

**U.S. Department of the Interior
Bureau of Land Management
Glenwood Springs Field Office
50629 Highway 6 & 24
Glenwood Springs, CO 81601**

ENVIRONMENTAL ASSESSMENT

NUMBER: CO-140-2005-080 EA

CASEFILE NUMBER: Lease # COC-58675

PROJECT NAME: Application for Permit to Drill 1 Exploratory Vertical Well into Dakota Formation from the Proposed M17OU Pad in Orchard Federal Unit (Benefiting program, Fluid Minerals 1310)

LEGAL DESCRIPTION:

Orchard 17-13 (M17OU Pad)	Surface location: T8S, R96W, Sec 17, SWE $\frac{1}{4}$ SW $\frac{1}{4}$, 6 th P.M. Bottom Hole: Same Surface Owner: BLM Federal Lease: COC-58675
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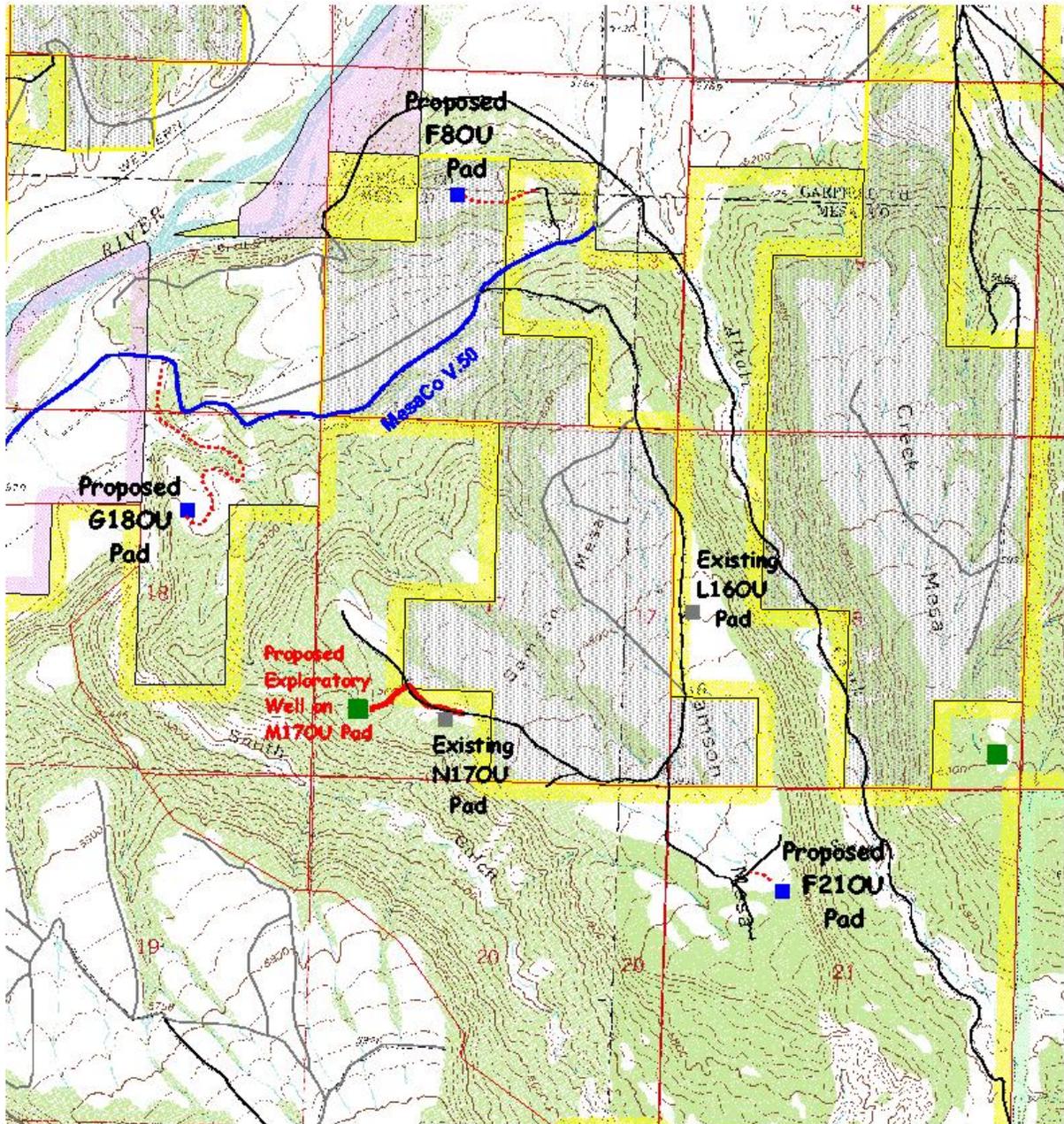
APPLICANT: EnCana Oil & Gas (USA) Inc.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Proposed Action: The proposed action is to drill and develop an exploratory natural gas well from the proposed M17OU well pad on BLM land as listed above and shown on Project Map. The well would be drilled vertically to maximize the operator's ability to conduct core testing of the Dakota Formation which exceeds 10,000 feet in depth. A new access road (750 feet) from the existing N17OU pad would be constructed with an additional 1000 feet of 2-track road being improved. The gathering line for this well would be laid as a temporary surface line parallel to the access road, and tie with the existing surface gathering system serving the N17OU well.

Drilling into the Dakota Formation, a new geologic strata yet to be developed, qualifies this well as exploratory development as defined in Appendix B of the 1999 SEIS. This well and pad will be analyzed in the pending Orchard GAP EA for additional directional wells and cumulative impacts.

The proposed action includes drilling and completion operations, installation of production facilities (pipeline, separator/dehydrator, water tank, etc.), production of natural gas, and intermediate and final reclamation measures. The Application for Permit to Drill (APD) includes a drilling program and a multi-point surface use and operations plan that describe details of well pad construction and interim reclamation. The proposed action will be implemented consistent with the oil and gas lease (listed above), federal regulations (43 CFR 3100), the Record of Decision and Resource Management Plan Amendment March 1999, and the operational measures included in the APD as well as the Conditions of Approval (COA) attached to the APD.



