

ENVIRONMENTAL ASSESSMENT
BLM Office: Carlsbad Field Office

**Aplomado Falcon Management Area Habitat Restoration:
Solar Wildlife Water Systems**

EA# DOI-BLM-NM-P020-2009-0608-EA

1. INTRODUCTION

1.1 Purpose and Need

The purpose of the Aplomado Falcon Grasslands Restoration Project is to respond to the goals and objectives of the American Recovery and Reinvestment Act of 2009, Healthy Forests Restoration Act of 2003, the New Mexico Forest and Watershed Plan, the Northern Aplomado Falcon Recovery Plan of 1990, and the Carlsbad Resource Management Plan of 1988. The Aplomado Falcon Grassland Restoration Project addresses the above-mentioned plans by investment in forms of range and wildlife improvements that will restore rangeland ecosystems to more closely match their historical structure, function, diversity, and dynamics.

This restoration project is needed for range improvements that will specifically benefit the habitat for the northern aplomado falcon (*Falco femoralis septentrionalis*), listed as a federally endangered species on February 26, 1986 and now considered an experimental non-essential population in New Mexico. The proposed water development projects will help insure an adequate and stable water system on the allotment. Reconstructing old pipeline systems and/or adding new sources of permanent water will make these pastures more viable in the grazing system utilized on this allotment. Livestock distribution within these pastures will be improved and the areas of heavy utilization will be reduced. Because the permitted number of livestock will not be increased on the allotment, lower utilization of forage should eventually lead to increased vigor and reproduction of the vegetation, improved water and nutrient cycles, and a healthier range for both wildlife and livestock. In addition, wildlife specific watering sources will be created. The improved vegetative cover and composition, and additional water sources should lead to improved habitat for prey species of the northern aplomado falcon. This, in turn, increases the potential for northern aplomado falcons to occupy former ranges.

Water sources are the limiting factor for wildlife in some areas. The vast majority of the Carlsbad Field Office resource area lacks free-standing ground water sources. The BLM will install watering facilities to provide a dependable water source for all wildlife in the area. Manipulating livestock water sites to improve free-water availability at identified locations and encompassing the use of solar-powered pumps to off-site water developments will benefit wildlife as well as livestock.

1.2 Background

Brush encroachment in the Southwest has been most frequently implicated as the principal cause for the decline of northern aplomado falcon (falcon). In the late-1800s, large numbers of cattle were introduced onto Southwest grasslands occupied by the falcon. Recognition of historic overstocking led to reductions in cattle numbers by the late- 1930s, particularly after passage of the Taylor Grazing Act in 1934. At some Arizona and New Mexico sites where the falcon occurred, brush did not extensively invade into grasslands until after the 1940s.

In the years since listing occurred, survey efforts for the falcon have increased, consideration of and planning for falcon habitat requirements on public lands has improved, and new research, focused on falcon population ecology and habitat requirements, has been initiated. In 1992, two small, isolated populations of falcons were discovered in north-central Chihuahua, Mexico in close proximity to the U.S. border. Ongoing releases, monitoring, and research efforts at these sites are providing important insights into the desert grassland ecology of this species. In 2002, the New Mexico Cooperative Fish and Wildlife Research Unit at New Mexico State University characterized falcon habitat in the northern Chihuahuan Desert and created a habitat model for use by land management agencies (Young et al. 2002). Since then, the BLM has made a commitment to assist the U.S. Fish and Wildlife Service (FWS) in its goal to conserve and enhance suitable falcon habitat on the Chihuahua desert grasslands in New Mexico in order to produce a self-sustaining falcon population that is not dependent on continued releases.

This project is consistent with the goals of the Restore New Mexico initiative, which has treated approximately 19,000 acres in suitable aplomado falcon habitat. BLM estimates that about one-fourth of the 13.4 million acres of public land in New Mexico need some restoration activity to help return these lands to a healthier natural state. Key goals of Restore New Mexico include restoration of habitat for fish, wildlife and endangered species, reversal of the expansion of invasive plant species, reversal of habitat fragmentation from historic oil and gas development while ensuring responsible energy development, improving water quality and reduction of impacts from catastrophic wildfire.

1.3 Conformance to Land Use Plans

This EA is tiered to the Carlsbad Resource Area Management Plan, which has been reviewed, and the proposed action does not conflict with the Carlsbad Resource Area Management Plan or other known Land Use Planning documents. The proposed action and alternative are consistent with the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1700 et seq.); the Taylor Grazing Act of 1934 (43 U.S.C. 315 et seq.), as amended; the Clean Water Act (33 U.S.C. 1251 et seq), as amended; the Endangered Species Act (16 U.S.C. 1535 et seq.) as amended; The Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901 et seq.); Executive Order 11988, Floodplain Management; and Executive Order 11990, Protection of Wetlands.

The BLM, U. S. Forest Service (USFS) and New Mexico Department of Game and Fish (NMDGF) have set guidelines for establishing wildlife watering units in areas where permanent accessible water is a limiting factor for maximizing use of suitable habitat by wildlife. These actions conform to the Bureau's wildlife habitat management objective of placing special emphasis on the protection, maintenance, and enhancement of crucial habitats for big game and upland game birds.

1.4 Critical Elements

The critical elements subject to requirements specified in statute, regulation, or executive order listed below are either not present or not affected by the proposed action or alternative and will not be discussed in this EA.

Areas of Critical Environmental Concern
Hazardous/Solid Wastes

Prime/Unique Farmlands
Water Quality
Wild & Scenic Rivers
Wilderness
Wetlands/Riparian

1.5 Legal Requirements or considerations

The impact of the proposed action and alternatives to minority or low income populations or communities has been considered and no significant impact is anticipated. The project area has no river/stream reach as identified in the *2008-2010 STATE OF NEW MEXICO 303(d) LIST FOR ASSESSED RIVER/STREAM REACHES REQUIRING TOTAL MAXIMUM DAILY LOADS (TMDLs). FINAL RECORD OF DECISION (ROD) FOR RIVER/STREAM LISTINGS.*

2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Description of Proposed Action

The proposed action is to construct or replace fresh water livestock pipelines, troughs and storage tanks utilizing photo-voltaic power to pump water. All pipelines will be buried except when resource conditions warrant surface installation such as shallow, rocky soils. The routes will follow fencelines, existing two track roads and other existing disturbances where possible.

The BLM also proposes to install artificial structures such as dome-topped guzzlers at strategic locations extending from the livestock water pipelines to remote sites to provide water and cover for wildlife. These water developments will spur laterally to individual locations and water will be delivered via 1¼” plastic pipe.

High density crosslinked-polyethylene water storage units, with a built in drinker, float valve, and a 1,800 gallon storage capacity, will be placed in strategic locations within the project area. Construction design for each project will include installation of 1¼” plastic pipe, a storage unit, and approximately 1000 ft. of 3-strand barbed wire fence. The fence construction specifications will conform to Bureau standards for wildlife fences in mule deer/pronghorn range.

Additional livestock numbers will not be authorized based solely on implementation of this project. The livestock operator must demonstrate to the CFO range staff that any net increase in animal unit months (AUMs) is the direct result of the livestock operator’s ability to manage livestock in balance with watershed capacity to provide forage, maintain livestock distribution and proper grazing use to restore rangeland health prior to any increases in authorized grazing preference.

