

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

ENVIRONMENTAL ASSESSMENT

NUMBER: CO-140-2006-140 EA

CASEFILE NUMBER: Lease # COC-66918 (bottomhole)

PROJECT NAME: Proposal to Drill 7 Exploratory Wells from Proposed Private Surface (Hidden Creek West) Pad into USFS Lease #COC66918 in Section 23, Apply for BLM Road and Pipeline Rights-of-Way across 1200 feet of New Access Road in Section 15, and Complete Big Game Wildlife Habitat Treatments in Section 14 in Vicinity of Alkali Creek along Silt-Collbran Road. (Benefiting program, Fluid Minerals 1310)

LEGAL DESCRIPTION:

Hidden Creek West Federal 23-1
(Hidden Creek West Pad)

Surface location: T8S, R92W, Sec 14, SE $\frac{1}{4}$ SW $\frac{1}{4}$, 6th P.M.
Bottom Hole: T8S, R92W, Sec 23, NE $\frac{1}{4}$ NE $\frac{1}{4}$, 6th P.M.
Surface Owner: G. Phillips, J.B. Duff, et al.
Federal Lease: COC-66918 (bottomhole)

Hidden Creek West Federal 23-2
(Hidden Creek West Pad)

Surface location: T8S, R92W, Sec 14, SE $\frac{1}{4}$ SW $\frac{1}{4}$, 6th P.M.
Bottom Hole: T8S, R92W, Sec 23, NW $\frac{1}{4}$ NE $\frac{1}{4}$, 6th P.M.
Surface Owner: G. Phillips, J.B. Duff, et al.
Federal Lease: COC-66918 (bottomhole)

Hidden Creek West Federal 23-3
(Hidden Creek West Pad)

Surface location: T8S, R92W, Sec 14, SE $\frac{1}{4}$ SW $\frac{1}{4}$, 6th P.M.
Bottom Hole: T8S, R92W, Sec 23, NE $\frac{1}{4}$ NW $\frac{1}{4}$, 6th P.M.
Surface Owner: G. Phillips, J.B. Duff, et al.
Federal Lease: COC-66918 (bottomhole)

Hidden Creek West Federal 23-4
(Hidden Creek West Pad)

Surface location: T8S, R92W, Sec 14, SE $\frac{1}{4}$ SW $\frac{1}{4}$, 6th P.M.
Bottom Hole: T8S, R92W, Sec 23, NW $\frac{1}{4}$ NW $\frac{1}{4}$, 6th P.M.
Surface Owner: G. Phillips, J.B. Duff, et al.
Federal Lease: COC-66918 (bottomhole)

Hidden Creek West Federal 23-5
(Hidden Creek West Pad)

Surface location: T8S, R92W, Sec 14, SE $\frac{1}{4}$ SW $\frac{1}{4}$, 6th P.M.
Bottom Hole: T8S, R92W, Sec 23, SW $\frac{1}{4}$ NW $\frac{1}{4}$, 6th P.M.
Surface Owner: G. Phillips, J.B. Duff, et al.
Federal Lease: COC-66918 (bottomhole)

Hidden Creek West Federal 23-6
(Hidden Creek West Pad)

Surface location: T8S, R92W, Sec 14, SE $\frac{1}{4}$ SW $\frac{1}{4}$, 6th P.M.
Bottom Hole: T8S, R92W, Sec 23, SE $\frac{1}{4}$ NW $\frac{1}{4}$, 6th P.M.
Surface Owner: G. Phillips, J.B. Duff, et al.

Federal Lease: COC-66918 (bottomhole)

Hidden Creek West Federal 23-7
(Hidden Creek West Pad)

Surface location: T8S, R92W, Sec 14, SE $\frac{1}{4}$ SW $\frac{1}{4}$, 6th P.M.
Bottom Hole: T8S, R92W, Sec 23, SW $\frac{1}{4}$ NE $\frac{1}{4}$, 6th P.M.
Surface Owner: G. Phillips, J.B. Duff, et al.
Federal Lease: COC-66918 (bottomhole)

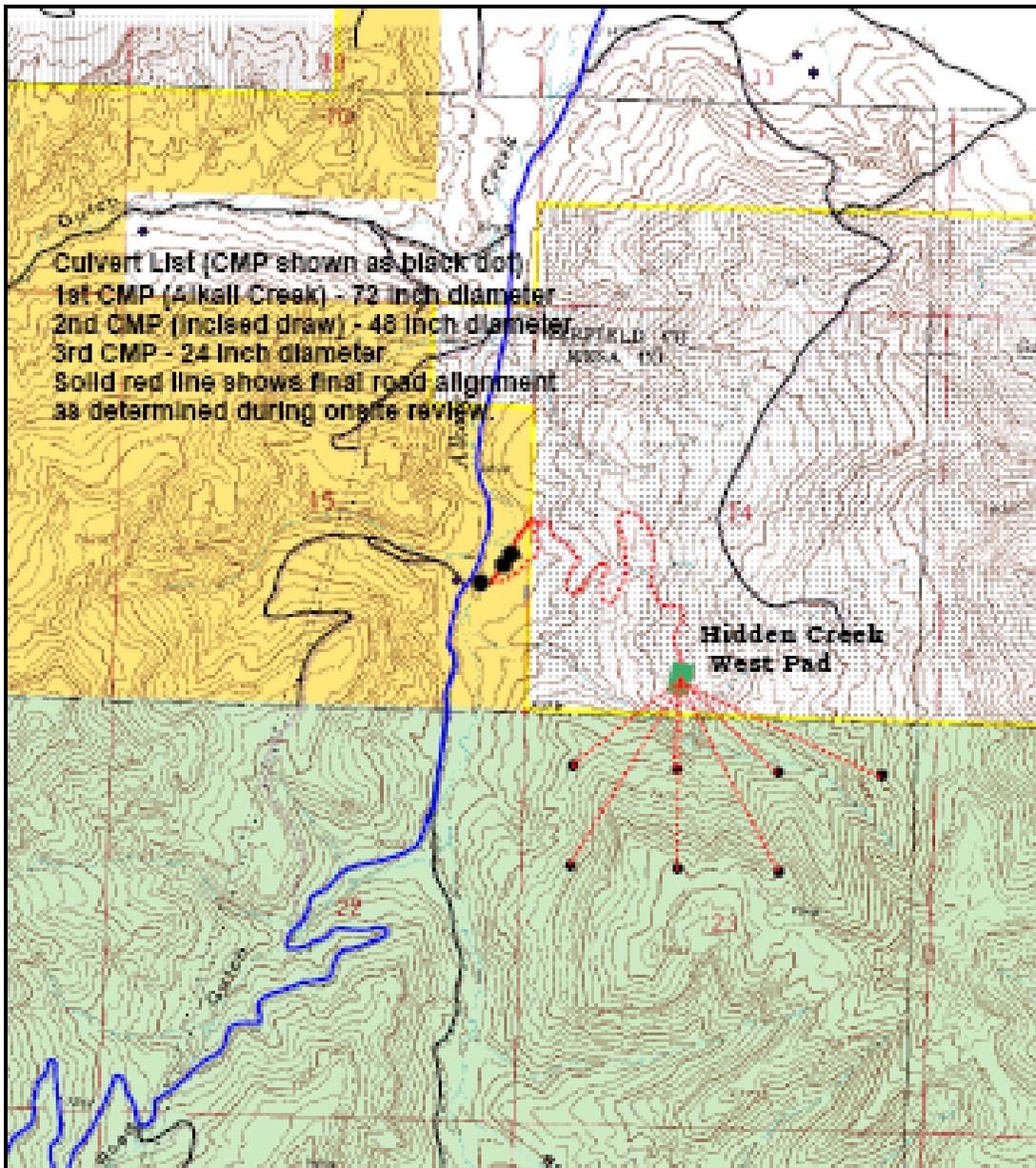
APPLICANT: Laramie Energy, LLC

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Proposed Action: The proposed action would allow the operator to directionally drill and develop seven federal natural gas wells from a proposed private well pad as listed above and shown on Project Map. The well pad, with a surface disturbance of 3.6 acres, would be situated in a mixed mountain shrub/pinyon-juniper vegetative community on west-facing slopes east of Alkali Creek. The well pad would be designed to accommodate the expected drill cuttings from 7 wells in reserve pit or engineered trench.

A new access road and gas gathering line (approx 1200 feet on BLM, 20 foot wide, crowned, ditched and graveled road, along with pipeline corridor not to exceed 35 additional feet) would be constructed via application for BLM rights-of-way in Section 15. A 6 foot diameter culvert would be installed in Alkali Creek during road construction to facilitate vehicle crossing of the ephemeral stream. Additional culverts (one 48" and one 24" diameter) would be installed in dry gulches on BLM. Furthermore, an additional 6900 feet of pad access road will be constructed on private surface in Section 14 – where federal minerals are leased to EnCana Oil & Gas (USA) Inc, not Laramie Energy. Access road grades across private surface portion in Section 14 would mimic road standards planned on BLM; road grades would not exceed 10% except for short pitches to maintain grade and minimize excavation impacts. Sideslopes along the proposed road would average less than 35%. Public motorized access would not be available to the project area as the access road crosses extensive private holdings in Section 14. Traffic control gate would be installed west of the creek crossing effectively stopping any public motorized travel beyond the proposed gate. The 8" diameter flowline serving the well pad would be buried in trench along portions of the access road with some planned deviations along a series of switchbacks to reduce overall length of the pipeline. Along the BLM right-of-way segment, the pipeline would be installed directly alongside the access road. BLM has recommended to the operator that the pipeline installation on private land in Section 14 be designed to avoid upslope alignments that would be readily apparent from CR 330E. The pipeline will connect with the approved, but yet to be constructed, Hells Gulch #2 pipeline upgrade planned along CR 330E.

Additional planned work in support of this project would include approximately 40 acres of mechanical treatment areas to specifically improve big game wildlife habitat. In past 10 years, about 39.5 acres were treated via bulldozing of oakbrush and sagebrush into piles and seeding the disturbed sites to shrub-grasslands with evidence of sagebrush regrowth. Rationale for implementing the habitat treatment is consideration by BLM and CDOW Managers of waiving the big game winter habitat timing limitation (TL) that would normally be placed on the 1200 feet of BLM road/pipeline right-of-way. Habitat treatments would be proposed, implemented and reviewed annually to determine their effectiveness in satisfying wildlife habitat improvements, and their potential applicability to waiving the big game winter TL. In order to implement the proposed 40+ acres of wildlife treatments prior to typical 12/1 shutdown for winter TL mitigation, resource surveys must be completed and the treatment work implemented prior to November 15th.

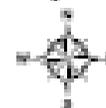


Laramie's Hidden Creek West Proposal: Drill 7 wells into USFS Lease (Sec 23), Apply for Road/Pipeline Right-of-Way across BLM (Sec 15), and Conduct Wildlife Habitat Treatments on Private Land (Sec 14)

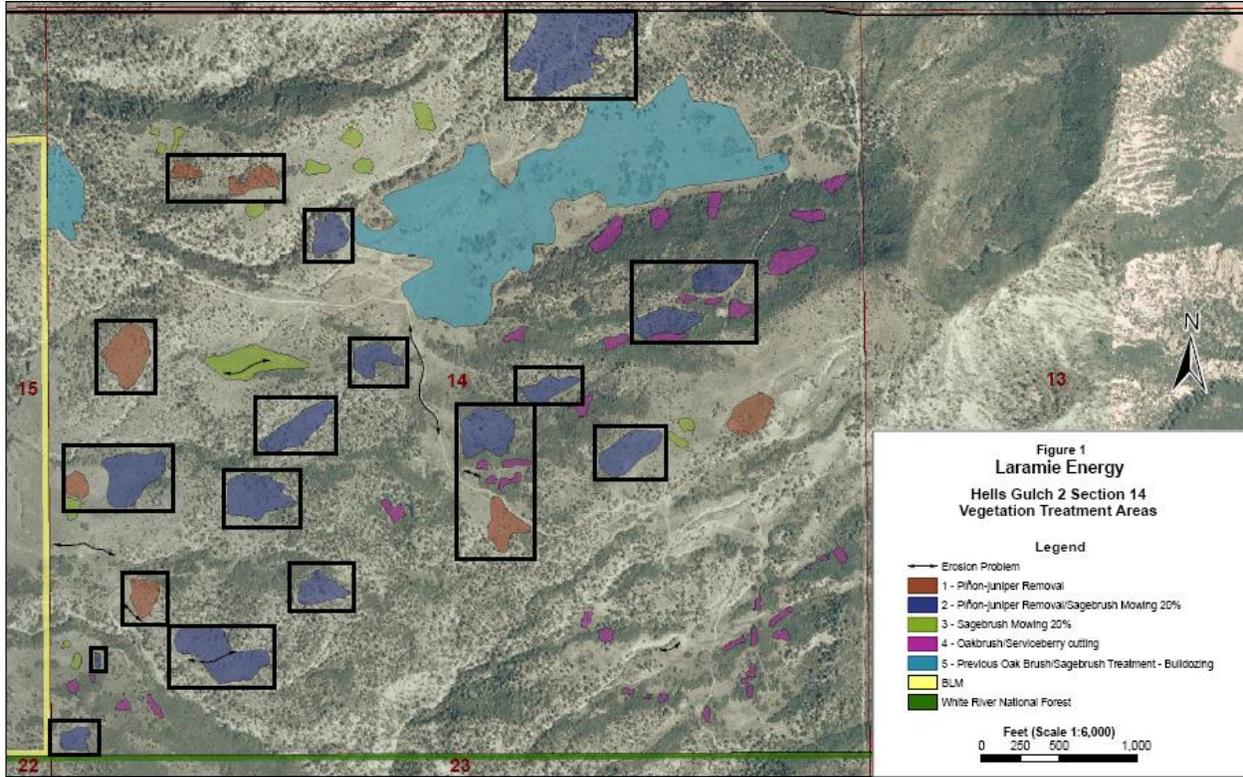
T8S R92W Sec 14, SE $\frac{1}{4}$ SW $\frac{1}{4}$ 6th P.M. (Pad Location)

Mesa County, CO

**Surface Owners: G.Phillips, J.Duff, et al. (Sec 14)
 BLM (Sec 15)**



Scale 1: 24,000
 8/16/06



The maximum cut planned for the well pad would be 35 feet at the northeast corner and maximum fill would be 35 feet along west side of pad. Disturbance area for the project would total 53.3 acres which includes 3.6 acres for pad, 9.7 acres for access road and pipeline, and 40 acres for the big game treatment areas. Overall disturbance on treatment areas would be minimized by use of rubber-tired equipment to complete the sagebrush mowing (mower head set 10" above ground level) and pinyon-juniper removal. Total surface disturbance on public land would amount to 1.5 acres.

The exploratory wells qualify as a GAP waiver as defined in Appendix B of the 1999 SEIS.

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 Applications for Permit to Drill (APD) include 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.

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.

Summary of Lease Stipulations (#COC-66918) which would apply to Proposed Action:

Since adjacent private surface is being used to construct and operate 7 federal wells and vast portion of access road and pipeline, there are no stipulations regarding the bottomhole lease under USFS that are enforceable. Furthermore, although the federal minerals underlying the private surface in Section 14 are leased, they are not leased to the operator, nor has the operator negotiated a farm-out agreement for the lease (#COC-57228). Operator is negotiating for surface damage agreement(s) with the Section 14 surface owners, seeking exclusive use of Section 14 for oil and gas development into Section 23.