Dakota Exploratory Well: 17-13 well on M170U pad

**T8S R96W Sec 17, SW¹/₄SW¹/₄, 6th P.M.
Mesa County, Colorado**

Surface Owner: BLM

**Road Access shown
in solid RED.**



Scale 1: 24,000

4/22/05

The surface disturbance associated with the M17OU site would be 4.3 acres for the pad and 1.6 acres for the road, totaling 5.9 acres. The well pad and new road construction lie within dense juniper woodlands vegetation

Public access is available to the Samson Mesa portion of the Orchard Unit via Mesa County Road V.50 east of I-70, DeBeque interchange along the south side of the Colorado River. It is important to note that the road crossing BLM and private (Keinath) in Section 17 into Section 21 on Samson Mesa has historically been managed as a “public road” after court intervention by the Colorado Division of Wildlife (Communication with John Broderick, CDOW).

No Action Alternative: The proposed action involves federal subsurface minerals that are encumbered with federal oil and gas leases, which grants the lessee a right to explore and develop the lease. The no action constitutes denial of the proposed action and could be used to prevent unnecessary and undue degradation. Absent a non-discretionary statutory prohibition against drilling, BLM cannot deny the right to drill and develop the leasehold. Only Congress can completely prohibit development activities (Western Colorado Congress, 130 IBLA 244, 248 (1994), citing Union Oil Co. of California v. Morton, 512 F.2d 743, 750-51 (9th Cir. 1975). For this reason, the No Action alternative has been considered but eliminated.

NEED FOR THE ACTION: The purpose and need is to authorize the Application for Permit to Drill (APD) to satisfy federal lease obligations that will in turn provide natural gas for commercial marketing to the public.

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: Glenwood Springs Resource Management Plan.

Date Approved: **Amended in November 1991 - Oil and Gas Leasing and Development - Final Supplemental Environmental Impact Statement;** amended Nov. 1996 - Colorado Standards and Guidelines; amended in August 1997 - Castle Peak Travel Management Plan; **amended in March 1999 - Oil and Gas Leasing & Development Final Supplemental Environmental Impact Statement;** amended in November 1999 - Red Hill Plan Amendment; and amended in September 2002 – Fire Management Plan for Wildland Fire Management and Prescriptive Vegetation Treatment Guidance.

Decision Number/Page: The proposed action is located on leases in area designated Open for oil and gas leasing in 1984 in the Glenwood Springs Resource Management Plan (page 14 and map 4).

Decision Language: The FSEIS described the environmental effects, including the cumulative effects, of oil and gas development, but did not authorize the construction of any individual well locations. This EA is more site-specific than the FSEIS and includes the results of the on-the-ground inventories for cultural resources and special status plant and animal species, if appropriate. This EA tiers to both the DSEIS and FSEIS and the information in the FSEIS is incorporated by reference. The EA will focus on specific issues and will not deal with the larger regional issues addressed in the FSEIS. The proposed action has been reviewed for and is in compliance with the FSEIS (43 CFR 1610.5, BLM 1617.3) - Page or Decision Number: Pages 1-5, Record of Decision dated March 24, 1999.

Standards for Public Land Health: In January 1997, Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. The Glenwood Springs Field Office is in the ongoing

process of completing Land Health Assessments on a landscape basis. A formal Land Health Assessment was completed on the lands affected by the actions addressed in this EA in 2001. Portions of these lands were found not to be meeting the Standards. Specific concerns related to the condition of the sagebrush and pinyon-juniper habitats that comprise important big game winter range. Many sagebrush stands were in poor condition with old, decadent and severely hedged shrubs and little recruitment and establishment of younger age-class plants. In some sagebrush and pinyon-juniper stands, understory vegetation was lacking or was dominated by cheatgrass. Based on the findings of this assessment, specific mitigation and reclamation practices will be required on the proposed action to move toward achieving conformance with the standards.

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. Because a standard exists for these five categories, the impact analysis must address whether the proposed action or any alternatives being analyzed would result in impacts that would maintain, improve, or deteriorate land health conditions for that specific parameter. These analyses are located in specific elements listed below:

AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES / MITIGATION MEASURES:

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. For further details, refer to the Draft Roan Plateau RMPA EIS, page 3_20-22.

Environmental Consequences/Mitigation: The Draft Roan Plateau EIS, pages 4_31-4_48, describes potential effects from oil and gas development. Analysis was completed with regard to greenhouse gas emissions, a near-field and far-field analysis for carbon monoxide, particulate matter (PM₁₀ 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 Draft EIS. Findings indicate that no adverse long term effects would be realized under the Draft Roan Plateau EIS plan. It is anticipated that the proposed action in this document would not likely produce adverse effects to air quality when compared to the Roan Plateau plan.

However, truck traffic during the initial rig-up, well completion, rig-move, and production activities would likely produce high levels of dust in dry conditions without dust abatement.

- Emissions of particulate matter will be reduced through control of dust during construction and completion, and production activities. The operator will water the road and/or use magnesium chloride for dust abatement or other approved surfactant by the authorized officer.

AREAS of CRITICAL ENVIRONMENTAL CONCERN, WILD AND SCENIC RIVERS and WILDERNESS

Affected Environment: There are no Wilderness Areas or Wilderness Study Areas, citizen proposed wilderness areas, ACECs, or Wild and Scenic Rivers within the proposed project area.

CULTURAL RESOURCES

Affected Environment: A Class III cultural resource inventory was conducted by Metcalf Archaeological Consultants (GSFO#5405-14) for the proposed well, access, and pipeline. No historic properties were identified that are eligible for listing on the National Register of Historic Places. Formal consultation was not initiated with the Colorado State Historic Preservation Officer for this well location and a determination of “**No Historic Properties Affected**” was made based upon results of the inventory, the BLM/SHPO National and Colorado Protocols (1997 and 1998) and National Historic Preservation Act (16 U.S.C. 470f).

Environmental Consequences/Mitigation: Indirect long term cumulative impacts from increased access and personnel could result in a range of impacts to known and undiscovered cultural resources in the vicinity of the locations, from illegal collection and excavation to vandalism.

The importance of the Education/Discovery Stipulation needs to be stressed to EnCana and their subcontractors informing them of their responsibilities to protect and report any cultural resources encountered on public land during operations under this permit.

Mitigation:

A standard Education/Discovery Condition of Approval for Cultural Resource protection will be attached to the APDs.