Mitigation Measures: To mitigate potential trapping of birds and small mammals in the water troughs, wildlife escape ramps will be installed. Fencing will be constructed around wildlife waters in a manner to discourage livestock, yet allow for wildlife to enter and exit freely. To ensure maximum water distribution for wildlife, water will be maintained in the troughs on a yearlong basis, unless the system is under repair. Pre-construction surveys in suitable habitat will be performed for Kuenzler’s hedgehog cactus. In the event that falcons or cacti are observed in the project area, CFO biologists will be consulted as to whether the project should be delayed, or potentially relocated to

avoid potential impacts on the species. When necessary, the appropriate level of consultation with the USFWS will occur. Pre-construction safety meetings will identify local hazards. Construction sites will be monitored on a regular basis to ensure noxious weeds are not present. In the event that invasive weeds encroach onto any project site, spot herbicide treatment will be implemented.

2.2 Description of Alternatives

Alternative A: No Action. Do not construct or replace fresh water livestock pipelines, troughs or storage tanks. Do not construct or install artificial structures such as dome-topped guzzlers at strategic locations extending from the livestock water pipelines to remote sites to provide water and cover for wildlife.

Mitigation: None

3. DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1 Description of the Project Area

The area analyzed by this environmental assessment is located in southeast New Mexico in northwest Eddy County and in the east side of the Chaves County 'bootheel'. The analysis area is bounded roughly on the north and west by NM Highway 24, on the east by US Highway 285, to the south by Eddy County Road 401, Eddy County Road 400, and Eddy County Road 12, and on the west by the Guadalupe Ranger District of the Lincoln National Forest, Bullis Road, and New Mexico Highway 13. The community of Hope lies in the middle of the analysis area and the community of Artesia is on the northeast perimeter of the analysis area. There are several county maintained roads in the analysis area with US Highway 285 and US Highway 82 being the primary access routes to the area. There are about 200,000 acres of public land managed by the CFO within the analysis area.

The affected environment of the area is generally discussed in the 1988 Carlsbad RMP. Refer to this plan and the following discussion for a complete description (Chapter 3). Only the resources potentially impacted by the proposed action are addressed in this document.

3.2 Vegetation

The analysis area is comprised of several vegetative communities including homogenous grasslands, shrub dominated grasslands, xeric riparian channels such as Rio Peñasco, Rocky Arroyo, Four-mile draw and desert shrub uplands.

The analysis area is primarily flat (generally less than 5% slope). The primary herbaceous species are tobosa grass, burro grass, vine mesquite, little and silver bluestem, and buffalo grass with a shrub component consisting of yucca species, littleleaf sumac, American tarbush and creosotebush.

The shrub dominated grasslands have been invaded by American tarbush and creosotebush. Their vegetative makeup is similar to the homogenous grasslands with the exception of the high shrub density. These areas have a shrub density that is greater than 600 plants per hectare.

The xeric riparian areas are ephemeral drainage channels dominated by woody species including little walnut, net-leaf hackberry, desert willow, brickillia, Apache plume and little-leaf sumac. The large dominant drainages run from west to east, draining into the Pecos River. Understory species include alkali sacaton, vine mesquite, Arizona cottontop, plains bristlegrass, tasajillo and a variety of forbs.

The dominant Ecological Sites within the Aplomado Falcon Management Area are Loamy (SD-3) and Shallow (SD-3) with a smaller percent of Swale (CP-4).

The historic Loamy ecological site plant community was dominated by grasses with shrubs and half-shrubs sparse and evenly distributed. Tobosagrass, black grama, and blue grama were the dominant species. There were a variety of perennial forbs and their production varied widely by season and by year. Globemallow, verbena, groundsels, croton and filaree were forbs commonly found. Fourwing saltbush and winterfat were two of the more palatable shrubs. Retrogression in this ecological site is characterized by the decrease in black grama and blue grama and an increase in burrograss. Continued reduction in grass cover and the resulting infiltration problems may eventually effect a change to a bare ground state, with very little or no remaining grass cover. Alternatively, creosotebush, American tarbush, or honey mesquite may expand or invade into the grassland.

Ground cover as a percent of the average percent of the surface area in the Loamy ecological site:

Grasses and forbs	15 to 30
Bare ground	40 to 50
Surface cobble and stone	1 to 5
Litter	25 to 30

Plant community composition in the Loamy ecological site by annual production:

Grass/grasslike	annual production in pounds per acre
Tobosagrass	278 -324
Burrograss	9 – 46
Black grama and blue grama	231 – 278
sideoats grama	28 – 46
Bush muhly and plains bristlegrass	46 – 93
Arizona cottontop	9 – 28
Threeawns, muhly species, and sand dropseed	46 – 93
Other grasses ¹	28 – 46
Tree/shrub/vine	
Fourwing saltbush, ephedra, winterfat	9 – 28
Broom snakeweed and javelinabush	9 – 28
Other shrubs ²	9 – 28
Forbs	
Globemallow, verbena, Threadleaf groundsel	9 – 46
wooly groundsel, croton	9 – 28
Cutleaf haplopappus, wooly paperflower	9 – 28
Texas filaree, Arizona filaree	9 – 28
Other forbs ³	9 – 28

¹Other grasses could include silver bluestem, cane bluestem, alkali sacaton, vine mesquite, Hall's panicum, hairy grama, mesa dropseed, spike dropseed and fluffgrass.

²Other shrubs could include yucca, mesquite, American tarbush, cholla, and creosote.

³Other forbs include desert holly, scorpionweed, bladderpod, flax, fleabane, Indianwheat, Indianblanket, groundcherry, deerstongue, and rayless goldenrod.

The potential natural plant community for the Loamy range site is:

Grasses and grasslike	
Tobosagrass	30 – 35
Burrograss	1 – 5
Black grama and blue grama	25 – 30
Sideoats grama	3 – 5
Bush muhly and plains bristlegrass	5 – 10
Arizona cottontop	1 – 5
Threeawns species, sanddropseed species, and muhly species	5 – 10
Other grasses ¹	3 – 5
Woody species (shrubs, half shrubs, and trees)	
Fourwing saltbush, winterfat, and ephedra species	1 – 3
Broom snakeweed and javelinabush	1 – 3
Other shrubs ²	1 – 3
Forbs	
Globemallow, verbena	1 – 5
Threadleaf groundsel, wooly groundsel, croton	1 – 3
Cutleaf haplopappus, wooly paperflower	1 – 3
Texas filaree, Arizona filaree	1 – 3
Other forbs ³	1 – 3

¹Other grasses could include silver bluestem, cane bluestem, alkali sacaton, vine mesquite, Hall's panicum, hairy grama, mesa dropseed, spike dropseed and fluffgrass.

²Other shrubs could include yucca, mesquite, American tarbush, cholla, and creosote.

³Other forbs include desert holly, scorpionweed, bladderpod, flax, fleabane, Indianwheat, Indianblanket, groundcherry, deerstongue, and rayless goldenrod.

Average ground cover in the Loamy Range Site is:

Grasses and forbs	15 – 30
Bare ground	40 – 50
Surface gravel and cobble	2 – 5
litter	25 – 30

The potential natural plant community for the Shallow range site is:

Grasses and grasslike	
Black grama	20 – 30
Sideoats grama	15 – 20
Blue grama and hairy grama	15 – 20
Bush muhly	5 – 10

Cane bluestem	3 – 5
Sand dropseed	5 – 10
Hairy tridens	3 – 5
Ear muhly	1 – 3
New Mexico feathergrass	1 – 3
Fluffgrass	1 – 3
Other grasses ¹	3 – 5
Woody species (shrubs, half shrubs, and trees)	
Littleleaf sumac	1 – 3
Broom snakeweed	1 – 3
Creosote	1 – 3
Range ratany	1 – 3
Javelinabush	1 – 3
American tarbush	1 – 3
Spiny allthorn	1 – 3
Mesquite	2 – 5
Catclaw mimosa	1 – 3
Cactus (opuntia species)	1 – 3
Mariola	2 – 5
Other shrubs ²	3 – 5
Forbs	
Globemallow	1 – 3
Wooly groundsel	1 – 3
Stemless actinea	2 – 5
Bladderpod	1 – 3
Senna	1 – 3
Other forbs ³	2 – 5

¹Other grasses include silver bluestem, vine mesquite, mesa dropseed, burrograss, spike dropseed, threeawns, tobosagrass, muhly species, Arizona cottontop, and plains bristlegrass.