NEED FOR THE ACTION: The purpose and need is to authorize the Applications 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. At this time the landscape addressed in this EA has not had a formal Land Health Assessment completed. As such, no formal determination on conformance with the Standards will be made until a formal Land Health Assessment and Determination Document is completed. The tentative schedule for Land Health Assessment on this landscape is 2010. At the time this landscape is scheduled, a Land Health Assessment will be completed addressing all of the Land Health Standards. Based on the findings of these assessments, the authorized officer may take appropriate action to achieve conformance with the standards or implement further mitigating measures on future actions to maintain or prevent a further decline in 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. 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 (Mesa 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_31-48, 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, and 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.

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 Draft Roan Plateau EIS mentioned above. However, it is anticipated that construction activities along with production activities associated with the proposed action would likely produce high levels of dust in dry conditions without dust abatement. To mitigate dust generated by these activities, the operator will 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.

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: Three Class III cultural resource inventories were completed for the proposed well location and the proposed access road/pipeline corridor (14506-6), 75+ acres of proposed big game wildlife habitat improvement blocks (14506-9), and access road and pipeline reroute (14506-8). These inventories identified no historic properties that were eligible for listing on the National Register of Historic Places. Formal consultation was not initiated with the Colorado State Historic Preservation Officer for these locations and a determination of “No Historic Properties Affected” was made based upon results of the inventories, the National Historic Preservation Act (16 U.S.C. 470f), BLM/SHPO National Programmatic Agreement (1997) and Colorado Protocol (1998).

Environmental Consequences:

- Mechanical vegetation treatments in the sagebrush mowing areas are not anticipated to effect any unidentified historic properties. For a similar project (CO-140-2003-0084-CER), the State Historic Preservation Officer concurred with the BLM Glenwood Springs Field Office in “There is no need to conduct Class III cultural resource inventory to determine the presence and effect to National Register Eligible properties by brush beating projects when the undertaking is limited to open sage parks, the expected resource type is open lithic scatters, the cutting deck height is set to 6 inches or more, and the equipment will be operated in dry soil conditions”.
- Pinon-juniper Removal/Sagebrush mowing treatment areas also are not anticipated to effect any unidentified historic properties as long as the mowing is limited to the sagebrush parks, the equipment is operated in dry soil conditions, the cutting deck height is 6 inches or greater, and the Pinon-juniper encroachment being removed are 6 inches in diameter or less, and cutting is to be done with a rubber tired "hydo-axe" type mower. Vegetation treatment where the Pinon-juniper trunk diameter is greater than 6 inches in diameter will require Class III cultural inventory.
- Pinon-juniper Removal treatment areas will require Class III cultural resource inventory.

- Oakbrush/Serviceberry treatment areas consist of dense stands with very poor ground visibility. Intensive pedestrian inventory would not be productive. A limited Class II inventory would be more practical, with the sampling area limited to openings in the Oakbrush/Serviceberry cutting areas with increased ground visibility. Oakbrush/Serviceberry cutting is to be done with a rubber tired "hydo-axe" type mower, is limited to operating in dry soil conditions, and with a cutting deck height of 6 inches or greater.

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 Laramie Energy 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:

- Laramie Energy, their subcontractors, and/or their personnel need to be made aware that “Any person who, without a permit, injures, destroys, excavates, appropriates or removes any historic or prehistoric ruin, artifact, object of antiquity, Native American remains, Native American cultural item or archaeological resources on public lands is subject to arrest and penalty of law. (16USC433, 16USC470, 18USC641, 18USC1170, and 18USC1361)
- 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.

FARMLANDS, PRIME AND UNIQUE

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

Affected Environment: The proposed action would not involve any prime or unique farmlands.

FLOODPLAINS, WETLANDS, RIPARIAN ZONES

Affected Environment: The proposed access road would result in three drainage crossings that would not affect floodplains, wetlands, or riparian vegetation. No developed floodplains, wetlands, or riparian vegetation reside within the project area. However, Coyote willow and Narrow leaf cottonwood were observed just upstream and downstream of the proposed crossing of Alkali Creek.

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

INVASIVE, NON-NATIVE SPECIES

Affected Environment: The pad lies within a mixed mountain shrub/pinyon-juniper vegetation type. The portion of the road and pipeline R.O.W. on BLM land starts in pinyon/juniper and continues through open sagebrush and mixed shrubs. There are a few musk and Canada thistle plants in the general vicinity of the road, but they will not be in the areas of construction. There is very little cheatgrass present on the road R.O.W. and the proposed pad. The wildlife habitat improvement will take place in mixed mountain shrub/pinyon-juniper communities. There is some cheatgrass present in these areas, but since ground disturbance is expected to be minimal, there should not be a large increase in cheat grass in these areas.

Environmental Consequences: Surface-disturbing activities provide a niche for the invasion and establishment of noxious and non-native species, particularly when these species are already present in the surrounding area. Because this area does not already have a large amount of weeds, extra efforts should be taken to ensure the area remains free of any new weed infestations.

Mitigations: In order to minimize the potential for invasion of cheat grass and other weeds, these steps will be taken:

- A BLM seed mix designed to meet interim reclamation standards using a mixture of native shrubs and grasses, and native or desirable non-native forbs is recommended for all disturbed areas; however, because the well pad and a large portion of the road and pipeline are located on private surface, the private landowner would ultimately determine the seed mix to be used for reclamation. The section of road and pipeline R.O.W. that occur on BLM land will be seeded using the BLM seed mix found in the Vegetation section below. The project proponent will adhere to the specified seed mix and will continue with reclamation activities, including additional reseeding if necessary, until interim reclamation objectives are achieved.
- The seed will be certified free of noxious weeds. All seed to be applied to public land must have a valid seed test, within one year of the acceptance date, from a seed analysis lab by a registered seed analyst (Association of Official Seed Analysts). The seed lab shall show no more than 0.5 percent by weight of “other weed” seeds; and the seed lot shall contain no “noxious, prohibited, or restricted weed” seeds according to the All States Noxious Test. Seed may contain up to 2.0 percent of “other crop” seed by weight which includes the seed of other agronomic crops and native plants; however, a lower percent of other crop seed is recommended. Seed tags shall be supplied to the Glenwood Springs BLM Energy Office Ecologist at least 14 days prior to the date of proposed seeding for acceptance. Seed which does not meet the above criteria shall not be applied to public lands.
- A Standard Condition of Approval is attached requiring the project proponent to monitor for the presence of any Colorado-listed noxious weeds at least once or twice annually during the

growing season until final reclamation of the pad is complete. The project proponent will promptly treat and control any noxious weeds. A Pesticide Use Proposal must be approved by BLM prior to the use of herbicides.

In regard to cheatgrass, if the area adjacent to the project site contains less than a 50% cover of cheat grass, interim reclamation will be considered acceptable when the cover of cheat grass on the project site does not exceed 5%. If the area adjacent to the project site contains more than a 50% cover of cheat grass, interim reclamation will be considered acceptable when the cover of cheat grass on the project site does not exceed 50%.

MIGRATORY BIRDS

Affected Environment: The access road, well pad, pipeline, and wildlife treatment areas are comprised primarily of mixed mountain shrub (oakbrush, sagebrush, snowberry, rabbitbrush, serviceberry, mountain mahogany), with a diverse and productive understory of grasses and forbs, and an overstory of larger pinyon and juniper trees. The proposed access road will cross three small drainages two of which are ephemeral and one (Alkali Creek) that contains willow and narrowleaf cottonwood. The project site and larger area provide cover, forage, and nesting habitat for a variety of migratory birds. A few species found on the U. S. Fish and Wildlife Service's Birds of Conservation Concern list (2002) may be present. Within the mixed shrub vegetation Virginia's warbler may exist. Within the pinyon-juniper woodlands the gray vireo, black-throated gray warbler, and pinyon jay may occur. Within the sagebrush vegetation the sage sparrow may be found. Numerous species could utilize the limited riparian habitat.

No raptor nests are known to occur in the immediate vicinity of the proposed well pad, road, pipeline, or wildlife treatment locations. However, red-tailed hawks 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, and wildlife treatments will be placed.

Environmental Consequences/Mitigation: The proposed action will result in the disturbance of a total of 53.3 acres which includes 3.6 acres for the well pad, 9.7 acres for the access road and pipeline, and 40 acres for the big game treatment areas. The access road, well pad, and pipeline construction will result in a loss of nesting, breeding, roosting, perching, and foraging habitat for migratory birds. Since all vegetation clearing is planned outside of the nesting and breeding season, limited direct impacts to migratory birds should result. The proposed activities will fragment habitat and reduce habitat patch size and connectivity which can negatively impact bird species that require large expanses of intact habitat. Human use will increase in the area which may displace some birds away from the area. In addition to the physical loss of habitat and fragmentation, it is likely that during all construction activities, individual birds will be displaced to adjacent habitats due to noise and human presence. Despite the impacts to individual birds, it is highly unlikely that birds would be impacted at the species or population level. The proposed habitat treatments will change habitat structure and composition. Where trees are removed via hydro-axe sagebrush dependent species will benefit as habitat is maintained. Birds that prefer pinyon-juniper woodlands will be slightly impacted as trees are removed. However, given the tree densities and sizes of invading trees, impacts should be minimal. Sagebrush mowing may have an initial and short-term (< 5 years) impact to sagebrush dependant birds but should help to maintain and improve sagebrush stand composition over time. 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 must be conservative and relegated to preventing bird contact with produced water and drilling and completion fluids that may

pose a problem (e.g., acute or chronic toxicity, compromised insulation). Raptors should not be negatively affected as upland foraging habitat is plentiful in the area.

Mitigation:

It will be the responsibility of the operator to comply with the Migratory Bird Treaty Act with respect to “take” of migratory bird species. As such, the operator is requested to 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 will be applied within 24 hours after completion activities have begun. All lethal and non-lethal events that involve migratory birds will be reported to the Natural Resource Specialist immediately upon their discovery.

NATIVE AMERICAN RELIGIOUS CONCERNS

Affected Environment: At present, no Native American concerns are known by the GSFO within the project area and none were identified during the inventory. The Ute tribes currently 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 Laramie Energy 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, yellow-billed cuckoo, razorback sucker, Colorado pikeminnow, bonytail chub, and humpback chub.

Specific to the project location, no federal or state listed species, or federal proposed or candidate species, or their habitat occur directly within the project area footprint. Plant surveys were conducted on June 23, 2006 by WestWater Engineering. The BLM Sensitive plant species, *Penstemon harringtonii*, is generally found in sagebrush and sagebrush/mixed mountain shrub habitats between 6,400 and 9,200 feet in elevation. According to WestWater Engineering, there was a small area of potentially suitable habitat for *P. harringtonii* along the proposed road and pipeline in sagebrush dominated shrubland; however, no plants with vegetative characteristics similar to *P. harringtonii* were observed.

Environmental Consequences/Mitigation:

Based on the lack of potential habitat or occurrence records for any special status species, the proposed action should have “**No Effect**” on any special status species or their habitats. In addition, no indirect or offsite impacts are anticipated.

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 if the COAs are implemented, 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 access road would cross the ephemeral Alkali Creek and two unnamed ephemeral tributaries. Proposed activities would occur within the Alkali Creek sub-watershed approximately 15,199 acres in size. The three drainages encountered in the project area range from slightly incised to very incised and contain bed and bank compositions that range from vertically stable to vertically unstable. Downstream of the proposed action area Alkali Creek is tributary to West Divide Creek. West Divide Creek along with East Divide Creek form Divide Creek which is tributary to the Colorado River just east of the Town of Silt.

The State of Colorado has developed *Stream Classifications and Water Quality Standards* (CDPHE, Water Quality Control Commission, Regulation No. 37) that identify beneficial uses of water and numeric standards used to determine allowable concentrations of water quality parameters. Alkali Creek and its tributaries are within the Lower Colorado River Basin segment 4a that includes all tributaries to the Colorado River from the confluence with the Roaring Fork River to a point immediately below the confluence with Parachute Creek.

This segment is classified aquatic life cold 2, recreation 2, water supply, and agriculture. Aquatic life cold class 2 refers to waters not capable of sustaining a wide variety of cold or warm water biota due to habitat, flows, or uncorrectable water quality conditions. Recreation class 2 refers to waters that are not suitable or intended to become suitable for primary contact recreation. The water supply class refers to waters suitable or intended to become suitable for potable water supplies. The agriculture class refers to waters that are suitable for irrigation or livestock use. Numeric standards include a comprehensive list of physical, biological, inorganic, and metal standards that have been established to protect the designated uses above. At this time there is no water quality data for Alkali Creek and its tributaries.

The State of Colorado has developed a *303(d) List of Water Quality Limited Segments Requiring TMDLS* (CDPHE, Water Quality Control Commission, Regulation No. 93) that identifies stream segments that are not currently meeting water quality standards with technology based controls alone. Alkali Creek and its tributaries are within the Lower Colorado River Basin segment COLCLC04a that includes tributaries to the Colorado River from the Roaring Fork River to Parachute Creek. This segment is listed as impaired due to Selenium and has been given medium priority by the State of Colorado.

The State of Colorado has developed a *Monitoring and Evaluation List* (CDPHE, Water Quality Control Commission, Regulation No. 94) that identifies water bodies suspected to have water quality problems. Alkali Creek and its tributaries are within the Lower Colorado River Basin segment COLCLC04a that

includes tributaries to the Colorado River from the Roaring Fork River to Parachute Creek. At this time the only water bodies listed within this segment are Mamm Creek and South Canyon Creek.

Environmental Consequences/Mitigation: Proposed activities would temporarily remove soil and vegetation resulting in an increase in erosion potential and offsite sedimentation. The proposed access road would result in three drainage crossings that would require adequately sized culverts designed to pass anticipated flows and debris. With measures to control runoff water in place, reestablishment of vegetation, and proper engineering of roads; the potential for sediment transport to Alkali Creek and its tributaries would be minimized. The following mitigation measures will be implemented to protect surface water.

- The operator will consult with the State of Colorado Water Quality Control Division regarding stormwater discharge permits prior to commencing construction activities. All construction activities that disturb one acre or greater require a stormwater discharge permit.
- The operator will consult with the US Army Corps of Engineers to obtain approval prior to discharging fill material into waters of the US in accordance with Section 404 of the Clean Water Act.
- Roads will be crowned, ditched, surfaced, and constructed to BLM Gold Book standards.
- Culverts will be installed during no flow or low flow conditions at drainage crossings and will be required to pass a 25-year or greater storm event. The 25-year storm event for the proposed action area is approximately 1.6 inches of precipitation in 6 hours.
- Well pads will be constructed to BLM Gold Book standards. Fill slopes will be seeded to minimize erosion and protected with silt fences to prevent sediment from leaving the site.
- An engineered frac pit would be constructed on the well pad after drilling is completed to store fracing material and other byproducts of production activities.

Affected Environment:

Groundwater:

The surface formation is the Wasatch Formation. The casing and cementing programs are adequate to protect downhole resources including fresh water. There is 1500 (MD) feet of surface casing with cement behind pipe and the top of cement for the production casing is 200 feet above the Mesaverde. According to the COGCC database, the closest water well is ~4200' to the northwest of the surface location. The nearest creek is Alkali Creek which is ~2600 feet to the west of the proposed location.

Environmental Consequences:

Groundwater:

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

Mitigation: No addition mitigation will be required.