ENVIRONMENTAL JUSTICE

Affected Environment: Review of 2001 data from US Census Bureau indicates the median annual income of Garfield County averages \$43,560 and is neither an impoverished or wealthy county. Median annual income of Eagle County averages \$51,578 and is not impoverished but is considered a wealthy county. U.S. Census Bureau data from July, 2002 shows the minority population of Garfield and Eagle County comprises less than 3 % of the total population¹.

Garfield County		Eagle County	
Median Household Income		Median Household Income	
Estimate	90% Confidence Interval	Estimate	90% Confidence Interval
\$43,560	\$40,491 to \$46,613	\$51,578	\$47,958 to \$55,177

Environmental Consequences/Mitigation: The proposed action and alternatives are not expected to create a disproportionately high and adverse human health impact or environmental effect on minority or low-income populations within the area.

¹ Table CO-EST2002-ASRO-02-08-County Population Estimates by Race Alone and Hispanic or Latino Origin: July 1, 2002
 Source: Population Division, U.S. Census Bureau
 Release Date: September 18, 2003

FARMLANDS, PRIME AND UNIQUE

Affected Environment: The proposed action would not take place on does not involve any prime or unique farmlands.

FLOODPLAINS, WETLANDS, RIPARIAN ZONES

Affected Environment: There will be no impacts to floodplains, riparian vegetation, or wetlands since these resources would not be not present within the area of proposed action.

Analysis on the Public Land Health Standard for riparian systems: Not Affected

INVASIVE, NON-NATIVE SPECIES

Affected Environment: The proposed pad and new access road lie within dense stand of mature juniper woodlands. The juniper woodland has a very sparse understory characterized by a few native forbs and cheatgrass.

Environmental Consequences/Mitigation:

Surface-disturbing activities provide a niche for the invasion and establishment of noxious weeds, particularly when noxious weeds are already present in the vicinity. The APD and Conditions of Approval include measures to re-vegetate the well site with native perennial grasses and shrubs and native or desirable, non-native forbs. The project proponent will adhere to the specified seed mix and will continue with reclamation activities, including reseeding if necessary, until BLM's interim reclamation objectives are achieved. In addition, a standard Condition of Approval is attached requiring the project proponent to promptly treat and control any invading noxious weeds. A Pesticide Use Proposal must be approved by BLM prior to commencing any herbicide spraying.

MIGRATORY BIRDS

Affected Environment: The project area is comprised primarily of juniper woodlands. Given this vegetation, the project area provides both foraging and nesting habitat for a variety of migratory birds. Three species characteristic of pinyon/juniper woodlands, the pinyon jay, gray vireo, and black-throated gray warbler, are listed on the USFWS's Bird of Conservation Concern List. Within the nearby sagebrush vegetation, the sage sparrow, and Brewer's sparrow may occur.

No raptor nests are known to occur in the immediate vicinity of the proposed well pad, road, or pipeline locations. However, golden eagles are known to nest in the nearby vicinity. It is likely that these and other raptors forage in the area where the new well pad, road, and pipeline facilities will be placed.

Environmental Consequences/Mitigation: The proposed action will involve new disturbance of approximately 5.9 acres of upland vegetation (habitat) associated with well pad, pipeline, and road construction. Although portions of the disturbed acreage will be reseeded/reclaimed, habitat will cease to function in its current capacity as shrubs and trees will be replaced with herbaceous grasses and forbs. The proposed action will result in the loss of nesting, breeding, roosting, perching, and foraging habitat for the species noted above. Individual birds will be impacted as trees, shrubs, and understory vegetation is removed to accommodate natural gas infrastructure. If the well pad is constructed during the nesting season, it is possible that individual nests will be destroyed, and that reproduction will be inhibited. In addition, currently intact habitats will be fragmented. This fragmentation will result in reduced habitat patch size which negatively impacts bird species that require large expanses of intact habitat. In addition to the physical loss of habitat and fragmentation, it is possible that during all construction activities, individual birds could be displaced to adjacent habitats due to noise and human presence. Limited public access into the area due to private surface ownership will reduce some indirect impacts associated with

human use. Despite the impacts to individual birds, it is unlikely that whole species or populations would be severely impacted by implementation of the proposed action. Raptors should not be negatively affected as upland foraging habitat is plentiful in the area.

NATIVE AMERICAN RELIGIOUS CONCERNS

Affected Environment: At present, no Native American concerns are known by the GSFO within the project area and no Native American sites were identified during the inventory. The Ute tribes claim this area as part of their ancestral homeland. If new data is disclosed, new terms and conditions may have to be negotiated to accommodate their concerns.

Environmental Consequences/Mitigation: Indirect impacts from increased access and personnel could result in a range of impacts to unknown cultural resources from illegal collection to vandalism. The importance of the Education/Discovery Stipulation needs to be stressed to EnCana and their subcontractors. A standard Education/Discovery Condition of Approval for Cultural Resource protection will be attached to the APD.

THREATENED, ENDANGERED, AND SENSITIVE SPECIES (includes analysis on Standard 4)

Affected Environment: According to the latest species list from the U. S. Fish and Wildlife Service, the following federally listed and candidate species may reside or be impacted by actions occurring in Garfield County: bald eagle, Canada lynx, Mexican spotted owl, black-footed ferret, Uinta Basin hookless cactus, Parachute beardtongue, DeBeque phacelia, boreal toad, yellow-billed cuckoo, razorback sucker, Colorado pikeminnow, bonytail chub, and humpback chub.

Specific to the project location, no federal or state listed species, federal proposed or candidate species, or BLM Sensitive species (collectively called special status species) or their habitat occur directly within the project area footprint. The Colorado River in close proximity (1 mile) to the proposed M17OU pad is mapped as general bald eagle winter range. Designated Critical Habitat for the Colorado pikeminnow and razorback sucker is located within the Colorado River and its 100-year floodplain.

Complete inventories have not been conducted at the proposed well site locations. The area of the proposed action does not contain potential habitat for any known special status plant species. Although, the special status plants, Debeque phacelia, Debeque milkvetch, and Rocky Mountain thistle are all known to occur within two miles of the project area, the geology upon which these species depend is not found at the proposed wells or access road locations.

Environmental Consequences/Mitigation:

Bald eagle

No roost or nest trees are located in close proximity to the action. Winter bald eagle habitat is located off of and below the mesa along the Colorado River. The action will have “No Effect” to bald eagles or their habitat.