²Other shrubs could include condalia, wolfberry, ephedra species, yucca, winterfat, and fourwing saltbush.

Other forbs³ include deerstongue, desert zinnia, wooly paperflower, prickleaf dogweed, verbena, and Wright’s buckwheat.

Average ground cover for the Shallow Range Site is:

Grasses and forbs	10 – 15
Bare ground	40 – 60
Surface gravel and cobble	15 – 25
litter	5 – 8

The potential natural plant community for the Swale range site is:

Grasses and grasslike	
Blue grama	5 – 35
Sideoats grama	10 – 20
Tobosa	20 – 30

Western wheatgrass	10 – 20
Vine mesquite	10 – 20
Silver bluestem and cane bluestem	5 – 15
Alkali sacaton and giant sacaton	10 – 15
Threeawn species	3 – 5
Dropseed species	3 – 5
Hall's panicum	5 – 10
Burrograss and mat muhly	3 – 5
Other grasses ¹	3 – 5
Woody species (shrubs, half shrubs, and trees)	
Fourwing saltbush	3 – 5
Catclaw acacia	3 – 5
Apache plume	5 – 8
Yucca species	3 – 5
Other shrubs ²	3 – 5
Forbs	
Wild buckwheat	1 – 2
Sagewort	1 – 3
Verbena	1 – 2
Other forbs ³	1 – 3

¹Other grasses include plains bristlegrass, green sprangletop, big bluestem, Indiangrass, switchgrass, Canadian wildrye, plains lovegrass, bottlebrush squirreltail, and wolftail.

²Other shrubs could include broom baccharis, desert willow, winterfat, tarbush, broom snakeweed, sumac species, and juniper.

Other forbs³ include desert holly, blanket flower, threadleaf groundsel, cudweed, and mullin

Average ground cover for the Swale Range site is:

Grasses and forbs	34 – 42
Bare ground	8 – 12
Surface gravel and cobble	3
litter	30

3.3 Soils

The dominant soil association is the Reagan – Upton association with the Limestone rock land – Ector association occurring on the western perimeter of the analysis area.

Reagan loam makes up about 40 percent of the Reagan – Upton association. Reagan loam is nearly level to gently sloping. Reagan loam typically has a surface layer of brown loam about 8 inches thick. Light brown loam and heavy loam, about 24 inches thick, underlies the surface layer. The next layers, which extend for about 60 inches are enriched with calcium carbonate (caliche).

Upton gravelly loam makes up about 35 percent of the Reagan – Upton association. Upton gravelly loam occurs as elongated areas with rounded crests. Upton gravelly loam typically has a surface layer of grayish-brown gravelly loam about 3 inches thick. The next layer is about 6 inches thick and is brown gravelly loam. Fractured, platy, indurated caliche is at a depth of about 9 inches.

Also included in the Reagan – Upton association are Atoka, Dev, and Pima soils which make up the remaining 25 percent of the association. The Atoka soils occur between the Reagan and Upton soils. They are moderately dark colored, calcareous, and loamy. They are moderately deep over caliche. Dev soils occur in the drainage ways as a complex with Pima soils. They are gravelly or cobbly. Pima soils occur on floodplains and developed in silty alluvium. They are deep, moderately dark colored and calcareous. The Dev and Pima soils are subject to serious damage from runoff.

Limestone rock land makes up about 45 percent of the Limestone rock land – Ector association. Ector soils make up about 40 percent and Dev and Pima soils make up the remainder of the Limestone rock land – Ector association.

Limestone rock land occurs along the primary and secondary drainages in the analysis area. It consists of steep to very steep canyon walls and escarpments. The bedrock is thin bedded limestone with some sandstone, siltstone, and shale. Rock outcrops cover a majority of the surface. Accumulations of mixed alluvial and colluvial debris occur at the base of slopes and at the bottom of narrow valleys. The soil material is stony or rocky loam.

Ector soils are very shallow to shallow, well-drained, calcareous, stony, and extremely rocky soils that are underlain by limestone. These soils typically occur as nearly level to gently sloping areas on ridges or mesa tops and on steep side slopes of hills. These soils have a surface layer of grayish-brown stony loam about 1 inch thick. The next layer, about 5 inches thick, is a dark-brown stony loam. The underlying limestone is exposed in many places.

3.4 Wildlife

This project occurs in the Chihuahuan Desert habitat type. The Chihuahuan desert is one of the most biologically rich and diverse desert ecoregions in the world (Hoyt 2002). The desert stretches from the southeastern corner of Arizona across southern New Mexico and west Texas to the Edwards Plateau in the United States. It runs deep into central México, including parts of the states of Chihuahua, northwest Coahuila, northeast Durango and several others. This Desert is bounded by the Sierra Madre Occidental to the west and the Sierra Madre Oriental to the east, extending as far south as San Luis Potosí and to the isolated islands of the Chihuahuan vegetation in the México states of Querétaro and Hidalgo. In New Mexico, rangeland west of the Pecos River in Chaves and Eddy Counties consist largely or entirely of Chihuahuan Desert habitat type. The dominant plant species throughout the Chihuahuan desert is creosote bush. Depending on diverse factors such as type of soil, altitude, and degree of slope, creosote bush, can be found in association with other woody and grass species.

The analysis area includes habitat suitable for a variety of wildlife species. Avian species potentially occurring based on the presence of habitat include scaled quail, mourning dove, greater roadrunner, western king bird, ash-throated flycatcher, pyrrhuloxia, Scott's oriole, Bullock's oriole, turkey vulture, red-tailed hawk, golden eagle, American kestrel, barn owl, great horned owl, lesser night hawk, common nighthawk, various hummingbirds, logger-headed shrike, cactus wren, canyon wren, western tanager, curve-billed thrasher, mocking bird, cliff swallow, cave swallow, rock wren, rufous-sided towhee, various warblers, and sparrows.

Executive order #13186 titled “Responsibilities of Federal Agencies to Protect Migratory Birds” signed 1/10/01 requires that the BLM evaluate the effects of federal actions on migratory birds. A migratory bird inventory has not been completed for this area.

Mammals potentially found in the analysis area include pallid, Mexican free-tail and cave myotis bats, mule deer, desert cottontail, black-tailed jackrabbit, rock squirrel, pocket gopher, banner-tailed kangaroo rat, porcupine, coyote, gray fox, bobcat, mountain lion, raccoon, striped skunk, badger, wood rat and various other small rodents. This is not a complete list, as there are other mammal species that are likely to occur.

Herptofauna (reptiles and amphibians) potentially associated with the analysis area include the Couch’s spadefoot toad, plains leopard frog, collared lizard, Texas horned lizard, short-horned lizard, roundtail horned lizard, Texas spotted whiptail, six-lined racerunner, western whiptail, little striped whiptail, great plains skink, leopard lizard, lesser earless lizard, side-blotched lizard, many lined skink, New Mexico milk snake, plains black-headed snake, checkered garter snake, coachwhip, striped whipsnake, gopher snake, western hognose snake, common kingsnake, blackneck garter snake, western garter snake, and the western diamondback rattlesnake.