Analysis on the Public Land Health Standard for water quality: The proposed action with associated mitigation would not likely prevent standard 5 for water quality from being met.

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: At this time there is no soil survey that covers the proposed action area. However, by extrapolating information from the general soil map from the *Soil Survey of Rifle Area, Colorado: Parts of Garfield and Mesa Counties* (USDA Soil Conservation Service, 1985) one can assume that the proposed activities will likely occur on the soil map unit Morval-Villa Grove. Following is a brief description of the two series that compose this map unit.

- Morval series are deep, well drained soils that are derived from basalt and sandstone parent material. These soils are found on mesas and valley sides at slopes ranging from 3 to 12 percent.
- Villa Grove series are deep, well drained soils that are derived from sandstone, shale, and basalt parent material. These soils are found on alluvial fans and mountainsides at slopes ranging from 15 to 30 percent.

Environmental Consequences/Mitigation: There would be some soil loss, loss of soil productivity, and an increase in sediment available for transport resulting from construction activities. Due to the close proximity of the proposed activities to the area drainages, the following mitigation measures will be implemented to minimize potential negative impacts associated with soil loss and transport.

- Reclamation measures such as contouring disturbed areas, roughing the soil surface, re-vegetating, and controlling runoff will minimize soil erosion and transport by stabilizing areas and capturing sediment.
- Due to the severe erosion potential of the area soils, the proposed access road will be crowned, ditched, graveled, and include drainage features in accordance with BLM Gold Book standards. In addition, the proposed well pad will be constructed to BLM Gold Book standards and include Best Management Practices (BMPs) designed to minimize erosion and offsite sedimentation.
- Roads should be periodically re-graveled when ruts exceed 6 inches in depth or as directed by the Authorized Officer. Initial gravel application will be a minimum lift of 4 inches.

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

VEGETATION (includes analysis on Standard 3)

Affected Environment: The pad lies within a mixed mountain shrub/pinyon-juniper vegetation type. Dominant shrubs consist of mountain big sagebrush, Gambel oak, Indian apple, serviceberry and snowberry. The portion of the road and pipeline R.O.W. on BLM land starts in pinyon/juniper and continues through open sagebrush and mixed shrubs. The dominant shrub in this area is Wyoming big sagebrush. Other shrubs found within the sage are the same as those listed within the mixed mountain shrub community. The areas proposed for mechanical vegetation treatment are predominantly located in mixed mountain shrub/pinyon-juniper vegetation types.

Environmental Consequences: The well pad would result in an estimated 3.6 acres of disturbance and a new access road and gathering pipeline would result in additional disturbance of 7,700' - the road will be 20' wide and the pipeline will be 35' wide. 1200' of road and pipeline will occur on BLM land. 40 acres are proposed for mechanical vegetation treatments. With implementation of reclamation practices

identified in the COA's, establishment of desirable herbaceous vegetation on the unused portions of the pad, pipeline and road could be restored within 2 to 3 years. The establishment of mature shrubs could take from 5 to 25 years. However, because of the periodic workovers and the potential for additional well bores to be drilled from this pad, it is likely that vegetation would remain in an early seral stage for the life of the wells. The vegetative areas receiving mechanical treatments should not need to be reseeded since ground disturbance will be minimal and the goal is to enhance vegetative growth rather than hinder it.

Mitigation: The following steps will be taken to successfully reclaim the disturbed area:

- A specified seed mix designed to meet interim reclamation standards using a mixture of native shrubs and grasses, and native or desirable non-native forbs will be used; however, because the well pad and a large portion of the road and pipeline are located on private surface, the private landowner would ultimately determine the seed mix to be used for reclamation. The section of road and pipeline R.O.W. that occur on BLM land will be seeded using the BLM seed mix provided below. The project proponent will adhere to the specified seed mix and will continue with reclamation activities, including additional reseeding if necessary, until interim reclamation objectives are achieved. Revegetating the area will help prevent noxious and invasive weed establishment, maintain big game winter range habitat and prevent erosion. The following seed mix and rates will be used on all disturbed surfaces within the project area:

| Species of Seed | Variety | Drilled Application Rate* (PLS lbs/acre) |
|--------------------------|----------------|---|
| Mountain big sagebrush | | 0.1 |
| Slender wheatgrass | San Luis | 1.9 |
| Bottlebrush squirreltail | | 2.0 |
| Mountain brome | Garnet | 4.4 |
| Prairie junegrass | | 0.1 |
| Scarlet globemallow | | 0.6 |
| TOTAL | | 9.1 PLS lbs/acre |

* In areas that cannot be drilled, broadcast seed at twice the application rate and cover ¼ to ½ deep with a harrow or drag bar.

- The pad will be fenced to exclude livestock grazing for the first two growing seasons or until the seeded species or native volunteer species become firmly established. The seeded species will be considered firmly established when at least 50% of the new plants are producing seed.

Analysis of the Public Land Health Standard for plant and animal communities (partial, see also Wildlife, Aquatic and Wildlife, Terrestrial): At this time the landscape addressed in this EA has not had a formal Land Health Assessment completed. As such, no formal determination on conformance with the Standards will be made until a formal Land Health Assessment and Determination Document is completed. The tentative schedule for Land Health Assessment on this landscape is 2010. The surface disturbance associated with the proposed action has the potential to encourage expansion and dominance of the site by cheatgrass and other noxious and invasive weeds. The Invasive, Non-native Species section includes provisions to revegetate the disturbances with native vegetation and to control noxious weeds. If successfully revegetated, the proposed action may result in a localized improvement in vegetative conditions by improving the density, frequency and composition of native plant species.

WILDLIFE, AQUATIC (includes analysis on Standard 3)

Affected Environment: The well pad is to be placed between two small ephemeral drainages that feed Alkali Creek. Alkali Creek eventually enters West Divide Creek and finally the Colorado River several miles to the north. No fish exist in Alkali Creek. The Colorado River contains a variety of fishes and aquatic insects.

Environmental Consequences/Mitigation:

It is likely that site-specific erosion potential will be increased due to clearing of vegetation to accommodate the new access road, well pad, and pipeline, as cuts and fills are high on the well pad and portions of the proposed access road. 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. The wildlife habitat treatments should have minimal soil impact and are not expected to increase soil loss or sedimentation.

Mitigation:

- Due to the severe erosion potential of the area soils, the proposed access road will be crowned, ditched, graveled, and include drainage features in accordance with BLM Gold Book standards. In addition, the proposed well pad will be constructed to BLM Gold Book standards and include Best Management Practices (BMPs) designed to minimize erosion and offsite sedimentation.
- Roads should be periodically re-graveled when ruts exceed 6 inches in depth or as directed by the Authorized Officer. Initial gravel application will be a minimum lift of 4 inches.

Analysis on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation and Wildlife, Terrestrial): A formal land health assessment has not been completed for the area. The proposed action by itself should have minimal impact to aquatic wildlife located offsite and downstream. However, given the amount of activity occurring throughout the Colorado River watershed, it is likely that sediment intolerant species such as trout and aquatic insects are being impacted as cumulative sediment amounts increase. The proposed action will slightly trend the watershed away from meeting Standard 3 for some select fish species and aquatic insects.

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

Affected Environment: The access road, well pad, pipeline, and wildlife treatment areas are comprised primarily of mixed mountain shrub (oakbrush, sagebrush, snowberry, rabbitbrush, serviceberry, mountain mahogany), with a diverse and productive understory of grasses and forbs, and an overstory of larger pinyon and juniper trees. The proposed access road will cross three small drainages two of which are ephemeral and one (Alkali Creek) that contains willow and narrowleaf cottonwood. The project area provides cover, forage, and nesting habitat for a variety of big game, small game, and non-game mammals, birds, and reptiles. The area encompassing the proposed access road is mapped as crucial big game winter range and is subject to the big game winter timing limitation stipulation restricting surface uses from December 1 through April 30.

Environmental Consequences/Mitigation: General impacts (short term, long term, and cumulative) to terrestrial wildlife were adequately addressed in the 1999 FSEIS. The action will result in direct and indirect losses of habitat, further fragment remaining habitats, and result in increased human use in the area. This will negatively impact some terrestrial wildlife species.

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:

Laramie Energy has proposed the 40-acres of wildlife habitat treatment as replacement mitigation in lieu of the big game winter timing limitation mitigation proposed for the access road right-of-way across BLM lands. While the proposed treatments in and of themselves would likely benefit big game animals, big game use of the treatment areas may be compromised due primarily to three factors. First, the treatment areas need to be accessible by big game. This may be compromised given the proposed road that would bisect Section 14. Vehicular use of this road during the fall and winter months may limit wildlife access from higher summer and transitional range down to the treatment areas located in mapped winter range. Second, the treatment areas are located on private land that is not under any type of conservation easement. Thus the private land may be subdivided in the future for residential homesites. The building of houses and associated infrastructure would compromise the utility of the treatment areas making them non-functional for their intended benefit. Third, the subsurface minerals underlying the proposed treatment areas in Section 14 are not owned by Laramie Energy or the private landowners. The mineral rights are owned by EnCana Inc. This is an issue in that EnCana has mineral and lease rights which could allow for them to commence natural gas development within Section 14. The surface activity could occur close to and/or on the proposed wildlife treatment areas rendering them non-functional for their intended benefit. In order for the treatment areas to be beneficial, they need to be kept free of noxious weeds, and made available and usable by big game for some length of time. The treatment areas would not provide benefit this first winter as the areas would need a minimum of one growing season to begin to produce increased forage. Improved and new water developments would need time to fill.

Analysis on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation and Wildlife, Aquatic): A formal land health assessment has not been completed for the area. The action will 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 could trend the watershed away from meeting Standard 3 for some 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.”*

This proposed well is exploratory. As such, 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: Public motorized travel is available along the Silt-Collbran Road (comprised of Garfield County Road 342 and Mesa County Road 330E). The proposed access road into Section 14 would be gated and locked to control motorized travel off the public lands at or near the east side of Alkali Creek. Surface owners in Section 14 have no desire to allow public access to their lands.

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 and occur in fall-winter, 2006.

GEOLOGY AND MINERALS

Affected Environment: The proposed action consists of seven wildcat wells from a single wellpad. These wells will penetrate the Wasatch, Williams Fork and Iles Formations. In this well conventional sands will be explored for possible economic gas recovery in the Mesaverde Group. The casing and cementing programs are adequate to protect downhole resources. The Cameo coals with more than six thousand feet of overburden can be found in the lower Williams Fork Formation. There mineable value is low. Nonetheless the above identified seams will be isolated by the proposed casing and cementing program.

Environmental Consequences: All coal seams and fresh water zones will be protected with casing and cement behind pipe.

Mitigation: No additional mitigation will be required.

NOISE:

Affected Environment: The proposed pad lies within ½ mile of CR 330E. Existing noise levels at the site are presently created by traffic from the County Road including an increase in past 2 years of gas development traffic.

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 County 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 surface formation is the Wasatch Formation which is a class 1 formation with areas known or likely to produce abundant scientifically important fossils vulnerable to surface-disturbing activities. The Paleocene Wasatch Formation may contain early horses, rare primates, rhinoceroses, birds, crocodiles, rodents, fish, turtles, fresh water clams, snails, and plants. There are paleontological sites identified near the proposed action. The proposed wellpad, access road, pipeline, and 40 acre mechanically treated area are located in an area with dense stands of pinion and juniper interspersed with thick stands of oakbrush and serviceberry with very poor ground visibility. The soil cover is relatively thick

Environmental Consequences/Mitigation: Constructing a new access road, pipeline, wellpad and mechanical treatment of 40+ acres could result in the uncovering or destruction of paleontological resources. The mechanically treatment will have a cutting deck height that is set a 6 inches or more above ground and the equipment will be operated in dry soil conditions. This will help prevent any destruction of potentially significant fossils in this area. Since the proposed action construction is located in an area with dense soil and vegetation cover, a paleontological survey will not be required for this potentially fossiliferous area prior to BLM authorization of the APDs. If any fossils are noticed at anytime, the AO must be notified so the resource can be recorded, evaluated, stabilized, or mitigated. The standard paleontology condition of approval shall be applied to the APDs.

RANGE MANAGEMENT:

Affected Environment: The proposed 1200 foot access road and pipeline in Section 15 would be located on public land on the Dry Hollow Reservoir Gulch Allotment # 08127. The table below summarizes the permitted grazing use on the allotments.

| Allotment | Permittee | Livestock Kind & NO. | Season of Use | % PL | AUMs |
|--------------------------------------|-----------------------------|----------------------|---------------|------|------|
| Dry Hollow & Reservoir Gulch # 08127 | Kelly Couey | Cattle 73 | 06/01 – 06/15 | 100 | 36 |
| | Marvelle Couey | Cattle 195 | 06/01 – 06/15 | 100 | 96 |
| | | Cattle 57 | 06/16 – 10/15 | 100 | 229 |
| | Record Ranch c/o Don Fulton | Cattle 140 | 06/01 – 06/15 | 100 | 69 |
| | Barry C. Shideler | Cattle 315 | 06/01 – 06/15 | 90 | 140 |
| | Ben Shideler | Cattle 315 | 06/01 – 06/15 | 100 | 141 |
| | Frank Starbuck | Cattle 10 | 06/01 – 06/30 | 100 | 10 |
| | Robert T. Wheeler | Cattle 90 | 06/01 – 06/15 | 100 | 44 |

Environmental Consequences: The total loss of forage to livestock resulting from the proposed construction would be < 1 AUM of forage. 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 development of the proposed 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. Installation of livestock/traffic control gate would occur at east side of Alkali Creek to help contain grazing livestock in their prospective pastures at proper times.

Since the BLM area east of CR 330E falls within a pasture of the Dry Hollow-Reservoir Gulch allotment, a steel frame gate (minimum 20 feet width) will be installed in new access road near the junction with CR 300E. Any range improvements damaged during construction of the proposed project will be repaired or replaced by the operator.

VISUAL RESOURCES

Affected Environment: The 1200 foot road and pipeline right-of-way would lie within an area classified as VRM Class II in the 1984 Glenwood Springs Resource Management Plan. The objective of Class II areas is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Furthermore, nearly all of the private lands in Section 14 would fall within the Class II VRM area. Visual resource management objectives do not apply to non-BLM lands, but visual concerns may be addressed on split estate where federal mineral occur. VRM classes shown for non-public lands are an indication of the visual values for those lands, and those values are only protected by landowner discretion.

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. The Key Observation Point used for this analysis is county road 3308 (Silt-Colbran road).

Environmental Consequences: The construction of the pipeline and road within the BLM right-of-way segment would create contrast in color, line, and texture by removing the mountain brush/sagebrush vegetation and exposing bare ground. However, the majority of the proposed road on BLM in Section 15 would be hidden from County road view particularly during the spring/summer/fall months when foliage is on trees and would not attract the attention of the casual observer. In addition, the viewing window is limited. The proposed action would conform to VRM Class II Objectives. However, portions of the road, pad and wildlife treatment area on private property will be noticeable as the road switchbacks up the mountain side. The most notable contrasts will result from the access road and from cut and fills on the pad. The viewing window will be longer as the road gains elevation. The location of the road and pad are preferred by the landowners. With the following mitigation the proposed action contrasts would be minimized on the private surface.

Mitigation:

The production facilities, including the metal containment ring, located on the pad in support of the proposed well would 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. The wildlife mitigation project should incorporate removing/treating vegetation in natural mosaic patterns and avoiding any linear appearances within the project area. The treatment area should repeat the appearance of a naturally burned area, leaving pockets of vegetation intermittently throughout the treatment area.