Colorado pikeminnow & razorback sucker

Although Designated Critical Habitat for these fish is located in close proximity to the proposed action, the well pads, roads, and pipelines will be constructed well above the river on a mesa away from the river. It is possible that the action will result in small increases in sediment reaching the river over time, but the Colorado River carries a tremendous amount of sediment and the minor amount of additional sediment will be within background levels currently carried by the river. No detectable increase in sediment will occur. Furthermore, these fish are well adapted to the high sediment loads traditionally carried by the

Colorado River. Periodic flooding and sediment have always played a part in the maintenance of these fish's habitats.

The action will have "No Effect" to either the razorback sucker or Colorado pikeminnow or its habitat.

Analysis on the Public Land Health Standard for Threatened & Endangered species: Since there is no potential habitat for special status species in the project area and no offsite or indirect impacts are anticipated, the proposed action should have no effect on any special status species. The proposed action should not result in a failure of the area to achieve Standard 4 for special status, threatened or endangered species.

WASTES, HAZARDOUS OR SOLID

Affected Environment: All wastes will be managed in accordance with the applicable Oil and Gas regulations and On-Shore Orders.

WATER QUALITY, SURFACE AND GROUND (includes analysis on Standard 5)

Affected Environment:

Surface Water

The proposed well pad lies on Samson Mesa south of the Colorado River between Smith Gulch and Alkali Gulch about 5 miles east of DeBeque, Colorado. The potentially affected drainages are subject to flow events from short duration, high intensity thunderstorms during summer months. Winter and spring runoff also plays a role in these watersheds depending on snowfall and spring rain events.

The state of Colorado has developed the 303(d) list which identifies impaired water bodies, waters not meeting water quality standards with technology based controls alone. No streams within the proposed action watershed area are known to be listed on the 303(d) list; suggesting water quality standards are currently being met.

Ground Water

The nearest water well is located about 1 mile to the south (92' depth). Other water wells are located along the Colorado River about 1-2 miles to the northwest. Usable ground water may occur in the unconsolidated surficial deposits, and lenticular sands in the Wasatch and upper part of the Mesaverde.

Environmental Consequences/Mitigation:

Surface Water

Pad, road and pipeline construction would result in the removal of vegetation and disturbance of soils that would increase sediment and salinity in surface water in the area. There is some risk that the impact to surface waters would be greater than anticipated should a high intensity thunder storm hit immediately following the surface disturbing activity and before mitigating measures are in place. With measures to control runoff water in place, reestablishment of vegetation, and proper engineering of roads, the increase in the amount of sediment in surface waters would be minimized. Culverts in road crossings of drainages will be required to pass a 25 year 6 hour storm event and would be installed during no flow or low flow conditions. Water produced during drilling activity would be contained in an engineered pit on the pad site and hauled to a disposal facility.

Negative impacts to surface waters would be expected to be minor and last for the most part for 3 years following the initial disturbance. Mitigating activity should be initiated as quickly as possible following construction to avoid unnecessary degradation of surface water quality. There would be some minor long term negative impacts to surface water quality from an increase in sediment coming from working

surfaces that would not be rehabilitated until the wells are no longer producing and facilities are removed and the area rehabilitated.

Analysis on the Public Land Health Standard for water quality: A formal land health assessment was completed in the project area in 2001. There is no indication that the proposed action would prevent Standard 5 from being met.

Ground Water

Surface casing will be set to 800' and the production casing cemented back to surface casing, which will provide adequate protection for any potential usable water zones.

NON-CRITICAL ELEMENTS

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

SOILS (includes analysis on Standard 1)

Affected Environment: The proposed action would include construction of road, pipeline and the M17OU pad. The Soil Survey for Colorado and the Douglas Plateau indicates that 2 soil map units would be affected by the proposed action area. Soil descriptions that follow are summarized from their respective surveys.

The M17OU pad and approximately ½ of the proposed road is located on Clapper very stony loam (12-25% slopes). The remaining portion of the road is located on the Barx-Clapper complex (3-12% slopes). This complex is found on dissected plateaus and is approximately 60% Barx loam (see above description) with 25% being Clapper very stony loam (12-25% slopes). The remaining soils vary widely and are integrated into the complex. The Clapper portion of this complex is described as having rapid runoff potential and severe erosion potential

Environmental Consequences/Mitigation: There would be some loss of soil, some loss of soil productivity, and an increase in sedimentation resulting from construction of the well pads. The extent of these impacts on soils would not be great and would be expected to last for a relatively short period of time. The proposed action includes measures to prevent direct placement of fill material in drainages, limits reclaimed slopes to 3:1, and to re-vegetate disturbed areas. Reclamation measures such as contouring disturbed areas, roughing the soil surface, re-vegetating, and controlling runoff would help to limit soil erosion. The loss of soil and sedimentation would occur after the construction phase for a short term of from 1 to 3 years until re-vegetation occurs. There would be some minor permanent loss of soil.

Analysis on the Public Land Health Standard for upland soils: The proposed action would not likely prevent health standard 1 from being met.

VEGETATION (includes analysis on Standard 3)

Affected Environment: The proposed pad would be constructed within old-age juniper woodland habitat. An Ips beetle infestation has been noted in the general area. The combined stress of the recent drought and attack by Ips beetles has resulted in mortality of numerous pinyon pines in the broader landscape. After field review, it was determined that removal of live pinyon trees would not be necessary for construction of the pad so the pinyon ips beetle problem would not be exacerbated by this action.

Environmental Consequences: The proposed action would result in a short-term loss of some herbaceous and shrubby vegetation and a long-term loss of mature to old-growth juniper trees on those the pad and road that will be revegetated following completion of drilling activities. In addition there would be a long term loss of herbaceous and shrubby vegetation and some woodland vegetation associated with the access roads and operating facilities for the wells. Total acreage associated with the disturbance will be approximately 5.9 acres. With implementation of reclamation practices identified in the COAs, desirable vegetative establishment on the temporary disturbed areas can be expected. Monitoring of the reclamation would occur as identified in COAs.

Mitigation: The M17OU pad will be fenced to exclude livestock grazing until the seeded species are established and well-rooted and 55% of seeded species are reproducing. (This will require a minimum of 2 growing seasons but may be longer depending on climatic conditions.)