3.5 Special Status Species

Kuenzler’s hedgehog cactus (*Echinocereus fendleri* var. *kuenzleri*) -- Endangered

Kuenzler’s hedgehog cactus was first listed as a federal endangered species on October 26, 1979 and the recovery plan was drafted in 1985. Kuenzler’s hedgehog cactus has been found to range from 5,200 feet to 6,900 feet on ridge tops and limestone benches where slopes are less than 5 percent. Habitat for the species is described as occurring on the lower fringes of the piñon - juniper woodland on skeletal soils of limestone outcrop. It is found primarily on gentle, south-facing or nearly flat ridge tops and limestone ledges, in grass and juniper woodland habitats.

Kuenzler’s hedgehog cactus is a long-lived perennial (Benson 1982). The plant grows to 30 cm tall and has stems that are either solitary or few-clustered which support few, thick, angular and often twisted spines (Weniger 1984). The cactus appears to only reproduce sexually as there is no documentation showing reproduction by tubers, stolons, rhizomes or by fragmentation. It also appears to be incapable of self pollination. The cactus normally flowers in mid May, although it may flower earlier if sufficient moisture occurs. Seed dispersal is primarily by rodents who eat the fruit and also by wind and water. It takes about 4 to 5 years for a plant to reach reproductive capability following germination.

Kuenzler’s hedgehog cactus is typically found growing wedged against rocks, within grass clumps or beneath shrub canopies. It has been theorized that this association provides thermal and physical protection to the plant (Knight and Cully 1988 and Chauvin et al. 1999). A hypothesis has been presented that suggests the population patterns for Kuenzler’s hedgehog cactus and other cacti are cyclic. Populations appear to fluctuate in cycles that last for ten or more years. A possible factor in the cycle is insect larval infestations that seem to occur when the cactus populations become very dense (DeBruin, 1996).

The recovery plan criterion for downlisting Kuenzler’s hedgehog cactus is “an increase in the numbers of the cactus to approximately 5,000 individuals and maintenance of that

population level for a period of 5 consecutive years” (Fletcher 1985). Additional criteria may be found in the Kuenzler’s Hedgehog Cactus Recovery Plan in the Project Record Index. In November 2003, Dr. David Wester estimated there to be 4,148 Kuenzler’s cactus in the Fort Stanton area alone (USFWS Consultation #2-22-03-F-0078.2). Combined with an estimated 200 plants near Elk (DeBruin 1992) and approximately 200 plants known from the east side of the Guadalupe Mountains, plus additional populations near Hope and Carrizozo, it is likely that there are over 5,000 plants alive.

Northern Aplomado Falcon (*Falco femoralis septentrionalis*) – Experimental Population, Non-Essential

The northern aplomado falcon (falcon) once extended from Trans-Pecos Texas, southern New Mexico and southeastern Arizona in the United States, south through Chiapas and the northern Yucatán along the gulf coast of México, and along the pacific slope of Central America north of Nicaragua (Howell 1972). According to the historical distribution map of 1900 contained in the recovery plan for this species (Northern Aplomado Falcon Recovery Plan, 1990), the falcon once inhabited the western and southern 1/3 of the CFO, although this species is now very rare in New Mexico. In 2001, 2002 and 2003, falcon nesting was documented south of Deming, NM. Previously, the last documented falcon nest in New Mexico was in 1952. Mainly due to recovery projects such as controlled releases, sightings of birds are increasing in the southwestern U.S. Sightings in New Mexico have increased in recent years, with several observances across the western half of CFO in the last five years (data available on request). One falcon was observed in 2007 within the project area southeast of Hope, New Mexico. Although stable breeding populations are known to exist less than 200 km from the U.S. border in México, successful release projects in Texas and New Mexico have increased the potential for breeding pairs to occupy nests in the U.S. (Montoya et al., 1997).

The falcon is a long-tailed falcon. The size of the falcon is intermediate between the American kestrel (kestrel) and prairie falcon. The back and dorsal side of the wings are blue-gray with a pronounced white trailing edge across the wing. The upper breast is white to creamy with variable amounts of black streaking, depending on the sex. There is a distinct broad dark or blackish band on the lower breast, which at close range may show faint white barring. The lower abdomen and undertail feathers are rufous (red), the tail striped. Unique to this falcon and useful to field identification is a pronounced white stripe above the eye.

Falcons appear to be year-long residents across most of their northern range where populations currently exist in México. Nesting primarily occurs from March to June in northern Chihuahua, México. Falcons typically use stick nests constructed by other large birds such as Swainson's hawks, white-tailed hawks, red-tailed hawk, Chihuahuan ravens, and possibly white-tailed kites. Nests are usually situated in soap-tree yuccas (Montoya et al. 1997), the tops of mesquite trees, manmade structures, or any other structure tall enough to avoid predation from animals such as coyotes and skunks. As such, nests are typically found at a height greater than five feet.

In September of 2002, a habitat suitability model was released by the New Mexico State University Coop Unit (Young et al. 2002). The model identified many areas throughout the CFO as suitable habitat for the falcon. Primarily, the habitat was centered around Hope, NM, and across the Indian Basin and Bogle flats south of Hope. The effort resulted in the CFO designation of the Hope Study Area for falcon habitat management.

Rangeland restoration to resemble historic grassland conditions and falcon survey efforts are concentrated in this area.

The Hope Study Area is made up of expansive grassland flats and elongated grassy bottoms bordered by limestone ridges. The vegetative makeup consists primarily of tabosa grass, burro grass, black and sideoats grama, soap-tree yucca, little-leaf sumac, American tarbush and a variety of other grasses and forbs intermingled throughout the grassland flats and bottoms. The limestone ridges are dominated by creosote, tarbush, catclaw acacia, broom snakeweed, beargrass, and a variety of grasses and forbs. Falcons inhabit open grasslands with scattered yuccas and mesquites. Although yuccas and mesquite are important, large unfragmented healthy grasslands are key to the survival of the prey base for the species and thus the species itself.

Prey species of the falcon vary from small birds to insects (Hector 1985). Avian prey species include meadowlarks, common nighthawks, northern mockingbirds, western king birds, brown-headed cowbirds, Scott's oriole, mourning doves, cactus wrens, and pyrrhuloxia. Migratory bird numbers in New Mexico and the Chihuahuan Desert as a whole have declined and the Hope Study Area is no exception. Native brush encroachment and agricultural development, including pesticide contamination, account for much of the declining condition of desert grasslands and coastal prairies within the former range of the falcon. Within the historic falcon range of CFO, brush encroachment is mainly due to two main factors: historical overgrazing and wild fire suppression. Long term efforts to reduce the density of native brush and restore historic grasslands have occurred and is planned to continue in the falcon area.

On July 26, 2006, a new ruling concerning the northern aplomado falcon was published in the Federal Register (Vol. 71, No. 143, Pg. 42298). "The falcon is being re-established under section 10(j) of the Endangered Species Act of 1973, as amended (Act), and would be classified as a nonessential experimental population (NEP). The geographic boundary of the NEP includes all of New Mexico and Arizona." The notice also defines the falcon status on BLM managed lands as "threatened" under the Endangered Species Act for the purposes of Section 9 (Prohibited Acts).

3.5.1 Description of section 10 (j) of the Endangered Species Act.

Section 10 (j) is designed to increase our flexibility in managing an experimental population by allowing us to treat the population as threatened, regardless of the species' designation elsewhere in its range. Threatened designation gives us more discretion in developing and implementing management programs and special regulations for a population, such as this rule, and allows us to develop any regulations we consider necessary to provide for the conservation of a threatened species. In situations where we have experimental populations, certain Section 9 prohibitions relevant to threatened species may no longer apply, and the special rules contain the prohibitions and exceptions necessary and appropriate to conserve that species.