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 |
|-----------------------|-------------------|----------------------------------|---|
| 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 |
| Range Management | | | 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:

Ken Lies, Landman, Laramie Energy LLC
Wayne Bankert, Consulting Engineer, Laramie Energy LLC
Jim Grabowski, Land Surveyor, GeoSurv
Will Spence, Colorado Division of Wildlife

INTERDISCIPLINARY REVIEW:

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

| | | |
|------------------|---------------------------------|--|
| John Brogan | Archaeologist | Cultural Resources, Native American Religious Concerns |
| Tom Fresques | Wildlife Biologist | Terrestrial & Aquatic Wildlife, Special Status Wildlife Species |
| Beth Brenneman | Ecologist | Special Status Plants, Vegetation, Noxious Weeds |
| Fred Conrath | Geologist | Ground Water/Minerals |
| Harley Armstrong | Paleontologist | Paleontology |
| Marty O'Mara | Petroleum Engineer | Downhole Conditions of Approval |
| Kay Hopkins | Outdoor Recreation Planner | Visual Resources |
| Jeff O'Connell | Hydrologist | Air, Riparian, Surface Water, Soil |
| Isaac Pittman | Rangeland Management Specialist | Range |
| Carole Huey | Realty Specialist | Lands |

FONSI
CO-140-2006-140 EA

Proposal to Drill 7 Exploratory Wells from Proposed Private Surface (Hidden Creek West) Pad into USFS Lease #COC66918 in Section 23, Apply for BLM Road and Pipeline Rights-of-Way across 1200 feet of New Access Road in Section 15, and Complete Big Game Wildlife Habitat Treatments in Section 14 in Vicinity of Alkali Creek along Silt-Collbran Road

Directionally Drill the Hidden Creek West Federal 23-1, 23-2, 23-3, 23-4, 23-5, 23-6 & 23-7 wells (14-14 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 to directionally drill seven wells [Hidden Creek West Federal 23-1, 23-2, 23-3, 23-4, 23-5, 23-6 & 23-7] 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: SEP 19 2006

CONDITIONS OF APPROVAL
APPLICATION FOR PERMIT TO DRILL

Company/Operator: **Laramie Energy**

| Surface Hole Location: SESW Sec 14 T08S R92W | | | |
|---|-----------------|-----------------------------|--------------|
| Well Name | Well No. | Bottom Hole Location | Lease |
| Hidden Crk West Fed | 23-1 | NENE Sec 23 T08S, R92W | COC-66918 |
| Hidden Crk West Fed | 23-2 | NWNE Sec 23 T08S, R92W | COC-66918 |
| Hidden Crk West Fed | 23-3 | NENW Sec 23 T08S, R92W | COC-66918 |
| Hidden Crk West Fed | 23-4 | NWNW Sec 23 T08S, R92W | COC-66918 |
| Hidden Crk West Fed | 23-5 | SWNW Sec 23 T08S, R92W | COC-66918 |
| Hidden Crk West Fed | 23-6 | SENE Sec 23 T08S, R92W | COC-66918 |
| Hidden Crk West Fed | 23-7 | SWNE Sec 23 T08S, R92W | COC-66918 |

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 Energy field office at least 24 hours prior to spud.

Please contact **Steve Ficklin (970) 947-5213, or Jennifer Gallegos (970) 947-5220 of the Glenwood Springs Energy** 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

1. The TOC for the production casing needs to be at least 200’ above the top of the Mesa Verde formation either during the primary cement job or through remedial cementing. The TOC for each well must be a minimum depth of:

| <u>Well No.</u> | <u>Minimum TOC</u> | |
|-----------------|--------------------|------------|
| | <u>MD</u> | <u>TVD</u> |
| 23-1 | 3985’ | 3385’ |
| 23-2 | 3800’ | 3535’ |
| 23-3 | 3795’ | 3685’ |
| 23-4 | 4120’ | 3835’ |
| 23-5 | 4408’ | 3860’ |
| 23-6 | 4204’ | 3785’ |
| 23-7 | 4144’ | 3635’ |

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. Contact BLM upon encountering any usable water zones.
4. In addition to the Onshore Order No. 2 BOP testing requirements, for safety concerns, please test BOP to 250 psi for 5 minutes.
5. Open hole production logs shall be run from TD to the base of the surface casing in at least one well 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.

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, spend 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 pipeline risers, traffic control gates and metal containment rings surrounding the tank batteries is Shale Green (5Y 4/2) .

2. Mechanical wildlife habitat treatments as outlined in Laramie Energy's Habitat Improvement and Management Plan – Hells Gulch Pilot Project – Section 14 will be implemented and completed prior to November 15, 2006 in a manner that satisfies CDOW objectives. Failure to complete the proposed treatments prior to November 15th deadline will result in continued enforcement of the 5 month (12/1 – 4/30) big game winter habitat timing limitation on the BLM portion of the road/pipeline right-of-way. As noted in Item #12 of Laramie Energy's APD, "The analogy is to actively drill and complete the proposed wells on the Phillips Duff pad (aka Hidden Creek West pad) throughout the winter on 2006, allow the habitat improvement to recover over the spring and summer of 2007, and avoid any drilling or completion activities in the winter of 2007 in Section 14 to prevent disturbance to the wintering wildlife."

A written letter or email from Colorado Division of Wildlife submitted to BLM shortly after November 15, 2006 project completion date would serve as CDOW concurrence that habitat treatment was completed as designed, and that CDOW concurs with the temporary waiver of the 5 month winter timing limitation on the BLM road right-of-way segment in Section 15 for the 2006-2007 winter season.

3. Roads will be crowned, ditched, surfaced, and constructed to BLM Gold Book standards. Roads should be periodically re-graveled when ruts exceed 6 inches in depth or as directed by the Authorized Officer. Initial gravel application will be a minimum lift of 6 inches.

The operator will be required to construct the access road along the staked centerline alignment marked on-the-ground and construct the road with a maximum grade of 10%. The exterior limits of the proposed road and pipeline construction shall be flagged and/or staked on the ground as necessary to prevent disturbance outside of the right-of-way.

Culverts will be sized and installed at 3 locations on BLM described in Item #2 of 13 Point Surface Use Plan in APD package. The inlet and outlet sides of culverts will generally be riprapped with a well-graded mixture of rock sizes to prevent erosion or headcutting. Culverts will be installed during no flow or low flow conditions at drainage crossings and will be required to pass a 25-year or greater storm event. The 25-year storm event for the proposed action area is approximately 1.6 inches of precipitation in 6 hours.

Operator will be responsible for providing timely year-round road maintenance and cleanup on the access road. A regular schedule for maintenance will include, but not be limited to, blading, ditch and culvert cleaning, road surface replacement and dust abatement. The road will be crowned, ditched, and drained with culverts and/or water dips. The operator will install pipeline per specifications shown in APD package.

Since the BLM area east of CR 330E falls within a pasture of the Dry Hollow-Reservoir Gulch allotment, a steel frame gate (minimum 24 feet width) will be installed in new access road near the junction with CR 300E. The gate must be installed and operational prior to May 31, as the grazing season for this pasture runs from June 1 through June 30, Any range improvements damaged during construction of the proposed project will be repaired or replaced by the operator. Additionally, operator will also install a steel frame traffic control gate (minimum 24 feet width) at the second culvert location on BLM to keep public motorized travel off the adjacent private land.

4. Juniper trees, oakbrush and sagebrush within the construction limits would be removed and placed at the toe of fillslope in a windrow to help catch excavated material. Such woody material will be placed perpendicular to the slope (or placed cross-slope) to help retain soil, reduce soil erosion and reduce visual contrast of the cuts and fills. Clearing and grubbing debris shall not be placed or buried under any embankment sections except as described above. Any trees damaged outside the construction limits from rolling material or other construction activities would be removed or limbed, depending on the extent of damage.

The existing 2-track route running east from Mesa County Road 330E will be ripped and seeded with prescribed seed mix between CR 330E and Alkali Creek. A minimum of 2 waterbars will be installed across the reclaimed 2-track route to prevent erosion. Furthermore, trees and vegetation cleared for new road segment between CR 330E and Alkali Creek will be scattered along the reclaimed 2-track route to prevent any motorized travel along the reclaimed 2-track route.

To avoid pinon tree mortality created from the ongoing pinon ips beetle outbreak, any pinon trees disturbed during road, pad or pipeline construction work will be chipped after severed from stump or grubbed from ground, buried in toe of fillslopes (if feasible) or cut and removed from site within 24 hours to a Colorado State Forest Service-approved site.

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. The project proponent is required to monitor for the presence of any Colorado-listed noxious weeds at least once or twice annually during the growing season until final reclamation of the pad is complete. The project proponent will promptly treat and control any noxious weeds. A Pesticide Use Proposal must be approved by BLM prior to the use of herbicides.

7. The operator will consult with the State of Colorado Water Quality Control Division (contact Matt Czahor at: 303-692-3575 or matthew.czahor@state.co.us) regarding Stormwater Discharge Permits prior to commencing construction activities. All construction activities that disturb one acre or greater require a Stormwater Discharge Permit. Written documentation to the BLM Authorized Officer is required within 30 days of the APD approval date to indicate that appropriate permits have been obtained. Written documentation may be a copy of the Stormwater Discharge Permit or an official verification letter from the State Water Quality Control Division to the operator that includes the Permit Certification Number. For further information contact Jeff O'Connell, Hydrologist of the Glenwood Springs Energy Office at 970-947-5215 or Jeffrey_O'Connell@blm.gov. Appropriate documents may be sent via electronic mail, faxed (970-947-5267), or mailed to Jeff O'Connell at the Glenwood Springs Energy Office.

8. The operator will consult with the US Army Corps of Engineers (contact Sue Nall at: 970-243-1199 x16 or Susan.Nall@usace.army.mil) to obtain approval prior to discharging fill material into waters of the US in accordance with Section 404 of the Clean Water Act. Waters of the US are defined in 33 CFR Section 328.3. Written documentation to the BLM Authorized Officer is required within 45 days of the APD approval date to indicate that the US Army Corps of Engineers has been notified prior to construction or that 404 Permits have been obtained or are not required by the permitting agency. Written documentation may be a copy of the Pre-Construction Notification (PCN) Form or an official verification letter from the US Army Corps of Engineers to the operator stating that a permit has been issued or is not required for the activities in question. For further information contact Jeff O'Connell, Hydrologist of the Glenwood Springs Energy Office at 970-947-5215 or Jeffrey_O'Connell@blm.gov. Appropriate

documents may be sent via electronic mail, faxed (970-947-5267), or mailed to Jeff O'Connell at the Glenwood Springs Energy Office.

9. 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.

10. 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.

11. 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.

12. 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 native shrubs and grasses and native or desirable non-native forbs shall be applied; however, because the well pad and a large portion of the road and pipeline are located on private surface, the private landowner would ultimately determine the seed mix to be used for reclamation. The section of road and pipeline R.O.W. that occur on BLM land will be seeded using the BLM seed mix provided below. The project proponent will adhere to the specified seed mix and will continue with reclamation activities, including additional reseeding if necessary, until interim reclamation objectives are achieved. The following seed mix and rates will be used on all disturbed surfaces:

| Species of Seed | Variety | Drilled Application Rate* (PLS lbs/acre) |
|--------------------------|----------------|---|
| Mountain big sagebrush | | 0.1 |
| Slender wheatgrass | San Luis | 1.9 |
| Bottlebrush squirreltail | | 2.0 |
| Mountain brome | Garnet | 4.4 |
| Prairie junegrass | | 0.1 |
| Scarlet globemallow | | 0.6 |
| TOTAL | | 9.1 PLS lbs/acre |

* In areas that cannot be drilled, broadcast seed at 2 times the application rate and cover ¼ to ½ deep with a harrow or drag bar.

The above rate of application is listed in pounds of pure live seed (PLS)/acre. The seed will be certified free of noxious weeds. All seed to be applied to public land must have a valid seed test, within one year of the acceptance date, from a seed analysis lab by a registered seed analyst (Association of Official Seed Analysts). The seed lab shall show no more than 0.5 percent by weight of “other weed” seeds; and the seed lot shall contain no “noxious, prohibited, or restricted weed” seeds according to the All States Noxious Test. Seed may contain up to 2.0 percent of “other crop” seed by weight which includes 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 Glenwood Springs BLM Energy Office Ecologist at least 14 days prior to the date of proposed seeding for acceptance. Seed which does not meet the above criteria shall not be applied to public lands.

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. All seeding will be conducted after September 1 and prior to ground frost. Spring seeding will be done after the frost leaves the ground and no later than May 15th. 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. Topsoil pile will be seeded with sterile cover crop (ReGreen) or BLM specified seed mix identified herein within 48 hours of stripping the topsoil.

Site Protection Practices

The project area will be fenced to exclude livestock grazing for the first two growing seasons or until the seeded species or native volunteer species become firmly established. 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. 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 what additional actions were taken or are needed to meet these objectives.

TERMS AND CONDITIONS

General

As defined by 43 CFR § 1810, the Authorized Officer is the Glenwood Springs Field Office Manager or his/her designee.

No surface disturbing activities shall take place on the subject right-of-way until the associated APD is approved. The holder will adhere to special stipulations in the Surface Use Program of the approved APD, relevant to any right-of-way facilities.

The holder shall prepare a fire prevention and suppression plan, which shall be reviewed, modified and approved, as appropriate, by the Authorized Officer. The holder shall take into account such measures for prevention and suppression of fire on the right-of-way and other public land used or traversed by the holder in connection with operations of the right-of-way. Project personnel shall be instructed as to individual responsibility in implementation of the plan.

During construction, operation, maintenance, and termination of the right-of-way, during the period designated by the authorized officer, vehicles, gas-powered equipment, and flues shall be equipped with spark arrestors approved by the authorized officer.

During conditions of extreme fire danger, operations shall be limited or suspended in specific areas, or additional measures may be required by the authorized officer.

Bonds/Liability

The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2803.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from fire or soil movement (including landslides and slumps as well as wind and water-caused movement of particles) caused or substantially aggravated by any of the following within the right-of-way or permit area:

- (1) Activities of the holder, including but not limited to construction, operation, maintenance, and termination of the facility.
- (2) Activities of other parties including but not limited to:
 - (a) Land clearing and logging.
 - (b) Earth-disturbing and earth-moving work.
 - (c) Blasting.
 - (d) Vandalism and sabotage.

This section shall not impose strict liability for damage or injury resulting primarily from the negligent acts or omissions of the United States.

Pipelines

The holder shall inform the authorized officer within 48 hours of any accidents on federal lands that require reporting to the Department of Transportation as required by 49 CFR Part 195.

The holder is prohibited from discharging oil or other pollutants into or upon the navigable waters of the United States, adjoining shorelines, or the waters of the contiguous zone in violation of Section 311 of the Clean Water Act as amended, 33 U.S.C. 1321, and the regulations issued thereunder, or applicable laws of the State(s) of xx and regulations issued thereunder. Holder shall give immediate notice of any such discharge to the authorized officer and such other Federal and State officials as are required by law to be given such notice.