Analysis on the Public Land Health Standard for plant and animal communities (partial, see also Wildlife, Aquatic and Wildlife, Terrestrial): The Battlement Mesa Land Health Assessment determined that this portion of the landscape was functioning but that problems were evident. Problems noted were dominance of the area by cheatgrass, heavily hedged and decadent sagebrush and conifers that appeared stressed. The ongoing drought is probably a contributing factor in the susceptibility of the stand to Ips beetle infestation. The proposed action would not remove any pinyon trees so it would not contribute to expansion of the Ips beetle infestation. The surface disturbance associated with the proposed action has the potential to encourage expansion and dominance of the site by cheatgrass. The Invasive, Non-native Species section includes provisions to revegetate the disturbances with native vegetation and to control noxious weeds. The proposed action with mitigation should not result in a failure of the landscape to meet Standard 3 for healthy plant communities. If successfully revegetated, the proposed action may result in an improvement in vegetative conditions by improving the density, frequency and composition of native plant species.

WILDLIFE, AQUATIC (includes **analysis** on Standard 3)

Affected Environment: There are no perennial aquatic systems at the proposed well pad. The M17OU pad is located on Samson Mesa overlooking the Colorado River. The Colorado River contains an abundant fish and aquatic insect assemblage.

Environmental Consequences/Mitigation:

It is likely that site-specific erosion potential will be increased due to clearing of vegetation to accommodate the new well pad, access road, and flowline. This will be the case until such time as adequate vegetation establishment is obtained on reclaimed portions of disturbed areas. Roads will increase the chance for erosion and sedimentation indefinitely. Increased sediment can reduce aquatic insect productivity as streams become silted and clean gravels and cobbles are covered. Sediment that ultimately reaches the Colorado River will have no impacts to fisheries as sediment levels are projected to be well within the background levels for the Colorado River and minor potential increases in sediment would be undetectable.

Analysis on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation and Wildlife, Terrestrial): A formal land health assessment was completed in 2001. The proposed action should result in no negative effects to aquatic wildlife and will have no negative effects on the ability to maintain or meet Standard 3 for aquatic wildlife.

WILDLIFE, TERRESTRIAL (includes **analysis** on Standard 3)

Affected Environment: The proposed well pad would be located within juniper woodlands with an understory comprised of grasses and forbs. Although some native grasses are present, cheatgrass is dominant in the understory. A variety of wildlife species may be found in the area. The area contains habitat for many species of big game, small game, and nongame mammals and birds. The area is also mapped as crucial big game winter range.

The proposed M17OU pad would fall within the big game winter timing limitation stipulation on the leases restricting surface uses (other than operation and maintenance of production facilities) from December 1 through April 30. In addition to big game, a variety of small game and non-game wildlife, and birds are found in the vicinity of these proposed wells. General impacts (short term, long term, and cumulative) to terrestrial wildlife were adequately addressed in the 1999 FSEIS. At this time a site-specific habitat assessment has not been conducted to determine the quality of the habitat. However, based on existing data and maps, the diversity of habitats, and the relatively undisturbed nature of the area, the habitat is considered to be high quality.

Environmental Consequences/Mitigation: Compliance with the timing limitation stipulated on the federal lease will minimize impacts to wintering big game by limiting construction during a 5 month period of the winter – December 1 through April 30.

Standard measures are incorporated into the APD along with other measures (i.e., automatic well reporting, and reclamation) to conform to the FSEIS that will help to mitigate wildlife impacts. Public access and use of the roads for all the proposed well sites will be prevented due to controlled access on private lands. This will minimize disturbance and reduce effective habitat loss.

Mitigation:

For the M17OU pad, the winter timing stipulation placed on the lease will apply from December 1 through April 30, with the applicable exception criteria.

Analysis on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation and Wildlife, Aquatic): A formal land health assessment was completed in 2001. The action should result in no further deterioration of the ability of the landscape to maintain or meet Standard 3 for terrestrial wildlife species.

THRESHOLD ANALYSIS FOR WILDLIFE AND WILDLIFE HABITAT MITIGATION: In the FSEIS Record of Decision (March 1999) on page 14 it states that: *“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 wildlife habitat.. Measures to reduce impacts would generally be considered when well density exceeds four wells per 640 acres, or when road density exceeds three miles of road per 640 acres.”* Furthermore, Lease Notice GS-LN-05 states: *“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 wildlife habitat.”*

The road and well density thresholds will not be exceeded via implementation of the proposed action. As such offsite or replacement mitigation measures to reduce impacts to wildlife are not currently being considered. However, as future activity increases in the area, and a Geographical Area Plan (GAP) is initiated, it is possible that mitigation will be sought to offset habitat loss and fragmentation. Cumulative impacts will be addressed in greater detail within the GAP and mitigation opportunities will be identified and pursued.

OTHER NON-CRITICAL ELEMENTS:

ACCESS AND TRANSPORTATION

Affected Environment: Road access to the proposed pad is through privately owned (Keinath) lands with no legal public access. Public access is available to the public lands in the general vicinity (L16OU pad) over County (Mesa V.50) road and public road.

Environmental Consequences: Truck traffic will be the heaviest during rig-up, completion activities, and the rig-move to the next location. The proposed drilling and completion activities on the federal wells will likely commence in summer, 2005.

Mitigation: The existing steel frame gate at junction of N17OU access road with the public road near the SW¹/₄ of Section 17 will remain closed and locked except when vehicles are passing through to access the N17OU or M17OU pad sites.

GEOLOGY AND MINERALS

Affected Environment/Environmental Consequences/Mitigation:

Proposed target gas zones for the directional wells are sands within the middle and lower part of the Williams Fork Formation and sands within the underlying Iles Formation. The shallower Wasatch G sands may be present but have low potential for producible gas. The wells are proposed for a target depth near the base of the Corcoran Sandstone (Iles Formation). All coal zones are too deep for underground mining. The operator proposes to cement the production casing from total depth back to the base of the surface casing, which would isolate the formation and producible gas zones from other formations and zones.

NOISE:

Environmental Consequences/Mitigation: There will be increased levels of noise during the construction, drilling, and completion phases of the proposed action. The noise will be most noticeable along the roads used to haul equipment and at the well site. Drilling activities are subject to noise abatement procedures as defined in the Colorado Oil and Gas Conservation Commission Rules and Regulations (Aesthetic & Noise Control Regulations).