3.6 Range Management

There are 30 allotments within the Aplomado Falcon Grassland Restoration Project. These allotments are:

Allotment Name	Allotment Name
El Rancho Grande	Tumbleweed Draw
Cottonwood Creek	Dry Chapparal
Brangus Ranch	Road Bend
Eagle Creek	Hope Hill
Pretty Bird Hills	Rock Tank
Sixteen Tank	Segrest Draw
Crow	East Hope
Hope Canal	Antelope Sink
North Canal	Gardner Draw
West Catclaw	Dayton
Encino Draw	Seven Rivers North
Cottontail	Black Muhley
Collier Tank	Gyp Waterhole
Indian Basin	Burro Hill
Little Box Canyon	Wadcutter Draw

Typically these allotments are run as yearlong cow-calf deferred rotation operations. Range improvement projects such as windmills, water delivery systems (pipelines, storage tanks, and water troughs), earthen reservoirs, fences, and brush control projects may be located within the allotment. In general, an average rating of the range land within this area is six acres/AUM (Animal Unit Months). In order to support one cow, for one year, about 72 acres is needed. This equals about nine cows per section.

3.7 Visual Resources

The Visual Resource Management (VRM) program identifies visual values, establishes objectives in the RMP for managing those values, and provides a means to evaluate proposed projects to ensure that visual management objectives are met. Portions of the western perimeter of the analysis area are within a VRM Class II. The remainder of the analysis area is in VRM Class IV.

The objective of VRM Class II 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.

The objective of VRM Class IV is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

3.8 Air Resources

Air Quality

Air quality is determined by atmospheric pollutants and chemistry, dispersion

meteorology and terrain, and also includes applications of noise, smoke management, and visibility. The area of the proposed action is within the Pecos River airshed and is classified as a Class II Air Quality Area. A Class II area allows moderate amounts of air quality degradation. The primary causes of air pollution in the project area are from motorized equipment and dust storms caused by strong winds during the spring. Particulates from nearby oil and gas production, agricultural burning, recreational and industrial vehicular traffic and ambient dust can also affect air quality. Air quality in the area near the proposed action is generally considered good, and the proposed action is not located in any of the areas designated by the Environmental Protection Agency (EPA) as “non-attainment areas” for any listed pollutants regulated by the Clean Air Act.

Greenhouse gases (GHG), including carbon dioxide (CO₂) and methane (CH₄), are not regulated by the EPA under the Clean Air Act. The EPA’s Inventory of US Greenhouse Gas Emissions and Sinks 1990-2006, found that in 2006, total U.S. GHG emissions were over 6 billion metric tons and that total U.S. GHG emissions have increased by 14.1% from 1990 to 2006. The report also noted that GHG emissions fell by 1.5% from 2005 to 2006. This decrease was, in part, attributed to the increased use of natural gas and other alternatives to burning coal in electric power generation.

Climate

Ongoing scientific research has identified the potential impacts of anthropogenic (man-made) GHG-emissions, changes in biological carbon sequestration, and other changes due to land management activities on the global climate. Through complex interactions on a regional and global scale, these changes cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although natural GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused carbon dioxide equivalent (CO₂(e)) concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change recently concluded that “warming of the climate system is unequivocal” and “most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations (Intergovernmental Panel on Climate Change (IPCC) 2007).

Global mean surface temperatures have increased nearly 1.33°F from 1906-2005. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24° N) have exhibited temperature increases of nearly 2.1°F since 1900, with nearly a 1.8°F increase since 1970 alone. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase between 2.5°F and 10.4°F above 1990 levels, (IPCC Third Assessment Report: Climate Change 2001) depending on the assumptions made in the predictive model. The National Academy of Sciences has confirmed these findings, but also has indicated there are uncertainties regarding how climate change may affect different regions. More recently, the Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in

daily maximum temperatures. Increases in temperatures would increase water vapor retention in the atmosphere, and reduce soil moisture, increasing generalized drought conditions, while at the same time enhancing heavy storm events. Although large-scale spatial shifts in precipitation distribution may occur, these changes are more uncertain and difficult to predict.

Several activities contribute to the phenomena of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildland fires and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years.

3.9 Cultural Resources

A general cultural sequence for the study area consists of Pre Clovis, Paleo-Indian (10,000-5500 B.C.), Archaic (5500 BC – A.D. 200/600), Formative (A.D. 200/600 – 1450), Protohistoric (A.D. 1450 – 1540), and Historic (A.D. 1540- Present). The project falls within the Pecos Valley archaeological region. A more complete discussion can be found in *Living on the Land: 11,000 Years of Human Adaptation in Southeastern New Mexico An Overview of Cultural Resources in the Roswell District*, Bureau of Land Management published in 1989 by the U.S. Department of the Interior, Bureau of Land Management.

Native American Religious Concerns

The BLM conducts Native American consultation regarding Traditional Cultural Places (TCP) and Sacred Sites during land-use planning and its associated environmental impact review. In addition, during the oil & gas lease sale process, Native American consultation is conducted to identify TCPs and sacred sites whose management, preservation, or use would be incompatible with certain land-use authorizations. With regard to Traditional Cultural Properties, the BLM has very little knowledge of tribal sacred or traditional use sites, and these sites may not be apparent to archaeologists performing surveys in advance of project development. However, to date no TCPs or sacred sites have been identified in the vicinity of the current project area.

3.10 Floodplains

There are no river or stream reaches within the analysis area identified in the 1998-2000 State of New Mexico 303(d) list for assessed river and stream reaches requiring total maximum daily loads (TMDLs).

The analysis area is within watershed boundaries 11168755712, 28059248464, and 6973978624.

The majority of drainages in the analysis area are identified as FEMA flood zones.

The analysis area drains into the Pecos River via Cottonwood Creek, Eagle Creek, Rio Penasco, Fourmile Draw and Seven Rivers.

3.11 Human Health and Safety

Public visitation to the analysis area primarily occurs during the hunting seasons. There

are several county roads in the analysis area which are moderately traveled. Potential hazards to personnel include punctures from the vegetation, snake bites, poor footing, and driving in dusty conditions.

There are several oil and gas wells within the analysis area. There are high pressure gas pipelines and above ground powerlines within the analysis area. There is the potential for hydrogen sulfide (H₂S) gas to be present around wells and in low lying areas.

3.12 Environmental Justice

Executive Order 12898, issued on 11 February 1994, addresses concerns over disproportionate environmental and human health impacts on minority and low-income populations. This project would not be out of conformance with this executive order.

3.13 Invasive and Non-Native Species

There are four plant species within the CFO that are identified in the New Mexico Noxious Weed List Noxious Weed Management Act of 1998. These species are African rue, Malta starthistle, Russian olive, and salt cedar. African rue and Malta starthistle populations have been identified throughout the Carlsbad Field Office and mainly occur along the shoulders of highway, state and county roads, lease roads and well pads (especially abandoned well pads). The CFO has an active noxious weed monitoring and treatment program, and partners with county, state and federal agencies and industry to treat infested areas with chemical and monitor the counties for new infestations.

3.14 Cave-Karst

The project is located in a limestone karst terrain, a landform that is characterized by underground drainage through solutionally enlarged conduits that may contain sinkholes, sinking streams, caves, springs and lineaments. These karst features, as well as, occasional fissures and discontinuities in the bedrock, provide the primary sources for rapid recharge of the groundwater aquifers of the region. Lineaments are linear or curvilinear surface features that indicate joints or fractures at depth which have reached the surface. In the Guadalupe Mountains, these features are often found in association with caves.