Prior to any discharge, hydrostatic testing water will be tested and processed, if necessary, to ensure that the water meets local, State or Federal water quality standards. Prior to discharge of hydrostatic testing water from the pipeline, the holder shall design and install a suitable energy dissipator at the outlets, and design and install suitable channel protection structures necessary to ensure that there will be no erosion or scouring of natural channels within the affected watershed as a result of such discharge. The holder will be held responsible for any erosion or scouring resulting from such discharge. Sandbags, rock, or other materials or objects installed shall be removed from the site upon completion of hydrostatic testing.

Constructions Plans and Access

Roads will be crowned, ditched, surfaced, and constructed to BLM Gold Book standards. Roads should be periodically re-graveled when ruts exceed 6 inches in depth or as directed by the Authorized Officer. Initial gravel application will be a minimum lift of 6 inches.

The holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the plan(s) of development which was (were) approved and made part of the grant on. Any relocation, additional construction, or use that is not in accord with the approved plan(s) of development, shall not be initiated without the prior written approval of the authorized officer. A copy of the complete right-of-way grant, including all stipulations and approved plan(s) of development, shall be made available on the right-of-way area during construction, operation, and termination. Noncompliance with the above will be grounds for an immediate temporary suspension of activities if it constitutes a threat to public health and safety or the environment.

The holder shall contact the authorized officer at least 2 days prior to the anticipated start of construction and/or any surface disturbing activities. The authorized officer may require and schedule a preconstruction conference with the holder prior to the holder's commencing construction and/or surface disturbing activities on the right-of-way. The holder and/or his representative shall attend this conference. The holder's contractor, or agents involved with construction and/or any surface disturbing activities associated with the right-of-way, shall also attend this conference to review the stipulations of the grant including the plans(s) of development.

The holder shall designate a representative(s) who shall have the authority to act upon and to implement instructions from the authorized officer. The holder's representative shall be available

for communication with the authorized officer within a reasonable time when construction or other surface disturbing activities are underway.

The authorized officer may suspend or terminate in whole, or in part, any notice to proceed which has been issued when, in his judgment, unforeseen conditions arise which result in the approved terms and conditions being inadequate to protect the public health and safety or to protect the environment. 3. Roads will be crowned, ditched, surfaced, and constructed to BLM Gold Book standards. Roads should be periodically re-graveled when ruts exceed 6 inches in depth or as directed by the Authorized Officer. Initial gravel application will be a minimum lift of 6 inches.

The operator will be required to construct the access road along the staked centerline alignment marked on-the-ground and construct the road with a maximum grade of 10%. The exterior limits of the proposed road and pipeline construction shall be flagged and/or staked on the ground as necessary to prevent disturbance outside of the right-of-way.

Culverts will be sized and installed at 3 locations on BLM described in Item #2 of 13 Point Surface Use Plan in APD package. The inlet and outlet sides of culverts will generally be riprapped with a well-graded mixture of rock sizes to prevent erosion or headcutting. Culverts will be installed during no flow or low flow conditions at drainage crossings and will be required to pass a 25-year or greater storm event. The 25-year storm event for the proposed action area is approximately 1.6 inches of precipitation in 6 hours.

Operator will be responsible for providing timely year-round road maintenance and cleanup on the access road. A regular schedule for maintenance will include, but not be limited to, blading, ditch and culvert cleaning, road surface replacement and dust abatement. The road will be crowned, ditched, and drained with culverts and/or water dips. The operator will install pipeline per specifications shown in APD package.

The operator will install a steel frame traffic control gate at the second culvert location on BLM. Gate and posts will be painted standard green.

No surface disturbing activities shall take place on the subject right-of-way until the associated APD is approved. The holder will adhere to special stipulations in the Surface Use Program of the approved APD, relevant to any right-of-way facilities.

Culverts will be installed during no flow or low flow conditions at drainage crossings and will be required to pass a 25-year or greater storm event. The 25-year storm event for the proposed action area is approximately 1.6 inches of precipitation in 6 hours.

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.

Except rights-of-way expressly authorizing a road after construction of the facility is completed, the holder shall not use the right-of-way as a road for purposes other than routine maintenance as determined necessary by the authorized officer in consultation with the holder.

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.

The paint color to be used on all surface facilities including pipeline risers, traffic control gates and metal containment rings surrounding the tank batteries is Shale Green (5Y 4/2) .

Staking

The holder shall place slope stakes, culvert location and grade stakes, and other construction control stakes as deemed necessary by the authorized officer to ensure construction in accordance with the plan of development. If stakes are disturbed, they shall be replaced before proceeding with construction.

The holder shall mark the exterior boundaries of the right-of-way with a stake and/or lath at **20** foot intervals. The intervals may be varied at the time of staking at the discretion of the authorized officer.

The tops of the stakes and/or laths will be painted and the laths flagged in a distinctive color as determined by the holder. The survey station numbers will be marked on the boundary stakes and/or laths at the entrance to and the exit from public land. Holder shall maintain all boundary stakes and/or laths in place until final cleanup and restoration is completed and approved by the authorized officer. The stakes and/or laths will then be removed at the direction of the authorized officer.

Culverts and lateral ditches shall be staked for location, skew, and elevation as directed by the Authorized Officer.

Clearing

Juniper trees, oakbrush and sagebrush within the construction limits would be removed and placed at the toe of fillslope in a windrow to help catch excavated material. Such woody material will be placed perpendicular to the slope (or placed cross-slope) to help retain soil, reduce soil erosion and reduce visual contrast of the cuts and fills. Clearing and grubbing debris shall not be placed or buried under any embankment sections except as described above. Any trees damaged outside the construction limits from rolling material or other construction activities would be removed or limbed, depending on the extent of damage.

To avoid pinon tree mortality created from the ongoing pinon ips beetle outbreak, any pinon trees disturbed during road, pad or pipeline construction work will be chipped after severed from stump or grubbed from ground, buried in toe of fillslopes (if feasible) or cut and removed from site within 24 hours to a Colorado State Forest Service-approved site.

Cultural/Pesticides/Weeds/Survey Monuments

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.

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.

Mechanical wildlife habitat treatments planned for fall, 2006 will be implemented and completed prior to November 15, 2006 in a manner that satisfies CDOW objectives. Failure to complete the proposed treatments prior to November 15th deadline will result in continued enforcement of the 5 month (12/1 – 4/30) big game winter habitat timing limitation on the BLM portion of the road/pipeline right-of-way. As noted in Item #12 of Laramie Energy's APD, "The analogy is to actively drill and complete the proposed wells on the Phillips Duff pad (aka Hidden Creek West pad) throughout the winter on 2006, allow the habitat improvement to recover over the spring and summer of 2007, and avoid any drilling or completion activities in the winter of 2007 in Section 14 to prevent disturbance to the wintering wildlife."

Use of pesticides shall comply with the applicable Federal and state laws. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of the Interior. Prior to the use of pesticides, the holder shall obtain from the authorized officer written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the authorized officer. Emergency use of pesticides shall be approved in writing by the authorized officer prior to such use.

The project proponent is required to monitor for the presence of any Colorado-listed noxious weeds at least once or twice annually during the growing season until final reclamation of the pad is complete. The project proponent will promptly treat and control any noxious weeds. A Pesticide Use Proposal must be approved by BLM prior to the use of herbicides.

Civil Rights/Corp of Engineers 404 Permits

The holder of this right-of-way grant or the holder's successor in interest shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d et seq.) and the regulations of the Secretary of Interior issued pursuant thereto.

The holder shall comply with the construction practices and mitigating measures established by 33 CFR 323.4, which sets forth the parameters of the "nationwide permit" required by Section 404 of the Clean Water Act. If the proposed action exceeds the parameters of the nationwide permit, the holder shall obtain an individual permit from the appropriate office of the Army Corps of Engineers and provide the authorized officer with a copy of same. Failure to comply with this requirement shall be cause for suspension or termination of this right-of-way grant.

The operator will consult with the State of Colorado Water Quality Control Division (contact Matt Czahor at: 303-692-3575 or matthew.czahor@state.co.us) regarding Stormwater Discharge Permits prior to commencing construction activities. All construction activities that disturb one acre or greater require a Stormwater Discharge Permit. Written documentation to the BLM Authorized Officer is required within 30 days of the APD approval date to indicate that appropriate permits have been obtained. Written documentation may be a copy of the Stormwater Discharge Permit or an official verification letter from the State Water Quality Control Division to the operator that includes the Permit Certification Number. For further information contact Jeff O'Connell, Hydrologist of the Glenwood Springs Energy Office at 970-947-5215 or Jeffrey_O'Connell@blm.gov. Appropriate documents may be sent via electronic mail, faxed (970-947-5267), or mailed to Jeff O'Connell at the Glenwood Springs Energy Office.

The operator will consult with the US Army Corps of Engineers (contact Sue Nall at: 970-243-1199 x16 or Susan.Nall@usace.army.mil) to obtain approval prior to discharging fill material into waters of the US in accordance with Section 404 of the Clean Water Act. Waters of the US are defined in 33 CFR Section 328.3. Written documentation to the BLM Authorized Officer is required within 45 days of the APD approval date to indicate that the US Army Corps of Engineers has been notified prior to construction or that 404 Permits have been obtained or are not required by the permitting agency. Written documentation may be a copy of the Pre-Construction Notification (PCN) Form or an official verification letter from the US Army Corps of Engineers to the operator stating that a permit has been issued or is not required for the activities in question. For further information contact Jeff O'Connell, Hydrologist of the Glenwood Springs Energy Office at 970-947-5215 or Jeffrey_O'Connell@blm.gov. Appropriate documents may be sent via electronic mail, faxed (970-947-5267), or mailed to Jeff O'Connell at the Glenwood Springs Energy Office.

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 native shrubs and grasses and native or desirable non-native forbs shall be applied; however, because the well pad and a large portion of the road and pipeline are located on private surface, the private landowner would ultimately determine the seed mix to be used for reclamation. The section of road and pipeline R.O.W. that occur on BLM land will be seeded using the BLM seed mix provided below. The project proponent will adhere to the specified seed mix and will continue with reclamation activities, including additional reseeding if necessary, until interim reclamation objectives are achieved. The following seed mix and rates will be used on all disturbed surfaces:

| <u>Species of Seed</u> | <u>Variety</u> | <u>Drilled Application Rate* (PLS lbs/acre)</u> |
|-------------------------------|-----------------------|--|
| Mountain big sagebrush | | 0.1 |
| Slender wheatgrass | San Luis | 1.9 |
| Bottlebrush squirreltail | | 2.0 |
| Mountain brome | Garnet | 4.4 |
| Prairie junegrass | | 0.1 |
| Scarlet globemallow | | 0.6 |
| TOTAL | | 9.1 PLS lbs/acre |

* In areas that cannot be drilled, broadcast seed at 2 times the application rate and cover ¼ to ½ deep with a harrow or drag bar.

The above rate of application is listed in pounds of pure live seed (PLS)/acre. The seed will be certified free of noxious weeds. All seed to be applied to public land must have a valid seed test, within one year of the acceptance date, from a seed analysis lab by a registered seed analyst (Association of Official Seed Analysts). The seed lab shall show no more than 0.5 percent by weight of “other weed” seeds; and the seed lot shall contain no “noxious, prohibited, or restricted weed” seeds according to the All States Noxious Test. Seed may contain up to 2.0 percent of “other crop” seed by weight which includes 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 Glenwood Springs BLM Energy Office Ecologist at least 14 days prior to the date of proposed seeding for acceptance. Seed which does not meet the above criteria shall not be applied to public lands.

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. All seeding will be conducted after September 1 and prior to ground frost. Spring seeding will be done after the frost leaves the ground and no later than May 15th. 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. Topsoil pile will be seeded with sterile cover crop (ReGreen) or BLM specified seed mix identified herein within 48 hours of stripping the topsoil.

Site Protection Practices

The project area will be fenced to exclude livestock grazing for the first two growing seasons or until the seeded species or native volunteer species become firmly established. 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. 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 what additional actions were taken or are needed to meet these objectives.

Hazardous Waste/Liability/Waste Disposal

Construction sites shall be maintained in a sanitary condition at all times; waste materials at those sites shall be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.

A litter policing program shall be implemented by the holder, and approved of in writing by the authorized officer, which covers all roads and sites associated with the right-of-way.

The holder(s) shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder(s) shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) with regard to any toxic substances

that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

LARAMIE ENERGY
HABITAT IMPROVEMENT AND MANAGEMENT PLAN
HELLS GULCH PILOT PROJECT-SECTION 14



Prepared by

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July 2006

INTRODUCTION

PROJECT DESCRIPTION AND LOCATION

Project name: Hells Gulch Habitat Improvement Project-Section 14

Survey date: The project area field surveyed was conducted from June 23 - June 29, 2006.

Name of project manager, agency and survey team: The field survey and habitat project plan was developed by WestWater Engineering at the request of Cordilleran Compliance Services, Inc., Grand Junction, CO.

Location of project: The project is located in T8S, R92W Section 14 (Figures 2 and 3). Section 14 is in Mesa County, Colorado. The northern border of the section is along the Mesa-Garfield County line. The White River National Forest borders section 14 on the south side (Section 23 and 24). Bureau of Land Management, Glenwood Springs Field Office, property border the western boundary (section 15). Private lands are found on the east and north side of section 14 (sections 11 and 13).

Type of project: The project is intended to enhance elk and mule deer habitat. The area is considered by the Colorado Division of Wildlife (CDOW) to be winter range for American elk and mule deer and lies within the overall range for these species. The field survey indicates that the entire section is occupied winter range for both ungulate species. However, deer and elk use this habitat as important transition range in the fall and spring range during migration periods.

Description of survey purpose: The survey was conducted to determine suitable areas where habitat improvement treatments could be implemented to enhance range conditions for elk and mule deer.

Type of survey being done:

1. Habitat condition,
2. Species of vegetation and distribution,
3. Soil conditions,
4. Big game distribution on the property.

Location of survey information: Survey information is at WestWater Engineering, Grand Junction, Colorado.

Site history: The areas main use has been for domestic livestock grazing. Recent use has been by cattle. Improvements to the area are limited to the development of stock ponds for livestock water. Two ponds appear to support permanent water; tiger salamanders were observed in one of these permanent ponds. These ponds support aquatic vegetation including cattails, rushes, sedges, and willows.

Vegetative Composition: (Percentage of each type; grasses, forbs, shrubs, trees). This preliminary survey information is not completed for this report.

Site Condition: (Stable, degrading, improving): Evidence of accelerated erosion includes gullying, high density of hillslope channels or rills, headcutting, pedestaling around shrubs and sediment deposition areas was noted. Vegetation for some species and habitat types is in a degraded condition including over-browsing by big game, even-aged, mature sagebrush stands, and poor herbaceous understory.

Seral stage by vegetative type:

1. Sagebrush is in a late seral stage, with most individual plants occurring in even-aged, mature stands. There does not appear to be any diseased sagebrush plants, however, some have been browsed extensively.
2. Piñon-Juniper woodlands are in various seral stages. The majority are in the mid to older age classes. Recruitment of young tree is occurring as sagebrush shrublands are being encroached upon.
3. Oak brush/Serviceberry shrublands are for the most part in a mature status, late seral stage. There is no sign of recent disturbance by fire and many trees are in the 15 – 20 ft height class.