PALEONTOLOGY

Affected Environment: The proposed pad and access road fall within a Condition I area for possible sites of paleontological or scientific value. However, dense soil and vegetation cover rock outcrops and as a result a paleontological survey would not be required for those specific potentially fossiliferous areas prior to BLM project authorization. If scientifically important fossils are discovered during construction activities and cannot be avoided, mitigation may be necessary.

All persons associated with operations under this authorization should be informed that any objects or sites of paleontological value, such as vertebrate or scientifically important invertebrate fossils, should not be destroyed, damaged or removed.

Environmental Consequences/Mitigation: A standard Education/Discovery Condition of Approval for Paleontology Resource protection will be attached to the APDs.

RANGE MANAGEMENT:

Affected Environment: The proposed M17OU pad would be located on public land within the Alkali Gulch Allotment # 08131. The table below summarizes the permitted grazing use on the allotment.

Allotment	Permittee	Livestock Kind & NO.	Season of Use	% PL	AUMs
Alkali Gulch # 08131	Malcolm Jolley	Sheep 200	12/17 – 2/15	100	80

Environmental Consequences: With the estimated 6 acres of new surface disturbance related to the M17OU pad, construction activities would result in minimal loss (< 1 AUM) of forage available to livestock. Rehabilitation of vegetation on the location would result in reestablishment of forage which usually takes about 3 years. Livestock may also be minimally disturbed by the increase in human activity during pad and pipeline construction and maintenance of the gas facilities.

Mitigation: It is not anticipated that the level of impacts from implementation of the proposed action would require adjustment of the livestock stocking rate. The level of forage utilization will be monitored on the allotment. If necessary, adjustments in livestock use will be made to protect land health. Fencing of the M17OU pad will be required to deter grazing impacts to the reclaimed pad area.

VISUAL RESOURCES

Affected Environment: The M17OU well pad would be located within an area classified as VRM Class IV in the 1984 Glenwood Springs Resource Management Plan. The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

The protection of VRM classes, landscape character and scenic quality on private lands and split estate is discussed on pages 3-41 through 3-45 of the FSEIS. The impacts of development are also discussed on pages 4-49 through 4-54 of the FSEIS. The proposed action will not affect any of the key viewing areas or viewsheds described in the FSEIS. In particular, the proposed action will not be seen from the key viewing areas of the 1-70 corridor or the town of Parachute/Battlement Mesa although a portion of the M17OU excess material pile may be visible from the Colorado River corridor.

Environmental Consequences/Mitigation: The construction of the well pad will create contrast by removing the existing juniper vegetation and exposing bare ground. Interim reclamation of the pad with seeded shrub and grass species would reduce the contrast after two to three growing seasons. After completion of interim reclamation work, the well site would be visible from the immediate vicinity and nearby mesas due to the production facilities. The proposed site, however, is not visible from nearby Interstate 70 or the Colorado River.

The production facilities on the pad including the metal containment ring will be painted Shale Green, as determined by on-site recommendations. Efforts should be made to leave as much existing vegetation as possible to screen the excavated disturbance. The facilities should be placed against the cut side of the pad, where feasible.

For the following elements, those brought forward for analysis will be formatted as shown above.

Non-Critical Element	NA or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
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Travel/Access			x
Cadastral Survey	x		
Fire/Fuels Management		X	
Forest Management		X	
Geology and Minerals			x
Hydrology/Water Rights		x	
Law Enforcement	x		
Paleontology			x
Noise			x
Realty Authorizations		x	
Recreation	x		
Socio-Economics		x	
Transportation		x	
Visual Resources			x

CUMULATIVE IMPACTS SUMMARY:

The 2004 Draft Roan Plateau Resource Management Plan Amendment & Environmental Impact Statement released in November, 2004 (DEIS, 2004) analyzed 5 alternatives for oil and gas development in the Roan Plateau planning area. These alternatives assessed impacts, including cumulative impacts, for oil and gas development scenarios ranging from 855 to 1582 new gas wells on public lands. The drilling of the wells addressed in this Environmental Assessment is well below the low range of development analyzed in the DEIS.

Since the completion of the 1999 Oil and Gas Leasing and Development FSEIS, the number of wells analyzed in subsequent NEPA documents has exceeded the 230 federal wells forecast in the RFD for lands outside the NOSR Production Area. However, drilling technology advancements has drastically reduced the expected surface disturbance of 3.4 acres per well or 1,020 acres from Federal wells analyzed in the 1999 FSEIS. The FSEIS analysis was based on a reasonably foreseeable development scenario, including the numbers of wells, well spacing, equipment necessary, and assumed emission rates. Since completion of the FSEIS, the majority of new wells has been drilled directionally and, in many instances, are being drilled from existing well pads, thereby reducing the overall anticipated surface impact addressed in the 1999 FSEIS.

The air quality analysis conducted in the 2004 DEIS does assess the impacts to the airshed from oil and gas development within and around the Roan Plateau Planning Area. The proposed action addressed in this document, which could include well pad and/or road construction, well drilling and well completion work typical for oil and gas development, would not represent a significant increase in emissions relative to the emissions assumed in the 2004 DEIS

PERSONS / AGENCIES CONSULTED:

RuthAnn Morss, Permit Agent, EnCana Oil & Gas (USA) Inc.
 Joe Schmid, Construction Foreman, EnCana Oil & Gas (USA) Inc.

INTERDISCIPLINARY REVIEW:

<u>Name</u>	<u>Title</u>	<u>Area of Responsibility</u>
Jim Byers	Natural Resource Specialist	Team Leader

Cheryl Harrison	Archaeologist	Cultural Resources, Native American Religious Concerns
Tom Fresques	Wildlife Biologist	Terrestrial & Aquatic Wildlife, Special Status Wildlife Species
Carla Scheck	Ecologist	Special Status Plants, Vegetation, Noxious Weeds
Bruce Fowler	Geologist	Ground Water/Minerals
Jim Wilkinson	Geologist	Paleontology
Mike Kinser	Rangeland Management Specialist	Riparian
Marty O'Mara	Petroleum Engineer	Downhole Conditions of Approval
Kay Hopkins	Outdoor Recreation Planner	Visual Resources
Mark Wimmer	Rangeland Management Specialist	Soil, Water and Air
Mike McGuire	Rangeland Management Specialist	Range

FONSI
CO-140-2005-080 EA

**Application for Permit to Drill 1 Exploratory Vertical Well into Dakota Formation from
the Proposed M17OU Pad in Orchard Federal Unit
Vertically Drill the Orchard 17-13 Well (M17OU Pad)**

The environmental assessment and analyzing the environmental effects of the proposed action have 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 Application for Permit to Drill the vertical Orchard 17-13 well on the M17OU Pad with the Conditions of Approval in order to provide for the orderly, economical and environmentally sound exploration and development of oil and gas resources on valid oil and gas leases.

