corrective actions or other measures specified by the authorized officer.

Contact Beth Brenneman, Glenwood Springs Energy Office Ecologist, at 970-947-5232 or beth_brenneman@blm.gov.

8. Culverts. Culverts at drainage crossings shall be installed during no-flow or low-flow conditions and shall be designed and installed to pass a 25-year or greater storm event. The minimum culvert diameter in any installation for a drainage crossing or road drainage shall be 18 inches. Contact Jeff O'Connell, Glenwood Springs Energy Office Hydrologist at 970-947-5215 or jeffrey_o'connell@blm.gov. Crossings of drainages deemed to be jurisdictional waters of the U.S. pursuant to Section 404 of the Clean Water Act may require additional culvert design capacity. Due to the flashy nature of area drainages and anticipated culvert maintenance, the U.S. Army Corps of Engineers recommends designing drainage crossings for the 100-year event. Contact Sue Nall at 970-243-1199 x16 or susan.nall@usace.army.mil.

9. Pipeline Installation. For pipelines installed beneath stream crossings, the operator shall bury the pipeline at a minimum depth of 4 feet below channel substrate to avoid exposure by channel scour and degradation. Following burial, the channel grade and substrate composition shall be returned to pre-construction conditions.

10. Paleontological Resources. All persons associated with operations under this authorization shall be informed that any objects or sites of paleontological or scientific value, such as vertebrate or scientifically important invertebrate fossils, shall not be damaged, destroyed, removed, moved, or disturbed. If in connection with operations under this authorization any of the above resources are encountered the operator shall immediately suspend all activities in the immediate vicinity of the discovery that might further disturb such materials and notify the BLM authorized officer of the findings. The discovery must be protected until notified to proceed by the BLM authorized officer.

    As feasible, the operator shall suspend ground-disturbing activities at the discovery site and immediately notify the BLM authorized officer of any finds. The BLM authorized officer will, as soon as feasible, have a BLM-permitted paleontologist check out the find and record and collect it if warranted. If ground-disturbing activities cannot be immediately suspended, the operator shall work around or set the discovery aside in a safe place to be accessed by the BLM-permitted paleontologist.

    Contact Karen Conrath, GSEO Geologist, at 970-947-5235 or karen_conrath@blm.gov.

11. Raptor Nesting. Raptor nest surveys for the West Parachute CPOD (May 2007) did not result in location of raptor nest structures within 0.25 mile of a well pad or 0.125 mile of an access road, pipeline, or other surface facility. Although BLM considers surveys conducted for a NEPA Environmental Assessment to be valid for 5 years, new nests may be built and occupied between the initial surveys and project implementation. To ensure compliance with the Migratory Bird Treaty Act, the Operator should schedule construction or drilling activities to begin outside the raptor nesting season (February 1 to August 15) if practicable. If initiation of construction or drilling during these dates cannot be avoided, the Operator is responsible for complying with the Migratory Bird Treaty Act, which prohibits the "take" of birds or active nests (those containing eggs or young), including

nest failure caused by noise and human activity. Contact Jeff Cook, Glenwood Springs Energy Office Wildlife Biologist, at 970-947-5231 or Jeffrey_cook@blm.gov.

12. *Ips* Beetle. To avoid pinyon tree mortality caused by infestations of the *Ips* beetle, any pinyon trees disturbed during road, pad, or pipeline construction work shall be chipped after being severed from the stump or grubbed from the ground, buried in the toe of fill slopes (if feasible) or cut and removed from the site within 24 hours to a location approved by the Colorado State Forest Service.

APPENDIX C

SITE-SPECIFIC AND DOWNHOLE CONDITIONS OF APPROVAL

SITE-SPECIFIC CONDITIONS OF APPROVAL
CO140-2007-168EA

DOE PM 2-31

1. New facilities shall be painted Covert Green (18-0617 TPX) or an alternate color approved by the BLM Authorized Officer.

DOE 1-M-31

1. New facilities shall be painted Covert Green (18-0617 TPX) or an alternate color approved by the BLM Authorized Officer.

2. A gabion wall shall be used for the lower 6 feet of the cut-slopes above the pad expansion in order to gain more horizontal distance, creating a more gradual slope for reclamation. The wall shall not be constructed with reflective wire and the fill material shall be equal to or darker in color than the surrounding unexposed soils.

PA 42-31

1. Disturbance shall not extend beyond limits of the original pad configuration on the northwest corner of the pad and the overburden/topsoil shall not be placed above the cut.

2. The cut slope shall be constructed to emulate the vertical wall of the surrounding drainage feature. Exposed rock faces shall be stained a dark color, if necessary, to emulate the pattern found on the adjacent vertical rock faces.

3. Disturbance shall be limited to within the constructed rock border on the northeast corner of the pad and overburden/topsoil shall not be placed on or outside of the rock border to maintain a buffer from the drainage.

4. Facilities shall be located out of view by utilizing topographic features to the south of the site to intercept the view from the KOP locations and shall be painted a dark forest grey/green, such as Covert Green (18-0617 TPX).

PA 41-31
(The following COAs apply to the well pad, access road and two facilities pads)

1. The operator shall obtain appropriate permits from the U.S. Army Corps of Engineers prior to discharging fill material into waters of the U.S. in accordance with Section 404 of the Clean Water Act. Waters of the U.S. are defined in 33 CFR Section 328.3 and may include wetlands as well as perennial, intermittent, and ephemeral streams. Permanent impacts to waters of the U.S. may require mitigation. Contact Sue Nall, Regulatory Specialist, Colorado/Gunnison Basin Regulatory Office, U.S. Army Corps of Engineers, at 970-243-1199 x16 or susan.nall@usace.army.mil.

2. To protect the large unnamed ephemeral drainage, the operator shall maintain a minimum buffer of 10 feet between the edge of disturbance and the drainage. BMPs that include but are not limited to silt fences, straw wattles, sediment retention basins, seeding fill slopes, rip-rapping slope toes, and water bars shall be used to minimize excessive sediment delivery to the nearby drainage.

3. Interim Reclamation. Following drilling and completion activities, interim reclamation shall begin within 30 days and shall involve reclaiming the southeast corner of the well pad and reducing the culvert length to approximately 40 feet under the access road. This shall involve removing fill material and culvert lengths unnecessary for well maintenance and operation. The laydown area shall be reclaimed and the 24-inch culvert replaced with a rock lined, stepped channel that resembles a natural high gradient ephemeral drainage. Fills slopes in close proximity to the large unnamed ephemeral drainage shall be re-contoured where possible and seeded with an approved seed mix. In addition, unnecessary cut slopes shall be recontoured , stabilized, and seeded.

Tank pad

1. The proposed tanks shall be partially located below the surface elevation and painted Covert Green (18-0617 TPX) to emulate the surrounding juniper trees.

Frac pad and pit

1. New facilities shall be painted Covert Green (18-0617 TPX) to emulate the surrounding juniper trees.