Representative list of common vegetative species:

- | | |
|------------------------|--------------------------|
| 1. Oak brush | 18. Penstemon spp. |
| 2. Serviceberry | 19. Arrowleaf balsamroot |
| 3. Squawapple | 20. Onion |
| 4. Mountain mahogany | 21. Gumweed |
| 5. Snowberry | 22. Milkvetch |
| 6. Piñon pine | |
| 7. Utah juniper | |
| 8. Coyote willow | |
| 9. Whiplash willow | |
| 10. Sagebrush | |
| 11. Rabbitbrush | |
| 12. Crested wheatgrass | |
| 13. Western wheatgrass | |
| 14. Indian ricegrass | |
| 15. Mountain brome | |
| 16. Western yarrow | |
| 17. Rose | |

Previously treated area: Approximately 40 acres of mountain shrubs and sagebrush have been previously treated (Figure 1) in two separate areas. The habitat improvement method involved reduction of vegetation, most likely using tracked equipment such as a bulldozer. During this treatment, the vegetation was gathered into piles, which presently remain in the project area. It appears that this habitat treatment was accomplished within the last 10 years. In this project area, sagebrush regrowth is

occurring and it appears that the area was seeded as part of the reclamation program. These areas do not need further treatment at this time.

Soil types: The Garfield County generalized soils map lists the type as the Morval-Villa Grove. This soil is defined as deep, well-drained, moderately sloping to moderately steep soils on mesas, mountainsides and alluvial fans.

Soils appear to have a downward trend due to erosion. Bare soil is high, pedestaling is severe, and displacement of surface litter is very common. Herbaceous cover, which is best at holding soils in place, is low. The sagebrush community is in poor condition with high decadency and poor vigor. This is compounded by moderate to heavy use. Density may decline in the future as a result of dying and very low recruitment from young plants. The understory is sparse for a sagebrush community and will probably not improve without some type of mechanical treatment to thin the sagebrush population and restore some of the herbaceous understory.

Elevation: Elevations range from about 6,840 ft on the west side to about 7,900 ft along the east boundary. Generally, elevations increase from west to east.

Aspect: The prevailing direction of the property is to the west and southwest (Figure 9).

Gradient: Average slope is about 20%. The southern half of the section tends to have steeper slopes than the northern half section.

Precipitation level: Average annual precipitation ranges from 18 to 23 inches (http://waterknowledge.colostate.edu/prcp_map.htm).

Site description: (Wetland, riparian, riverine, upland, forested, mesa, steep canyon with vertical walls, shallow sloped canyon, vegetated walls, mixed terrain, closed or open canopy, isolated, close to roads, human activity area, etc).

Access to the property is from the west via Mesa County Road 330E, located in the northwest corner of the section. Mesa County Road 330E transitions into Garfield County Road 342 on the north side of the section as it enters Garfield County. There are no improved roads on the property, only two track trails that are open to ATVs or pickup trucks (Figure 1). The interior road provides access to the north half of the property and to the southeast quarter section. There is no road access into the southwest quarter section.

Section 14 is fenced on the north, east and south boundaries. The west side, which is adjacent to BLM lands, is not fenced. There are no interior fences on the property.

The habitat in the area is best described as upland vegetation and mid-elevational mountain terrain. The vegetation is dominated by mountain shrubs and piñon-juniper habitat. There are no forested areas and except for dense oak brush, the vegetation configuration is considered open. There are 3 main unnamed, intermittent drainages

that flow from east to west into Alkali Creek. Two of these drainages range from 20 to 50 ft deep relative to the surrounding terrain.

There are no permanent structures such as cabins on the property. Development consists of the construction of stock ponds for livestock grazing. One ditch has been constructed to provide water to stock ponds in the southwest quarter section. This ditch is in disrepair and likely does not carry water. There are no power transmission lines or pipelines on the property.

Sensitive issues: (Archaeological, special designation area, T & E or sensitive species, cultural, historical, social, economic or easement structures). No threatened, endangered or sensitive wildlife or plant species were found on the property during this survey.

Sensitive timing issues: Climate is the most important factor affecting the size and distribution of elk and mule deer herds in Colorado. Big Game winter ranges are essential habitat for big game animals. The CDOW defines winter range (NDIS) as that part of the overall range of a species where 90 percent of the individuals are located during the average five winters out of ten from the first heavy snowfall to spring green-up, or during a site specific period of winter as defined for each Data Analysis Unit (DAU). For herd management purposes, the CDOW divides the state into DAUs (data analysis units) that are again divided into GMUs (game management units). DAUs can be a single GMU or, most often, multiple GMUs.

Animal impact: The CDOW does not determine elk and deer populations on a section-by-section basis. The elk population in DAU E-14 (GMUs 41, 411, 42, 421, 52, 521) is approximately 10,500 animals and the deer population in DAU D-12 (GMUs 41, 42, 421) is in a range between 25,000 to 30,000 animals. A reasonable estimate of big game animals during the winter on the property ranges from 50-200 animals, including both deer and elk.

The number and timing of livestock grazing on the property is unknown. Livestock grazing is made difficult due to the lack of boundary fencing and interior fencing with which to manage livestock distribution. Many of the livestock watering ponds (earthen ponds) are in disrepair and not capable of retaining water. At several locations, the dams are breached and others are silted in and not capable of retaining water for very long.

Wildlife observations and potential: No elk or mule deer were observed during the survey. The area is not high-density summer range due to the elevation and the suitability of the habitat to attract and hold summering species. Elk and mule deer tend to summer at higher elevations in this area. However, it is likely that some elk and mule deer use the area on a year-round basis.

Potential for natural re-vegetation: The potential for natural re-vegetation is good. Numerous native plant species occur on the site and the distribution of noxious and invasive weeds is low. While the understory grasses have been grazed extensively, in

- Consider visual impacts.
- Consider terrain features and site conditions that can influence project success.

PROJECT SELECTION CRITERIA

The following criteria were considered when developing the habitat improvement plan for section 14.

- The project is designed to meet CDOW goals for ecosystem health and enhancing the capability of the habitat to sustain big game species on an annual basis.
- The treatment area was identified by field surveys (June 2006) as being in a degraded ecological condition including vegetation and soils.
- The area is not meeting the needs of the ecological community and likely is in decline because of previous or current management practices.
- The project has opportunity for multiple habitat improvement objectives. The potential exists for cost sharing and partnerships.
- Restoration work is consistent with existing CDOW, FS and BLM management goals and guidelines.
- No catastrophic natural events such as flooding, landslides and fires have affected the project area.
- The area is essential wildlife habitat and is in a state of vegetative decline.
- Consideration will be given for T & E or sensitive species, if found to be present.
- An improvement in vegetative species composition and age structure is desired to meet ecosystem restoration objectives.
- Watersheds can be improved to enhance water quality, quantity, retention and flow releases.
- Invasive, non-desirable plant species need to be controlled.
- Grazing impacts and needs are considered.

Vegetation Condition

Sagebrush

Mountain big sagebrush is the dominant shrub species on the property. Generally, sagebrush occurs as a single, mature age class with little diversity in the younger age classes (Figure 2). In some areas, where there is little herbaceous groundcover (understory grasses and forbs) the sagebrush appears to be stressed and in poor condition. This was mainly observed in the dryer, rocky, south facing slopes that typically supported poorer, thin soils in the south portion of the section. The amount of grass and forb understory varies across the property ranging from marginal cover to bare ground. Indications are that grazing management practices have not benefited understory species due to over use.

Winward (2004) emphasizes the need to have both a healthy, multi-aged overstory of sagebrush as well as a healthy, diverse herbaceous understory. Management practices that promote a healthy overstory/understory ratio will benefit domestic and wild

ungulates. A healthy sagebrush ecosystem promotes good soils and watershed conditions. Excessive amounts of bare ground are negatively affecting the hydrology in the project area.

In many areas, sagebrush is reaching maximum densities and canopy cover and, thus, the plants are becoming competitive with understory forbs and grasses. It is likely that dominance is accentuated by the current grazing management practices.

Piñon-juniper Woodlands

Piñon-juniper woodlands are encroaching into sagebrush shrublands across the property (Figure 3). Multi-age classes were noted during the survey. In some areas, sagebrush is being replaced by this species, thereby reducing the shrubland habitat. Piñon-juniper is also replacing other shrub species including serviceberry and squawapple. The piñon-juniper woodlands are in good condition with no apparent disease or insect problems causing mortality.

Because piñon-juniper out-competes forbs, grasses and shrubs for light and belowground resources (Vaitkus and Eddleman 1987, McPherson and Wright 1990), more bare ground is being exposed in the P-J woodlands than in the sagebrush shrublands.



Figure 2. An example of current sagebrush habitat conditions in section 14.

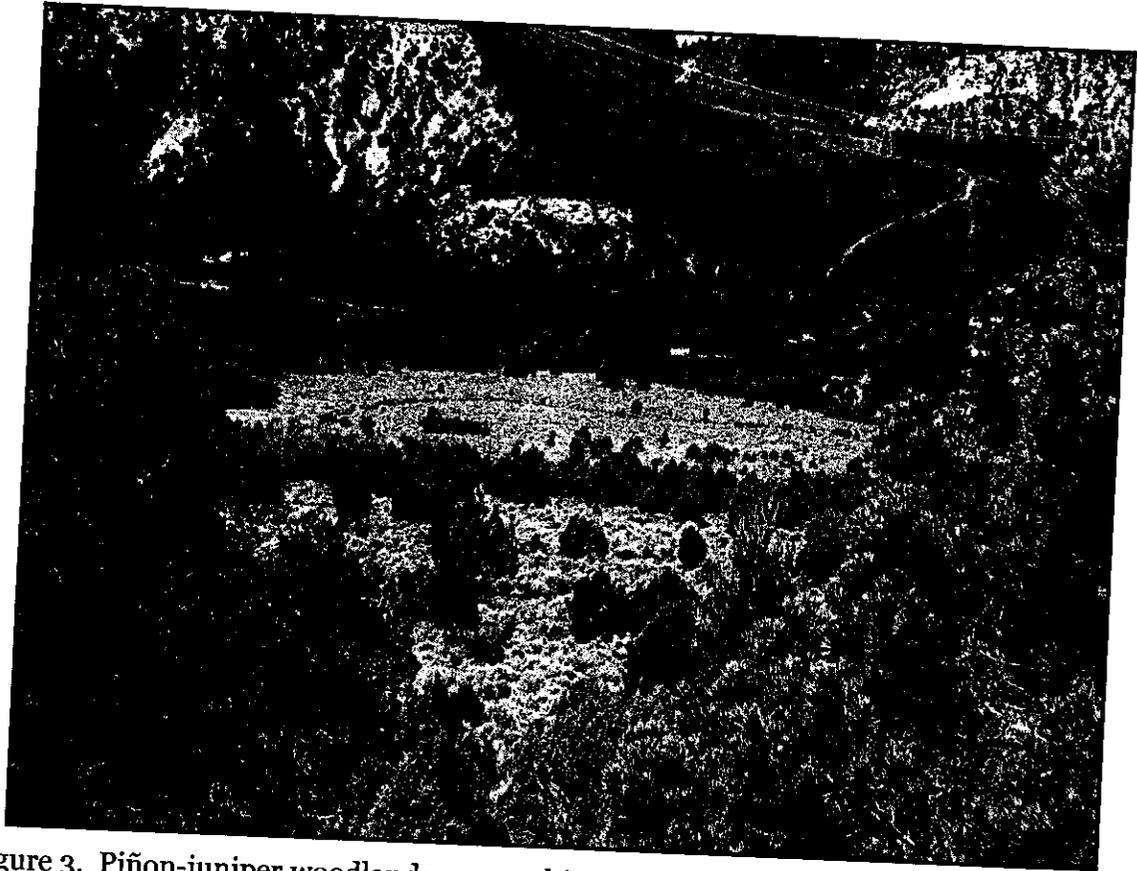


Figure 3. Piñon-juniper woodlands encroaching into sagebrush shrublands in the southwest quarter section of the property.

Oak brush, Serviceberry, Squawapple, Mountain Mahogany

Mountain shrub communities are spread across the property, mainly on north facing slopes where the exposure provides suitable moisture and temperature conditions for these species (Figure 5).

For the most part, this community is an even-aged, mature stand dominated by oak brush with an understory of serviceberry and squawapple. Much of the oak brush is 15 to 20 ft tall and very dense. Livestock and big game trails are common in some areas.



Figure 4. Example of a well-browsed serviceberry shrub on a south facing slope.

Big game use of both the serviceberry and squawapple is high throughout the section, particularly along the periphery of this habitat type and in areas where the plants are scattered in other vegetation types. Big game use in the dense habitat is limited by the height of the vegetation and density, which restricts movement and thus use.

Squawapple is used extensively as a browse species by both deer and elk. This species typically is not considered a major browse species and the CDOW ranks its palatability as only fair to poor (CDOW 1976). However, in this area, squawapple is well used and efforts should be made to preserve and enhance the status and distribution of this species.

Mountain mahogany is less common on the property, but still makes up a significant portion of the shrub community. Mountain mahogany was commonly observed on south facing slopes and along ridge tops above the oak brush vegetation.

There is no evidence of fire having affected the oak brush. There appears to be some small areas where drought or insects have killed portions of the upper canopy. In these areas, the lower portions of the shrubs are resprouting.

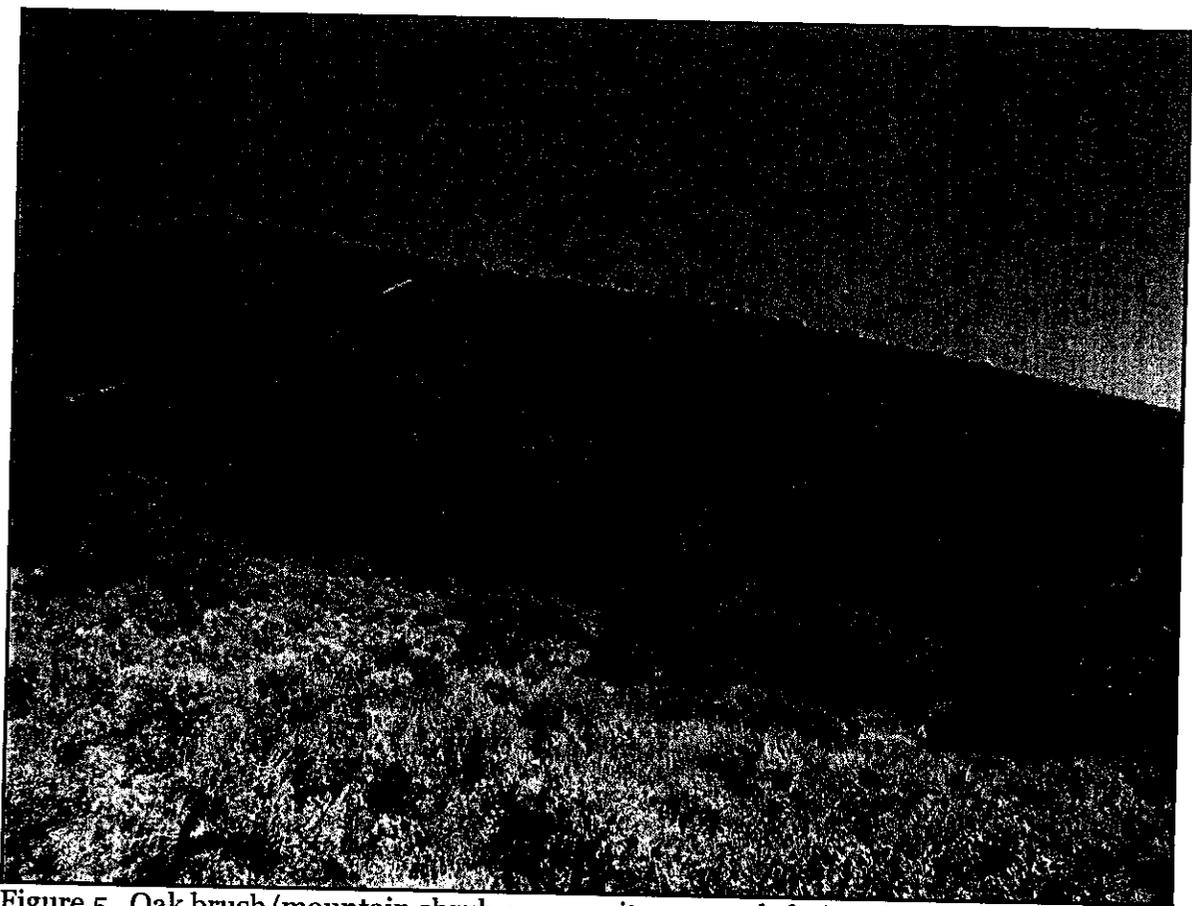


Figure 5. Oak brush/mountain shrub community on north facing slopes in the northeast quarter section of the property.