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 Surface Use Plan and the attached Conditions of Approval.

MITIGATION MEASURES: Mitigation measures are included in the Surface Use Plan and Conditions of Approval for both surface and drilling operations.

NAME OF PREPARER: Jim Byers, Natural Resource Specialist

SIGNATURE OF AUTHORIZED OFFICIAL:


Authorized Officer

DATE SIGNED:

6/8/05

CONDITIONS OF APPROVAL
APPLICATION FOR PERMIT TO DRILL

Company/Operator: **EnCana Oil & Gas(USA), Inc.**

PAD	M17OU	Location	SWSW Sec 17, T08S, R96W	
Well Name	Well No.	API No.	Bottom Hole Location	Lease
Orchard Unit	17-13 (M17OU)		SWSW Sec 17, T08S, R96W	COC-58675

NOTIFICATION REQUIREMENTS

- Location Construction - at least forty-eight (48) hours prior to construction of location and access roads.
- Spud Notice - at least twenty-four (24) hours prior to spudding the well.
- Casing String and Cementing - at least twenty-four (24) hours prior to running casing and cementing all casing strings.
- BOP and Related Equipment Tests - at least twenty-four (24) hours prior to initiating pressure tests.
- First Production-Notice - within five (5) business days after new well begins, or production resumes after well has been off production for more than ninety (90) days.
- Reclamation - At least (24) hours prior to re-shaping the well pad.

For more specific details on notification requirements, please check the Conditions of Approval for Notice to Drill and Surface Use Program.

APD approval is valid for a period of one (1) year from the signature date. An extension period may be granted, if requested, prior to the expiration of the original approval period.

Please contact Marty O’Mara (970) 947-2825 of the Glenwood Springs field office at least 24 hours prior to spud.

Please contact Carol Snyder (970) 244-3033, or Ed Fancher (970) 244-3039 of the Grand Junction field office at least 24 hours prior to running the surface and production casing and conducting the BOP test.

**DOWNHOLE CONDITIONS OF APPROVAL FOR NOTICE TO DRILL
ORCHARD UNIT (M17OU) WELL PAD**

1. The TOC for the production casing needs to be at the base of the surface casing either during the primary cement job or through remedial cementing. This is to protect the potential for Wasatch gas below the surface casing. The TOC for the well must be a minimum depth of:

<u>Well No.</u>	<u>MD</u>	<u>Minimum TOC</u>	<u>TVD</u>
17-13 (M17OU)	2000'		2000'

2. A cement bond log (CBL) will be run from the production casing shoe to **TOC** and shall be utilized to determine the bond quality for the production casing.
3. Any usable water zones encountered below the surface casing shall be isolated and or protected by cementing across the zone. The minimum requirement is to cement from 50 feet above to 50 feet below each usable water zone encountered.
4. Open hole logs (PEX) shall be run in the surface section of the hole to determine shallow gas and waters. This COA is necessary only for the first well drilled on a pad.
5. The PEX open-hole log shall be run from TD to surface casing in at least one of the wells on the pad.

REGULATORY REMINDERS

Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

All drilling operations, unless otherwise specifically approved in the APD, must be conducted in accordance with Onshore Oil and Gas Order No. 2.

All lease and/or unit operations will be conducted in such a manner that full compliance is made with applicable laws, regulations (43 CFR 3100), Onshore Oil and Gas Orders, and the approved plan of operations. The operator is fully responsible for the actions of his subcontractors.

A copy of the approved application for permit to drill (APD), including the conditions of approval and accompanying surface use plan will be furnished to the field representative by the operator to insure compliance and will be available to authorized personnel at the drillsite whenever active construction or drilling operations are underway.

Be aware fire restrictions may be in effect when location is being constructed and/or when well is being drilled. Contact the appropriate Surface Management Agency for information.

Section 102(b)(3) of the Federal Oil and Gas Royalty Management Act of 1982, as implemented by the applicable provisions of the operating regulations at Title 43 CFR 3162.4-1(c), requires that "not later than the 5th business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in the case of a well which has been off production

for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, of the date on which such production has begun or resumed."

If you fail to comply with this requirement in the manner and time allowed, you shall be liable for a civil penalty of up to \$10,000 per violation for each day such violation continues, not to exceed a maximum of 20 days. See Section 109(c)(3) of the Federal Oil and Gas Royalty Management Act of 1982 and the implementing regulations at Title 43 CFR 3162.4-1(b)(5)(ii).

In the event after-hours approval or notification is necessary, please contact one of the following individuals:

Marty O'Mara Petroleum Engineer	C: 970.319.5837 BLM Fax: 970.947.2829	W: 970.947.2825
Carol Snyder Petroleum Engineering Tech.	H: 970.255.9339 C: 970.216.6146	W: 970.244.3033
Ed Fancher Petroleum Engineering Tech.	H: 970.523.5771 C: 970.640.4590	W: 970.244.3039
Jim Byers Natural Resource Specialist	W: 970.947.2804	

BLM Fax: 970.244.3083

EPA'S LIST OF NONEXEMPT EXPLORATION AND PRODUCTION WASTES

While the following wastes are nonexempt, they are not necessarily hazardous.

- Unused fracturing fluids or acids
- Gas plant cooling tower cleaning wastes
- Painting wastes
- Oil and gas service company wastes, such as empty drums, drum rinsate, vacuum truck rinsate, sandblast media, painting wastes, spent solvents, spilled chemicals, and waste acids
- Vacuum truck and drum rinsate from trucks and drums, transporting or containing nonexempt waste
- Refinery wastes
- Liquid and solid wastes generated by crude oil and tank bottom reclaimers
- Used equipment lubrication oils
- Waste compressor oil, filters, and blowdown
- Used hydraulic fluids
- Waste solvents
- Waste in transportation pipeline-related pits
- Caustic or acid cleaners
- Boiler cleaning wastes
- Boiler refractory bricks
- Incinerator ash
- Laboratory wastes
- Sanitary wastes
- Pesticide wastes
- Radioactive tracer wastes
- Drums, insulation and miscellaneous solids.