Sinkholes and cave entrances collect water and can accumulate richer organic materials and soils. This, in conjunction with the more stable microclimate near a cave entrance, supports a greater diversity and density of plant life which provides habitat for a greater diversity and density of wildlife.

The caves also provide habitat for a number of animal species. The entrance areas support communities of raptors, rodents, mammals, and reptiles, while the interior of the caves support a large variety of troglobitic, or cave-dependent, species. The troglobitic species have adapted to the cave environment which has a constant temperature, constant high humidity, and total darkness. Some of the caves in the area contain easily disturbed bat colonies.

Three cave/karst high occurrence areas are within the analysis area.

3.15 Recreation

Recreational activities include hiking, hunting, walking, wildlife viewing, horseback riding, mountain biking and off-highway vehicle (OHV) use by local residents. No historical data is available that documents visitor/user days in the analysis area, and no formal studies were completed during this analysis to measure visitor/user days.

4. ENVIRONMENTAL IMPACTS OR CONSEQUENCES

Alternative A: No Action

The No Action Alternative would result in the continuation of the current land and resource uses in the project area and is used as the baseline for comparison of the proposed action.

4.1 Affected Environment

This section is a discussion, by relevant resources, of the potential impacts of each alternative.

4.2 Vegetation: Proposed Action: The proposed freshwater pipelines will be buried unless resource conditions require the pipeline to be installed on the surface. It is expected that less than two acres of vegetation will be disturbed during construction of any single pipeline. Pipelines that are buried, typically ripped in, will disturb vegetation in a swath about six feet wide. Recovery of vegetation within the ripped area is expected to occur in one to two growing seasons. Impacts from surface installation will be slight as plants will be bent or crushed by vehicle or foot traffic, but should recover during the next growing season. By providing permanent water sources, in this case reliable water to the currently unusable troughs, the pastures can be more effectively used in following a grazing system. This should result in a more uniform pattern of distribution and utilization by livestock and a longer recovery time for pastures that are being rested. It is anticipated that more rest will improve plant composition, density and ecological range condition. This assessment is based on the assumption that the area will receive at least the long term average in precipitation both in timing and amount.

Impacts to vegetation from construction of wildlife water developments will be minimal due to the small size of the project site. Some plants will be disturbed during pipeline, tank and drinker installation. Fence construction will require some disturbance for setting fence posts. Potentially, one to two acres of vegetation per unit will be minimally disturbed. Impacts to vegetation will be reduced by following standard practices such as utilizing existing surface disturbance and quickly establishing vegetation on disturbed areas.

It is expected that the vegetative resource would continue to be maintained, or improved, under the proposed action.

Mitigation: None

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact or disturbance to the vegetation. No permanent water sources would be in these pastures. Animals could have difficulty

finding water if the earthen reservoirs in the pastures are empty. The grazing rotation system would be more difficult to manage with no permanent water sources.

4.3 Soils: Proposed Action: The proposed freshwater pipelines will be buried unless resource conditions require the pipeline to be installed on the surface. Pipelines that are buried will disturb one to two acres of soil, about 18-20 inches deep. Soil horizon layers may be slightly mixed by the ripper blade. However these loamy soils generally have similar textured horizons to this depth, so any mixing is not expected to have an effect on soil fertility, infiltration, permeability, or other soil properties. For pipelines installed on the surface, slight soil compaction would occur where the vehicles were driven as the pipeline was laid. This is expected to be minimal, as these rocky soils are not prone to compaction.

Some soil compaction will occur in the area immediately adjacent to the storage tank and troughs. These impacts are considered to be minimal, since the area involved will be less than 0.1 of an acre at each site and the new storage and trough will be placed on an existing disturbed area with shallow rocky soils. Because grazing distribution patterns will be improved within this pasture and because the permitted livestock numbers will not be increased after construction of the pipeline, utilization levels are expected to be in proper level of 45% or less. These factors are expected to maintain the stability of the soils.

The biological soil crusts are susceptible to compressional damage, which can result from trampling impacts from livestock and wildlife, and vehicle traffic. Disruption of the crust can result in decreased soil organism diversity, soil nutrient levels, soil stability, and organic matter. In this instance, these impacts are expected to be extremely small due to limited amounts of biological soil crusts and surface installation will need only one or two passes across the surface either by foot or by rubber tired vehicle, to complete the project.

Impacts to soil resources will be reduced by following standard practices such as amending soils compacted during construction and utilizing existing surface disturbance and quickly establishing vegetation on disturbed areas.

Mitigation: None

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact or disturbance to the soils.

4.4 Wildlife: Proposed Action: Negative impacts are expected to be short term and primarily limited to the construction phase. Noise and dust may cause some animals to vacate the area during installation of the pipeline. Negative impacts to wildlife are expected to be minimal as a result of pipeline construction (buried or surface). If water troughs are not fitted with an escape ramp, this could cause the entrapment of some small mammals and birds. In addition, if water is not left in the troughs year round, animals that have become dependent on that water source will have to move to an alternate source or perish. Maintenance of existing water sources as well as development of new year-

round water sources is critical to supporting existing wildlife populations and the proposed action will continue to provide a dependable water source for wildlife, as well as livestock. Increasing the number of permanent water sources for livestock should decrease the total impacts to habitat from livestock gathering by increasing the number of smaller local gathering opportunities and not concentrating larger numbers of livestock from a larger landscape. In turn, less grazing and trampling pressure would spare the grasslands, thus improving the habitat for nesting grassland birds. Increasing the number of livestock watering locations will also allow more efficient rotation of stock and thus better enable range managers the opportunity to respond to changing rangeland conditions.

Mitigation: Construction and maintenance of escape ramps will be conducted to ensure proper function of escape ramps.

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact or disturbance to wildlife. However, livestock concentration at the few existing livestock watering areas would continue and further degrade the habitat surrounding the gathering areas while increasing the competition between livestock and wildlife during drier periods. Often, natural earthen tanks dry up naturally leaving wildlife without a predictable local watering source, encouraging wildlife to travel farther from the area to meet its water needs. The continued absence of permanent water sources will not improve distribution of wildlife within the area or improve the wildlife habitat potential.

4.5 Special Status Species: Proposed Action:

Kuenzler's Hedgehog Cactus

Potential direct impacts to Kuenzler's hedgehog cactus could include crushing of individual cacti from vehicles during installation of the pipelines or drinkers. Once installed, indirect impacts may occur if the species or potential species habitat is present. Those indirect impacts may include trampling from increased livestock concentration around the waters. There are no documented records of these impacts causing mortality to individual plants of this species, although there is a record of livestock trampling and damaging one individual Kuenzler's cactus plant (USFWS 1985). That plant later recovered and fruited.

All proposed project areas within this analysis will be assessed for potential Kuenzler's cactus habitat. Those projects that fit the habitat description for Kuenzler's will be surveyed prior to activity to assess potential direct and indirect impacts on the species. Potential direct impacts would be those associated with the installations of the projects and the indirect impacts would be those that eventually resulted from the installations. Based on the findings from pre-action surveys, the appropriate level of consultation with the USFWS will occur.

Northern Aplomado Falcon

Potential negative effects of installing water developments will be minimal in number, type, frequency, and intensity within the project area. An example of potential disturbance would be during periods of pipeline construction and the physical installation of the watering units, both for livestock and wildlife. Human presence for these activities will be short-term and temporary such that activity levels and disturbance will be

minimal and would not increase the amount of unavailable habitat, especially for breeding falcons. However, in the event that breeding aplomado falcons are observed during the construction phase of this project, CFO wildlife biologists will be made aware of the situation and possible postponement of the project would be necessary to avoid impacts to the species.