Soil Condition

There are numerous areas of active soil erosion where the soil loss appears to be having a negative impact on the plant communities. Evidence of soil erosion is most apparent in the steeper terrain and in areas of deeper soils (Figure 6). Indications of long-term erosion are reflected by steep, sharp gullies along with active head cutting. The lack of identified perennial understory vegetation establishment in gully and rill bottoms, lack of ground litter and the presence pedestaling around perennial plants such as sagebrush is additional indication of active erosion.



Figure 6. An example of headcutting and erosion found in the project area.

RESTORATION PROJECT DESIGN AND IMPLEMENTATION

Livestock Grazing

Livestock grazing should be planned to stimulate timely vegetative growth and to assist with managing noxious weeds. The goal is to sustain a landscape composed of plant community mosaics that represent successional stages and distribution patterns that are consistent with natural regeneration regimes. In addition, the objective of the livestock

management program is to improve the rangeland forage resources by managing toward a desired plant community. In addition, goals are to enhance a healthy rangeland vegetative composition and species diversity that is capable of supplying forage at a sustained yield to meet the demand for livestock grazing, if livestock grazing is a preferred land use. Intensive grazing management provides for adequate forage plant growth and/or regrowth opportunity, which is necessary to: 1) replenish the plants food reserves and 2) to produce sufficient seed to meet the reproduction needs necessary to maintain an ecological presence in the plant community.

The development of a healthy, highly productive herbaceous understory is important to big game species, since grasses and forbs can be an important part of winter and spring range diets for these species. Since mule deer are selective feeders, highly nutritious vegetation across a broad spectrum of browse and herbaceous species is highly important. American elk are capable of using a broader spectrum of forage and are well adapted to survive winter conditions typically found in the project area.

Controlling Livestock Numbers and Season of Use - Proper stocking rate, season and duration of use are essential to improvement of the herbaceous vegetation on the section. Livestock grazing should be planned to stimulate timely, vegetative growth and to assist with managing noxious weeds. The following techniques should be applied.

- Range readiness evaluations should be conducted to assure that the soil is not too wet and that sufficient forage growth has occurred.
- Utilization measurements to provide data for grazing use patterns and improved livestock distribution, allocation and assessments of rangeland health.
 1. Place a minimum of 10 exclosures across the section to help monitor production and use. Exclosures can be one square meter rebar frames constructed in a pyramid design covered with welded wire mesh.
 2. Establish photo points to document vegetation use by both livestock and big game species.
- Stock counts to assure that only permitted livestock enter the allotment.
- Livestock numbers and season of use may be adjusted annually to reflect current climatic conditions.
- Periodic field checks would be made to identify if adjustments in livestock number or season are needed.

Controlling Livestock Distribution - Livestock use within the project area is typically not uniform due to variations in topography, water availability, and vegetation type and condition. The following techniques should be used to achieve proper distribution and lessen the impact to sensitive areas or areas that are naturally overused include:

- Strategic placement of supplements, such as mineral blocks to aid in distribution of livestock.
- Maintenance and upgrade of existing livestock watering catchments to allow for better distribution of livestock during the grazing season.

- Annual maintenance of fencing to manage authorized livestock and keep unauthorized livestock from trespassing.
- Construct additional interior fencing to allow for seasonal pastures and rest rotation pastures. Interior fencing construction should follow designs that are suitable for big game crossing. At a minimum, fencing should allow for 2 pastures; potentially creating a low elevation and high elevation pastures.
- Addition of fencing along the boundary, particularly the west side where no current fencing exists.

Habitat Improvement Treatments

Sagebrush - Sagebrush habitat will be improved by projects designed to increase plant diversity and by developing a multi-aged sagebrush community. The following recommendations will help add diversity to sagebrush and increase herbaceous understory vegetation.

- The objective would be to treat approximately 20% of the sagebrush in this vegetation type during the first treatment phase. The goals would be to produce a multi-aged stand of sagebrush that would involve multiple treatments over a period of time. The time interval between treatments would depend on the regrowth of previous treatments.
- The sagebrush treatments will be completed in an irregular pattern, taking advantage of better soils and exposures that will provide for regrowth of the sagebrush. Often north facing exposures have better hydrologic conditions due to the accumulation of snow and decrease soils surface evaporation. In areas where sagebrush is limited by soils (too rocky) or on south facing exposures, care should be taken in these areas, since the response may be marginal.
- Projects should be timed to avoid impacts to wildlife and livestock.
- In sagebrush-dominated areas (Figure 1), mowing with a large rotary mower pulled behind an 80-100 hp tractor equipped with a power take-off. Mowing would be limited to sagebrush and other small shrubs in areas that were gentle terrain and with no large rocks. Best results would occur in sagebrush stands where good residual herbaceous vegetation is present. There is usually little ground disturbance due to the use of a wheeled tractor, which help reduce the incidence of noxious weed invasion, particularly in lower, dryer sites where cheatgrass is a concern. The height to which sagebrush can be cut ranges from ground level to 12-15 inches high. The degree of sagebrush mortality and regrowth can be controlled by the height above ground level the plants are cut. Cutting to less than 4 inches will probably result in 85-100% mortality and leaving greater than a 10 inch height may result in a kill of only 40-60%. The mobility of this tool facilitates the creation of an irregular and complex treatment design.
- For this project, it is recommended that a 40-60% sagebrush kill would maintain the sagebrush community, but increase the herbaceous ground cover.

Piñon-juniper – The encroachment of piñon-juniper into sagebrush shrublands is reducing the amount of herbaceous vegetation available to big game animals. As the P-J moves into these shrublands, sagebrush is also lost. Reduction in P-J would positively affect sagebrush and herbaceous understory species. Range research has indicated that interception of precipitation (catching precipitation in leaves and branches) can affect the hydrology of an area and possibly reduce moisture levels in a watershed. P-J tends to out compete sagebrush and eventually reduces the shrubland community. The following treatments are recommended for the property.

- Piñon-juniper should be removed for mapped areas presented in Figure 1. In designated mapped polygons, P-J removal should approach 100%. In some cases, large trees can be left for cover.
- Recommended treatment for this project is Hydro-Ax, which is a large articulated tractor with a 6-8 foot wide, hydraulically controlled mower/mulcher head mounted on the front. The machine has rubber, flotation-type tires that result in minimal ground disturbance. A single machine can treat up to 20 acres per day and can operate on slopes up to about 20%. The machine has the capability of being highly selective and can meander through a stand of trees removing selected trees, or patches to create the desired mosaic. The machine chops and mulches the plant material into the desired size, which can range from fist-size to 3-4 foot long sections or larger. Stump height can be controlled, and may vary from below ground level to any desired heights. It can operate on most ground surface conditions, including rocky areas. The Hydro-Ax head is lifted above the tree or shrub top and lowered quickly, usually completely chopping the plant in less than 15 seconds. The Hydro-Ax is used in most vegetative types including mountain shrub, and piñon-juniper stands with stem diameters up to 15-18 inches.
- An alternative treatment method would be with a roller chopper. The roller chopper consists of a large steel, water-filled drum fitted with 8-12 inch blades and pulled behind a bulldozer. The roller chopper cannot be lifted and thus treats anything in its path as it moves through the vegetation. Roller choppers are most valuable in dense stands of P-J and P-J mixed with sagebrush. It is frequently used in mature or mid-aged piñon-juniper and shrub stands, on slopes less than 15 percent with a limited amount of shelf-rock or large rocks or boulders. Roller chopping can be done anytime the soil is firm and dry enough to support the heavy equipment. Results are best when done in cold weather. A single roller chopper can treat 15-25 acres a day, depending on its width, and the type of vegetation and terrain involved.
- It is not recommended that reseeding be conducted in conjunction with habitat treatments. There appears to be sufficient grass and forbs available for natural reseeding if allowed to mature and go to seed.

Oak brush/Serviceberry – This habitat type is likely the most important to big game animals due to the amount of winter forage that is available. The distribution is more “patchy” in nature due to habitat preferences of these species. Species occurring in this habitat type also include mountain mahogany and squawapple in this area.

- Oak brush should be treated from mapped areas presented in Figure 1. In designated mapped polygons, removal should approach 100%. In some cases, large patches of trees can be left for cover.
- Recommended treatment for this project is Hydro-Ax, which is a large articulated tractor with a 6-8 foot wide, hydraulically controlled mower/mulcher head mounted on the front. The machine has rubber, flotation-type tires that result in minimal ground disturbance. A single machine can treat up to 20 acres per day and can operate on slopes up to about 20%. The machine has the capability of being highly selective and can meander through a stand of trees removing selected trees, or patches to create the desired mosaic. The machine chops and mulches the plant material into the desired size, which can range from fist-size to 3-4 foot long sections or larger. Stump height can be controlled, and may vary from below ground level to any desired heights. It can operate on most ground surface conditions, including rocky areas. The Hydro-Ax head is lifted above the tree or shrub top and lowered quickly, usually completely chopping the plant in less than 15 seconds. The Hydro-Ax is used in most vegetative types including mountain shrub and piñon-juniper stands with stem diameters up to 15-18 inches.
- An alternative treatment method would be with a roller chopper. The roller chopper consists of a large steel drum fitted with 8-12 inch blades and pulled behind a bulldozer. The roller chopper cannot be lifted and thus treats anything in its path as it moves through the vegetation. Roller chopping can be done anytime the soil is firm and dry enough to support the heavy equipment. Results are best when done in cold weather. A single roller chopper can treat 15-25 acres a day, depending on its width, and the type of vegetation and terrain involved.
- It is not recommended that seeding be conducted in conjunction with habitat treatments. There is sufficient grass and forbs available in this type for natural reseeding if allowed to mature and go to seed. If re-seeding the treatment is recommended, the seed mix should meet those stipulated by the FS and BLM. Native species are recommended and preferably those species grown in the Lower Colorado River Valley. Any sagebrush planting should locally collected species that are adapted to the area. Introduction of exotic sagebrush species is not recommended. Develop and utilize a native seed list, application rate and technique according to a vegetation management plan, which indicates site potential. The application rate, timing and technique should be developed through team planning and utilizing agency experts.

Noxious and Invasive Weed Management- Noxious weeds are introduced plant species with the ability to invade intact ecosystems and displace native species. Because of these abilities, the presence of noxious weeds reduces the ability for land managers to manage for biodiversity, grazing and wildlife habitat requirements. Identification and treatment of such plants is important prior to, during and following ground disturbing projects.

Noxious and Invasive Weed Species observed in the project area included Houndstongue, Musk thistle and cheatgrass.

Musk thistle (*Carduus nutans*): Scattered occurrences of musk thistle were found near stock ponds and scattered in various locations where moisture levels were higher.

Houndstongue (*Cynoglossum officinale*): Houndstongue is the dominant weed in the oak brush habitats on the property. Houndstongue is not currently a big problem, so the potential exists to get a handle on this species by conduction treatment programs. Infestations are not evenly distributed throughout this area. Houndstongue tends to prefer disturbed soils and this appears to be the case in section 14. However, it also grows in undisturbed areas where soil moisture is high such as in oak brush woodlands and on northern exposures. Houndstongue does not grow as well in undisturbed areas in serviceberry and oak brush habitat and on south facing slopes.

Cheatgrass: In addition to the above noxious weeds, observations noted general infestations of other invasive plant species, especially cheatgrass. Cheatgrass was infrequently encountered in areas that had been disturbed such along roads and around stock ponds. Cheatgrass invasion results in the same negative consequences of noxious weeds (e.g., elimination of desirable native plants, wildlife habitat fragmentation, increased soil erosion, loss of forage and loss of soil moisture) and greatly increases the risk of wildfire. Where feasible and desirable, chemical control of this species may be a desirable habitat improvement project.

It may be possible to minimize these potential consequences by implementing best management practices including:

- Conduct pre-construction field surveys each spring prior to identify existing noxious weed infestations within the project area.
- Use certified weed-free erosion control and reclamation materials (i.e., straw bales and seed mixes).

Prescribed Fire - Prescribed fire is not a preferred tool for use in Section 14 to accomplish vegetative objectives. Prescribed fire can be used to manage vegetation, enhance growth, reproduction, or vigor of certain species, manage fuel loading, and maintain vegetation community types that are fire dependent. When conditions are suitable it can be applied to fuels in their natural or modified state, under specified conditions, weather, and other variables, to allow the fire to achieve site-specific resource objectives. Risks of using fire include: 1) potential weed invasion, e.g., cheatgrass, dominating the site following burning, 2) getting larger than desired burned areas with straight, rather than undulating edge, because too little pre-burn vegetative diversity existed to be able to control the burn, 3) fire escape and associated risk to life and property, 4) ineffectiveness of treatment due to inadequate prescriptions and 5) Impact on watershed management and water issues.

Fire is currently not recommended on the project area due to the size and configuration of suitable sites. The larger areas of oak brush, which would be suitable for burning, are

adjacent to surrounding property, making the control of fire questionable. In addition, the largest stands need only thinning and not complete treatment. Fire could be used in some of the smaller patches of oak brush, but the time, effort and expense of conducting a controlled burn in these areas is not likely to be justified. They could more effectively be treated with mechanical equipment.

Sagebrush in the project area is not fire tolerant. Burning of small patches would be impractical. Any planned burn treatments would be applied in accordance with a well-designed burn plan.