SURFACE USE CONDITIONS OF APPROVAL

1. The paint color to be used on all surface facilities including the metal containment rings surrounding the tank batteries is Shale Green (5Y 4/2) .
2. Excess material generated from pad and pit construction will NOT be windrowed along the entire north side of the pad as shown on Sheet 4 of 11. Instead the excess material will be separated into 2 piles with (1) pile located at the NE corner between access road and mid-point between PT1 and PT2 and (2) pile placed on both sides of NW corner (PT 12). The objective of splitting the excess material piles is to avoid placement of material off the fillslope at PT 1 into the existing dry gulch. Silt fencing will be installed at toe of all fillslopes and material piles.
3. Interim livestock fencing will be required on the pad including around the total area of disturbance, after the disturbed area has been seeded per specifications in Item #10. Such fencing will be installed after completion work is finished and prior to livestock turnout. A steel frame gate will be installed if interior fencing program is not used on the location.
4. Juniper trees removed during road or pipeline construction will be windrowed at toe of fillslope to help contain compacted fill OR chipped with mechanized chipping equipment.
5. The operator is responsible for applying dust abatement measures as needed or directed by the 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 Authorized Officer. Dust control is needed to prevent heavy plumes of dust from road use that create safety problems and disperses heavy amounts of particulate matter on adjacent vegetation.
6. Noxious weeds, which may be introduced due to soil disturbance associated with the proposed lease operations, will be treated by methods to be approved by the Authorized Officer. A Pesticide Use Plan (PUP) is required prior to use of any pesticide.
7. Remote monitoring will be conducted during the winter months to minimize site visits to pad locations and reduce traffic impacts to wintering big game wildlife. In addition, scheduled winter visits (those other than for emergency purposes), should be scheduled between 10 a.m. and 3 p.m. to further minimize disturbance to wintering big game wildlife.
8. Cultural Resource Education/Discovery Stipulation
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 43CFR10.4(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 43CFR10.4 (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, 36CFR800.112). 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); and,
- a time frame 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 of 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 of 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.

9. All persons associated with operations under this authorization must 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 proponent 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 authorized officer.

As feasible, the proponent 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 proponent shall work around or set the discovery aside in a safe place to be accessed by the BLM-permitted paleontologist.

10. Reclamation Plan. Refer to Appendix I. Surface Reclamation of the 6/98 GSFO's Draft Supplemental EIS for Oil & Gas Leasing Development (pages I-1 through I-8) for specific reclamation goals, objectives, timelines, measures and monitoring methods. These guidelines will be followed in completing the reclamation of disturbed surfaces on well pads, access roads and pipelines

Some effective practices that will be implemented during reclamation include, but are not limited to: proper siting of the well pad to minimize impacts, the immediate seeding of disturbed areas after construction, proper storage and redistribution of topsoil, reshaping cut and fill slopes, seeding with specified seed mix within the first available growing season after disturbance, deep ripping (>18 inches on 2 foot centers), fencing reclaimed areas to protect from livestock use, and the use of riprap, slash or other erosion control structures to help control sediment loss.

The 4 Reclamation Categories defined on Page I-8 of Appendix I (6/98 GSFO’s Draft Supplemental EIS for Oil & Gas Leasing Development) will be used in gauging the progress of reclamation monitoring.

Seed Mix Application Practices

A specified seed mix designed to meet interim reclamation standards while providing forage and browse for wintering elk and deer using a mixture of shrub, grass and forb species shall be applied. The following seed mix and rates will be used on all disturbed surfaces, including pipelines unless otherwise noted in the specific APD:

<u>Species of Seed</u>	<u>Variety</u>	<u>Application Rate (lbs/acre)</u>
Winterfat		1.0
4-wing Saltbush	Rincon	2.0
Shadscale		2.0
Western wheatgrass	Arriba	3.0
Bluebunch wheatgrass	P7	3.0
Indian ricegrass	Paloma	2.0
<u>Galleta</u>	Viva	<u>1.0</u>
Total:		14.0 lbs. PLS/acre Total

The above rate of application is listed in pounds of pure live seed (PLS)/acre. The seed will be certified and there will be no primary or secondary noxious weeds in the seed mixture. The operator shall notify the Authorized Officer 24 hours prior to seeding and shall provide seed tags and evidence of certification of the seed mix to the Authorized Officer within 30 days of completion of the seed application.

Upon completion of backfilling, leveling, ripping to minimum 18 inch depth on 2 foot centers, and recontouring, the stockpiled topsoil will be evenly spread over the reclaimed areas(s). Prior to reseeding, all disturbed surfaces will be scarified and left with a rough surface. No depressions will be left that would trap water and form ponds.

The prepared seedbed will be seeded within 24 hours after completing dirt work unless a change is requested by the operator and approved by the Authorized Officer. Prepare the seedbed by contour cultivating 4-6 inches deep. **Drill seed ¼ to ½ inch deep** following the contour. In areas that cannot be drilled, broadcast seed at 1½ times the application rate and cover ¼ to ½ deep with a harrow or drag bar. All seeding will be conducted between September 1st and May 1st. If the seeding is unsuccessful, operator will be required to make subsequent seedings until the reclamation objectives identified in Appendix I. Surface Reclamation of the 6/98 GSFO’s Draft Supplemental EIS for Oil & Gas Leasing Development are met.

Erosion Control Practices

The cut and fill slopes will be protected against rilling and erosion with measures such as water bars, lateral furrows, or other measures approved by the Authorized Officer. Weed free straw bales, straw “wattles”, straw matting or a well-anchored fabric silt fence will be used on cuts and fill slopes to protect against soil erosion.

Topsoil Practices

During well pad, road and/or pipeline construction, topsoil will be stripped to a minimum depth of 6 inches and segregated from other subsurface material piles, ie. excess material from reserve pit construction. If topsoil is less than 6 inches, the top 6 inches of surface material will be stripped and piled.

Site Protection Practices

Reclaimed areas will be fenced to exclude livestock until seeded species have established. The Authorized Officer will approve the type of fencing. Fencing shall be to BLM standards

The operator will submit an annual reclamation report by December 31 to the Authorized Officer. The report will document compliance with all aspects of the reclamation objectives. The report will specify if the reclamation objectives are likely to be achieved and actions needed to meet these objectives.