The fact that falcons are located in intact, productive grasslands with low human activity levels in core population areas in Chihuahua suggests that they have limited tolerance for modification to their habitat (Meyers 2005). Potential positive effects of the proposed action would include increasing the suitability of open grassland habitat for passerine birds thus increasing the total number and diversity of prey items for falcons in the local area.

Mitigation: Construction and maintenance of escape ramps will be conducted regularly to ensure functionality of escape ramps. Interim-reclamation of disturbed areas pertaining to this action will assist in the establishment of an onsite seed bank, which should provide a seed source that will increase the success and rate of final reclamation. Projects that are proposed to occur in suitable cactus habitat will be surveyed for occupancy prior to work on the project. In the event that falcons or Kuenzler's hedgehog cacti are observed in the area, CFO biologists will be consulted as to whether the project should be delayed, or potentially relocated to avoid potential impacts on either species.

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact or disturbance to wildlife. However, livestock concentration at the few existing livestock watering areas would continue and further degrade the habitat surrounding the gathering areas while increasing the competition between livestock and wildlife during drier periods. Often, natural earthen tanks dry up naturally leaving wildlife without a predictable local watering source, encouraging wildlife to travel farther from the area to meet its water needs. The continued absence of permanent water sources will not improve distribution of wildlife within the area or improve the wildlife habitat potential. This alternative would not improve grasslands or nesting habitats for grassland obligate birds, a main constituent of the falcon's prey base.

4.6 Range Management: Proposed Action: The installation of the proposed projects will insure that the existing grazing systems on the 30 allotments will continue without the interruptions of an unreliable watering system. With solar powered booster pumps, water will be made available on a regular basis, therefore, the rotation systems can continue to be implemented. These grazing systems, facilitated by the proposed pipelines, troughs, or storage tanks should eventually lead to increased vigor and reproduction of the vegetation, improved water and nutrient cycle, and a healthier range for both livestock and wildlife.

Under the proposed project, there would be no impacts to the current or planned livestock management. It would continue to be managed as a yearlong, cow-calf operation and the permitted number of animals would remain the same. However, pastures with proposed water sources should see utilization rates become more consistent thorough out the pasture. Current patterns of heavy use at existing waters, moderate use up to 0.5 miles away, and slight use at a mile or more away are expected to become generally light

across the whole pasture. In addition, non-grazed pastures will be able to receive longer periods of rest, since livestock can range over additional acres in pasture with these proposed waters. This longer rest should allow grasses to produce more leaves, seeds, and roots and store carbohydrate reserves.

Mitigation: None required.

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no change in the livestock distribution and utilization patterns in any of the allotment pastures, which would only be used when earthen reservoirs contain water, which is unlikely in drought years. Therefore, pastures with few water sources will continue to show heavier use near the waters and little or no use in areas without reliable water sources.

4.7 Visual Resource Management (VRM): Proposed Action: The proposed action will result in all pipelines to be buried except when resource conditions warrant pipelines to be installed on the surface. Pipelines that are buried are typically ripped in and will disturb vegetation and soils in a swath about six feet wide. Recovery of vegetation within the ripped area is expected to occur in one to two growing seasons. Once vegetation has been reestablished, buried pipelines should not attract attention from the casual observer. Surface pipelines will be visible as a black poly pipeline laid adjacent to existing two track roads, existing fences, and from isolated points along several two-track roads in the area. Surface pipelines would be subordinate to the landscape and would not detract from the vistas. Grazing of livestock would not affect the form or color of the landscape, or the primary aspect of the vegetation within this project area.

Wildlife water developments such as inverted umbrellas, gallinaceous guzzlers, troughs or storage tanks are strategically placed in swales or in areas hidden from view. These structures would not detract from the vistas.

Impacts to visual resources will be reduced by following standard practices such as amending soils compacted during construction, utilizing existing surface disturbance and quickly establishing vegetation on disturbed areas.

Mitigation: None required.

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact or disturbance to the visual resources.

4.8 Air Resources: Proposed Action:

Air Quality

The winds that frequent the southeastern part of New Mexico generally disperse odors and emissions, however, air quality would be impacted temporarily from exhaust emissions, chemical odors, dust caused by vehicles traveling to and from the project area and from motorized equipment used during construction. Impacts to air quality will

diminish upon completion of the construction of the proposed action.

Climate

Climate change analyses are comprised of several factors, including GHGs, land use management practices, and the albedo effect. The tools necessary to quantify incremental climatic impacts of specific activities associated with those factors are presently unavailable. As a consequence, impact assessment of effects of specific anthropogenic activities cannot be performed. Additionally, specific levels of significance have not yet been established. Qualitative and/or quantitative evaluation of potential contributing factors within the project area are included where appropriate and practicable. When further information on the impacts to climate change in southeastern New Mexico is known, such information will be incorporated into the BLM's NEPA documents as appropriate.

The EPA has the primary responsibility for regulating air quality, including seven nationally regulated ambient air pollutants. The EPA has delegated regulation of air quality to some states of which New Mexico is one. The New Mexico Air Quality Bureau's (NMAQB) mission is to protect the inhabitants and natural beauty of New Mexico by preventing the deterioration of air quality. The NMAQB is responsible for: ensuring air quality standards are met and maintained; issuing air quality required Construction and Operating Permits if any; enforcing air quality regulations and permit conditions. Any emission source must comply with the NMAQB regulations.

Impacts to air quality on lands managed by BLM in southeastern New Mexico are reduced by the following standard practices which include: utilizing existing disturbance; minimizing surface disturbance; reclaiming and quickly establishing vegetation on areas not necessary project development.

Mitigation: None required.

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact or disturbance to air quality or climate.

4.9 Cultural Resources: Proposed Action: The routes for proposed replacement pipelines, inverted umbrellas, gallinaceous guzzlers, troughs or storage tanks will have been surveyed and cleared for archeological and cultural resources. Any sites encountered along the proposed routes or development sites will be avoided. No impacts to cultural resources are expected. Any new construction will be surveyed and cleared in advance by BLM Cultural Resources staff or under contract.

Mitigation: None required.

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact to cultural or archeological resources.

4.10 Floodplains: Proposed Action: Initial slight increases in erosion and sedimentation may have a slightly negative impact on surface water quality. However, surface water quality and quantity are expected to improve over the long-term if the Proposed Action is implemented. Improved livestock distribution would help restore the vegetative balance necessary to stabilize watershed systems by decreasing much of the shrub component, thus allowing other vegetation, such as herbaceous species, to reestablish themselves and maintain water retention values of the system.

No impacts to the ground water quality are anticipated by the proposed action, since groundwater is not shallow in the treatment area.

Mitigation: None required.

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact to floodplains.

4.11 Human Health and Safety: Proposed Action:

Potential hazards to construction personnel include punctures from the vegetation, snake bites, poor footing, and driving in dusty conditions. There are several oil and gas wells within the analysis area. There are high pressure gas pipelines and above ground powerlines within the analysis area. There is the potential for hydrogen sulfide (H₂S) gas to be present around wells and in low lying areas. Hazards to the public would be extremely slight as water developments are not sited near oil or gas wells.

Standard practices to ensure safety of personnel involved in construction activities associated with the proposed project include, pre-construction safety meetings that identify local hazards. In addition, all BLM staff are trained in First Aid and would render such in the event of an accident.

Mitigation: None

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact to human health or safety.

4.12 Environmental Justice: Proposed Action

This project is likely to employ a certain percentage of the population on a temporary basis. Economic input-output models may be employed to determine the cost benefit to local communities from purchase of materials and equipment locally.