Five types of areas are indicated on Figure 1. These area types and areas of each are given in the following table.

| Vegetation Treatment Area Description | Area (acres) |
|--|--------------|
| Piñon-juniper Removal | 6.8 |
| Piñon-juniper Removal/Sagebrush mowing | 25.5 |
| Sagebrush Mowing | 4.4 |
| Oakbrush/Serviceberry cutting | 6.5 |
| Total of Preliminarily Identified Mechanical Treatment Areas | 43.2 |
| Previous Oak Brush/Sagebrush Treatment – bulldozing | 39.5 |

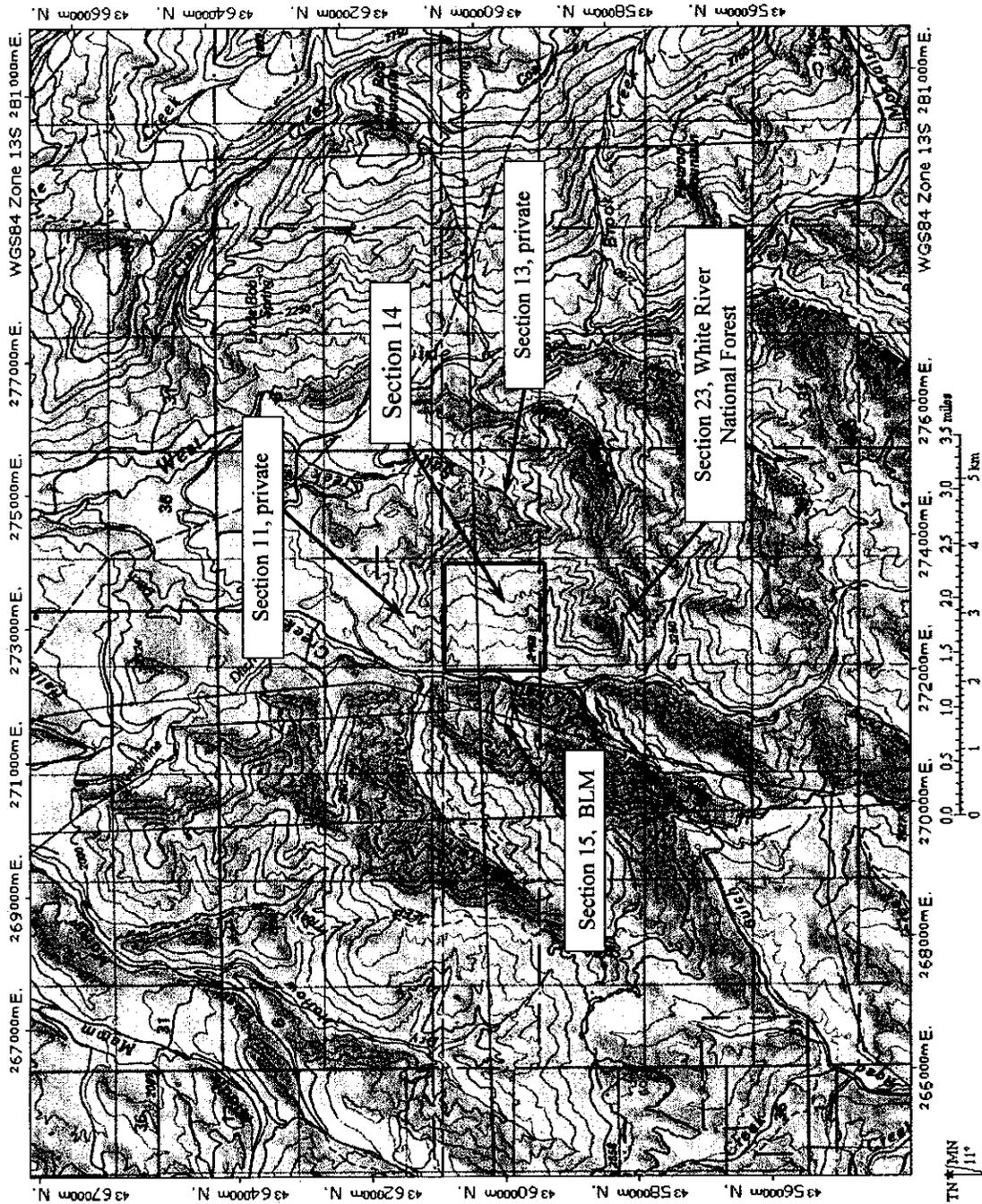


Figure 8. Landownership surrounding section 14.

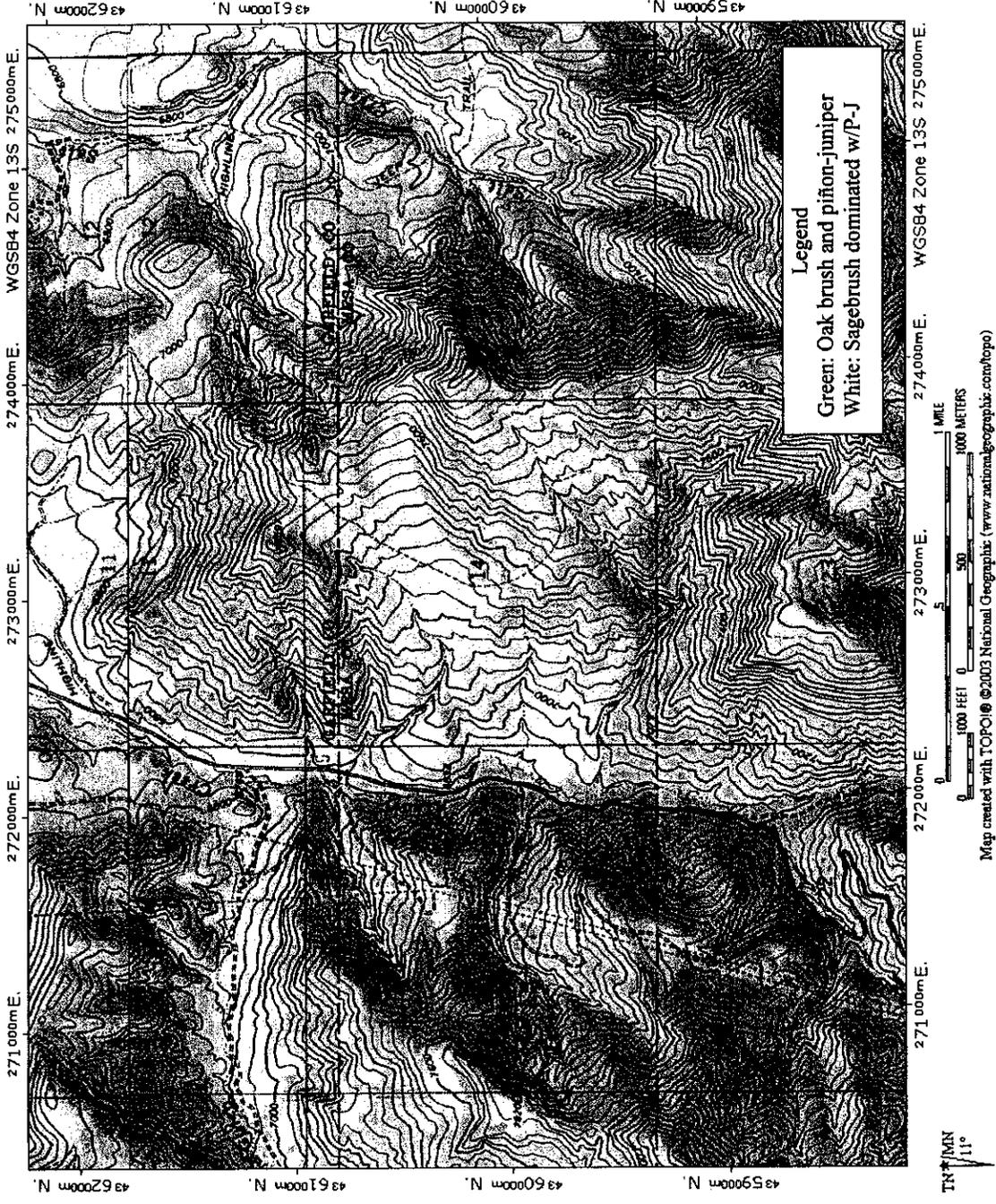
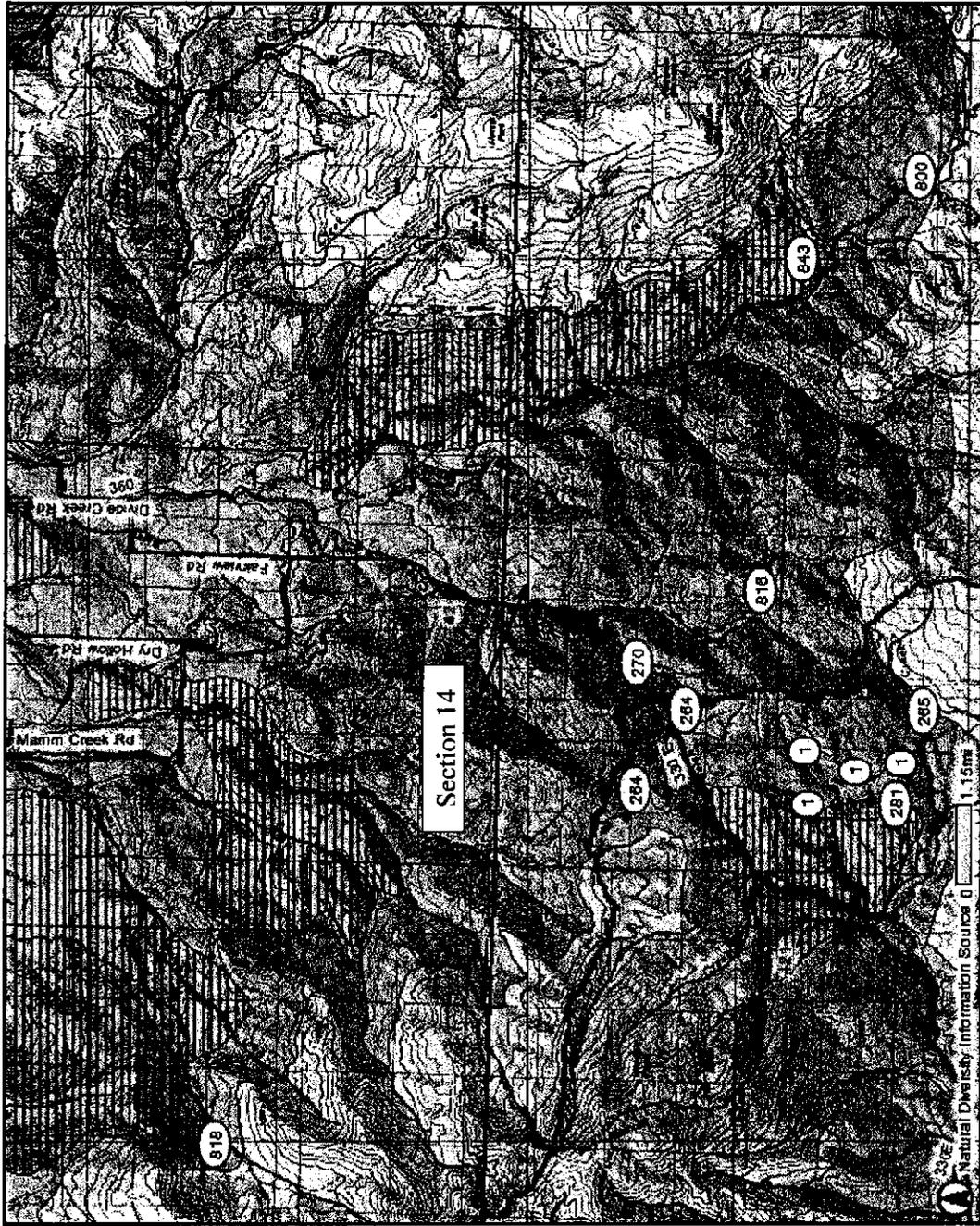


Figure 9. Topography and vegetation of section 14.



- American Elk Winter Concentration
- American Elk Winter Range
- Game Management Units
- County Boundary
- Cities
- Streams 100K
- Highways
 - Interstate
 - US Highway
 - State Highway
- Major Roads
- Forest Roads
- Paved
- Gravel
- Bladed
- 4WD
- City Boundaries
- State Wildlife Areas
- Lakes
- Perennial
- Intermittent

Figure 10. Elk winter range and winter concentration areas.

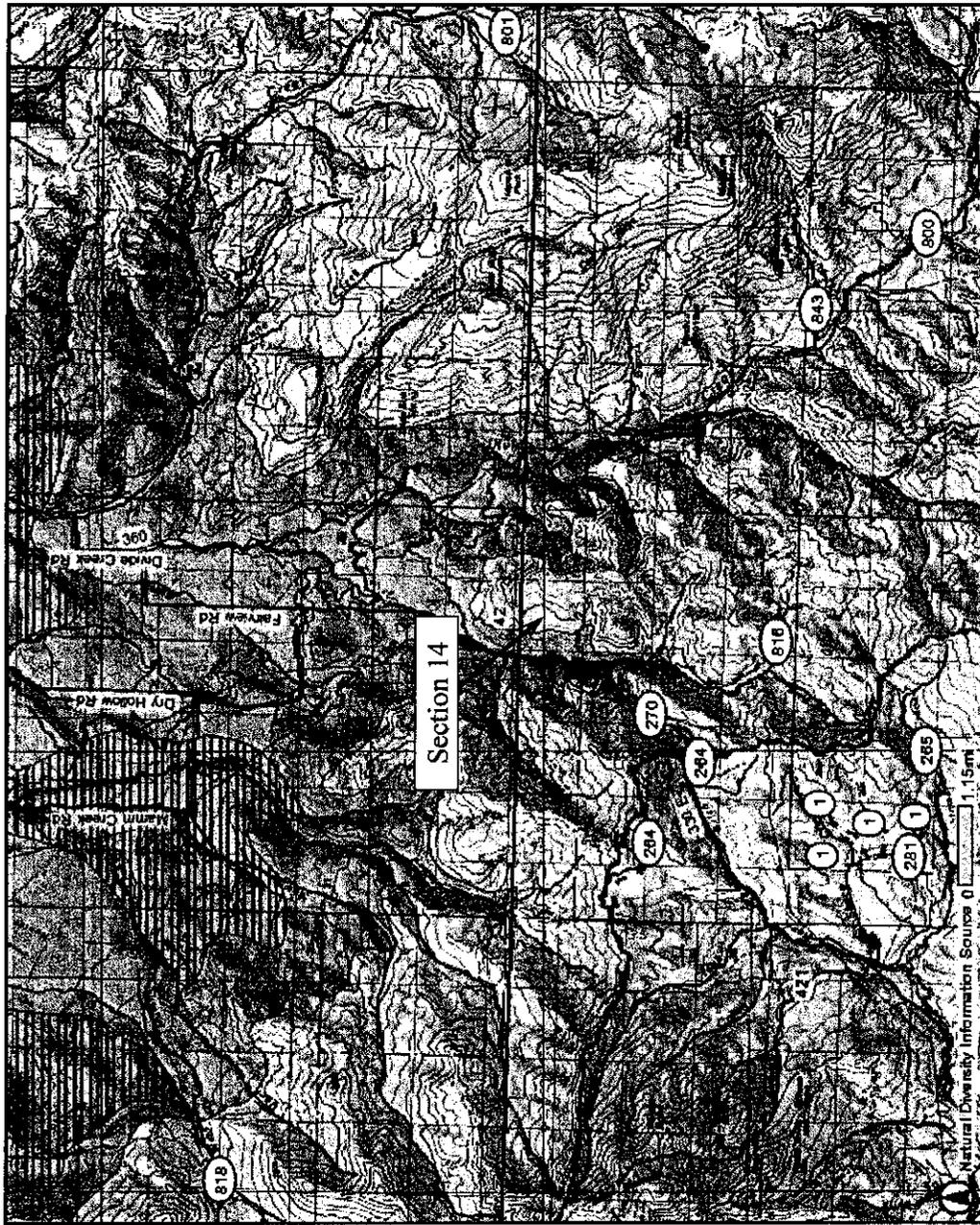


Figure 11. Mule deer winter range and winter concentration area in section 14.

REFERENCES (NOT COMPLETE)

Winward, Alma. 2004. Sagebrush of Colorado: taxonomy, distribution, ecology and management. Colorado Division of Wildlife, Denver, CO.