No displacements are anticipated as a result of this project. In accordance with Executive Order 12898 on Environmental Justice, no disproportionately high or adverse human health or environmental impacts upon minority populations is anticipated as a result of the project. The proposed project would not permanently disrupt any existing or proposed neighborhood, or adversely affect community cohesion. The condition of the water developments following completion of the projects would be very similar to pre-project conditions in terms of its impact on the surrounding community, and thus would not

result in any adverse effects that appreciably exceed or are likely to appreciably exceed that impact on the general population.

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact to human health or safety.

4.13 Invasive and Non-Native Species: Proposed Action

Any surface disturbance can increase the possibility of establishment of new populations of invasive, non-native species. The construction activities may contribute to the establishment and spread of African rue and Malta starthistle. The main mechanism for seed dispersion would be by equipment and vehicles that were previously used and/or driven across noxious weed infested areas. Noxious weed seed could be carried to and from the project area by construction equipment and transport vehicles

Mitigation: Construction sites will be monitored on a regular basis as maintenance schedule allows. In the event that invasive weeds encroach onto any project site, spot herbicide treatment will be implemented.

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact to invasive and non-native species.

4.14 Cave-Karst: Proposed Action

Concentrations of cattle in karst areas, particularly near sinking streams or springs, can cause turbidity and additional organic materials to be carried into a cave system. In addition, manure content and other materials could cause a deterioration of the water quality, which could pose health threats to wildlife and cave visitors. Range management practices such as fencing off fragile areas, locating projects away from karst features, changing season of use, pasture rotation and proper stocking rates reduce impacts to these sensitive areas.

Mitigation: None required.

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

Under this alternative there would be no new impact to cave/karst systems.

4.15 Recreation: Proposed Action

Hunting and hiking, off highway vehicle activity and other actions would not be adversely affected by this project. It is anticipated that improved habitat conditions would result in increased wildlife numbers and additional use by the public for hunting activities. The proposed action would have very little impact on recreation opportunities in this area, since it is primarily a new way to provide water to existing facilities. The new lines would provide a more dependable water supply and the new trough will create an additional place where horseback riders or hunters could water their horses. The new water developments would draw wildlife, as well as livestock, to the area so wildlife

observations might be increased. If built, the proposed pipelines and troughs have the potential of being impacted by hunters, who occasionally damage troughs and storage tanks while hunting.

The recreational value of the impact of water development would correspond to the availability of animals for hunting or viewing, which in turn could lead to an increase in the number of hunters using the area. The primary recreational activity occurring in the project area is hunting. Mule deer, pronghorn and game birds such as quail and dove are taken during hunting seasons set by New Mexico Department of Game and Fish. A secondary activity occurring in the area is observing nature or watching wildlife and would likely increase due to the increased wildlife use of the treated area.

Mitigation: None required.

Alternative A: No Action. Do not install or replace the old pipelines, troughs or water developments.

No increase or decrease in use by recreationists would occur.

5. Residual and Cumulative Impacts:

Cumulative Impact Analysis

Cumulative impacts are the combined effect of past projects, specific planned projects, and other reasonably foreseeable future actions, that may occur in the area including foreseeable non-federal actions.

The combination of all land use practices across a landscape has the potential to change the visual character, disrupt natural water flow and infiltration, disturb cultural sites, cause minor increases in greenhouse gas emissions, fragment wildlife habitat and contaminate groundwater. However, the likelihood of these impacts occurring is minimized through standard mitigation measures and ongoing monitoring studies.

The proposed action will allow the existing grazing scheme to continue to be followed, as it will provide a dependable water supply. There are positive residual impacts of improved vigor and reproduction of herbaceous vegetation, an improved water and nutrient cycle and decreased potential for soil erosion, from this grazing system. There will be the residual impact of soil erosion and loss of vegetation due to the trampling effect by livestock around waters. The area of this effect should be small, approximately 1/4 acres per watering site. The freshwater pipelines and troughs constitute minor disturbance. The new development will also allow the permittee to improve his planned grazing system which should benefit the resources.

6. Consultation and Coordination

This Environmental Assessment has been prepared and reviewed by the following interdisciplinary team:

Steve Daly – Soil Conservationist, BLM
Susan Britt – Rangeland Management Specialist, BLM
Jim Goodbar – Cave/Karst Specialist, BLM
Ty Allen – Wildlife Biologist, BLM
Rebecca Hunt – Planning & Environmental Coordinator, BLM

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George MacDonell – Archaeologist, BLM
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New Mexico Dept. of Game and Fish
Southeast New Mexico Sikes Act Citizens Advisory Committee
New Mexico State Land Office
Natural Resources Conservation Service – Carlsbad Office
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Date: 14 May 2009

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Finding of No Significant Impact – FONSI

Aplomado Falcon Management Area Habitat Restoration: Solar Wildlife Water Systems

EA# DOI-BLM-NM-P020-2009-0608-EA

Finding of No Significant Impact:

I have reviewed the Aplomado Falcon Management Area Habitat Restoration: Solar Wildlife Water Systems environmental assessment (EA# DOI-BLM-NM-P020-2009-0608-EA). I have determined that the proposed action with the mitigation measures described in Section 2.1 of the attached EA will not have any significant impacts on the human environment. Therefore, an Environmental Impact Statement (EIS) is not required. The proposed action is consistent with the approved Carlsbad Resource Management Plan and Carlsbad Resource Management Plan Amendment. Therefore, it is recommended that this application be approved.

Authorized Officer: /s/ David D. Evans

Date: 06/25/2009

DECISION RECORD

Aplomado Falcon Management Area Habitat Restoration: Solar Wildlife Water Systems

EA# DOI-BLM-NM-P020-2009-0608-EA

Purpose and Need for Action:

The purpose of the Aplomado Falcon Grasslands Restoration Project is to respond to the goals and objectives of the American Recovery and Reinvestment Act of 2009, Healthy Forests Restoration Act of 2003, the New Mexico Forest and Watershed Plan, the Northern Aplomado Falcon Recovery Plan of 1990, the 1988 Carlsbad Resource Management Plan and 1997 Amendment. The Aplomado Falcon Grassland Restoration Project addresses the above-mentioned plans by investment in forms of range and wildlife improvements that will restore rangeland ecosystems to more closely match their historical structure, function, diversity, and dynamics. This restoration project is needed for range improvements that will specifically benefit the habitat for the northern aplomado falcon (*Falco femoralis septentrionalis*).

Decision and Rationale:

I have determined that the proposed project, Aplomado Falcon Management Area Habitat Restoration: Solar Wildlife Water Systems, environmental assessment (EA), DOI-BLM-NM-P020-2009-0608-EA is in conformance with the approved Carlsbad Resource Management Plan, Carlsbad Resource Management Plan Amendment, Endangered Species Act and Section 106 of the National Historic Preservation Act. It is my decision to implement the proposed project with the mitigation measures as described in the attached EA to construct or replace fresh water livestock pipelines, troughs and storage tanks utilizing photo-voltaic power to pump water and to install artificial structures such as domed topped guzzlers at strategic locations extending from the livestock water pipelines to remote sites to provide water and cover for wildlife on the Aplomado Falcon management Area.

If you wish to appeal this decision, you have 30-days within which to file an appeal for the purpose of a hearing before the Interior Board of Land Appeals, and to petition for stay of the decision pending final determination on the appeal (43 CFR, Subpart E at 4.400 – 4.413). If a petition for stay is not requested and granted, the decision will be put into effect following the 30-day appeal period. The appeal and petition for stay should be filed with the Field Manager, Bureau of Land Management, 620 E. Greene St., Carlsbad, NM 88220. The appeal should specify, clearly and concisely, why you think the decision is in error. The petition for stay should specify how you will be harmed if the stay is not granted.

Authorized Officer: /s/ David D. Evans

Date: 06/25/2009