

ENVIRONMENTAL ASSESSMENT CHECKLIST

EA Number: NM-060-2004-051 Preparer: Helen Miller/Howard Parman			Action Type: Vegetation Management Project Name: Mesquite Control		
Resource / Activity	Not Present	Not Affected	**May Be Affected	Reviewer	Date
Air Quality*			x	/s/ Michael McGee Hydrologist	3/16/05
Floodplains*			x		
Soils/Watershed			x		
Water Quality- Drinking/Ground*			x	/s/ Michael McGee Hydrologist/Geologist***	3/16/05
Vegetation			x	John Spain	12/01/04
Livestock Grazing			x	Rangeland Management Spec	
Invasive, Nonnative Species*		X		/s/ hcjmilller Range Mgmt Spec/Nox. Weed Spec	06/20/2005
Wastes, Hazardous or Solids*			X	T.R. Kreager Hazardous Waste Spec.	11/25/2005
Prime/Unique Farmlands*	x			Irene M. Gonzales	6/7/2004
Lands/Realty/ROW		x		Realty Specialist	
Fluid Minerals		X		Armando A. Lopez Pet Eng/Geologist/Sur. Prot. Spec.	07/06/05
Mining Claims		√		/s/ Jerry Dutchover	11/09/04
Mineral Materials		√		Geologist	
Threatened or Endangered Species*		X		/s/ D Baggao	7/1/05
Wetlands/Riparian Zones*		X			
Wildlife Habitat			X		
Native American Religious Concerns*		X		Pat Flanary	3/11/04
Cultural Resources*			X	Archaeologist	
Areas of Critical Environmental Concern*			X	J H Parman	11/5/04
Low Income & Minority Population Concerns		X		Planning & Env. Coordinator	
Wild/Scenic Rivers*	X			Bill Murry	10/21/04
Wilderness*	X				
Cave/Karst Resources			X		
Outdoor Recreation			X		
Visual Resources			X		
Access/Transportation	☺			Environ. Prot. Spec. Richard G. Hill	11/5/04

* "Critical Element" - must be addressed in all NEPA documents.

** "Affected Element" - must be addressed in the attached Environmental Assessment.

*** "Hydrologist/Geologist" – Hydrologist will be the primary lead for "Water Quality- Drinking/Ground" with Resource projects such as fire, fuels, and grazing EA's etc... The Petroleum Geologist will be the primary lead for "Water Quality- Drinking/Ground" with Minerals or oil and gas projects such as Application For Permit To Drill and Sundry Notices etc...

FINDING OF NO SIGNIFICANT IMPACT
FOR EA #NM-060-2004-051
ROSWELL FIELD OFFICE GRASSLAND
RESTORATION BY MESQUITE REDUCTION

I have reviewed the environmental assessment (EA) for the Roswell Field Office Grassland Restoration by Mesquite Reduction. The review included the explanation and resolution of any potentially significant environmental impacts. I have determined that the proposed action and alternatives will not have significant impacts on the human environment, and that preparation of an Environmental Impact Statement (EIS) is not required.

Rationale for Recommendations: The proposed action and alternatives would not result in any undue or unnecessary environmental degradation. The proposed action will be in compliance with the Roswell Approved Resource Management Plan and Record of Decision (October, 1997).

/s/ T. R. Kreager

T.R. Kreager
Assistant Field Manager, Roswell Field Office

11/25/2005

Date

ENVIRONMENTAL ANALYSIS

ROSWELL FIELD OFFICE GRASSLAND
RESTORATION BY MESQUITE REDUCTION

EA# NM-060-2004-051

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
PECOS DISTRICT
ROSWELL FIELD OFFICE
ROSWELL, NEW MEXICO

LOCATION:

Public lands administered by the Roswell Field Office
Within the Following Counties -

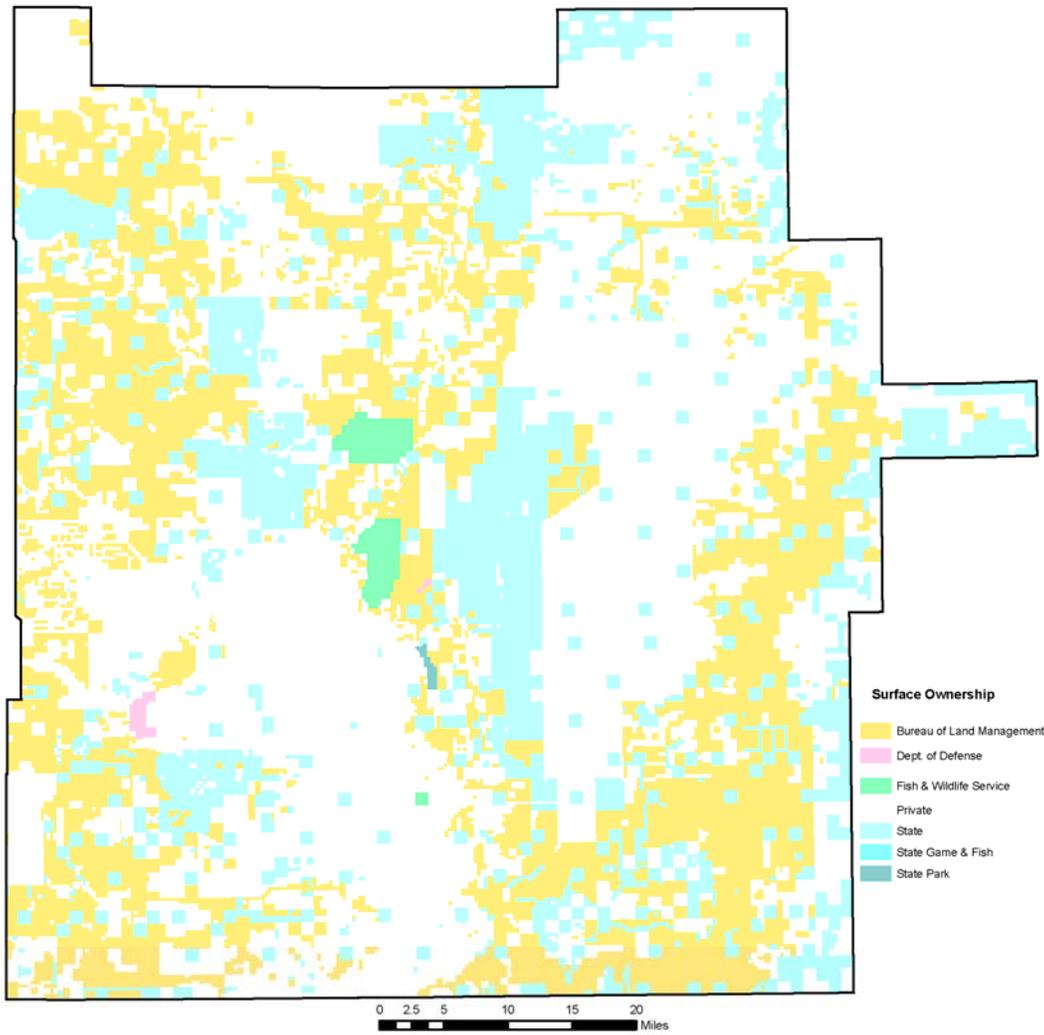
Chaves (except for the "bootheel")

All of Lincoln, DeBaca, Roosevelt, Curry, Quay and Guadalupe

Portion of Eddy County administered by the
Rowell Field Office

Chaves County

Proposed Treatment on Public Land

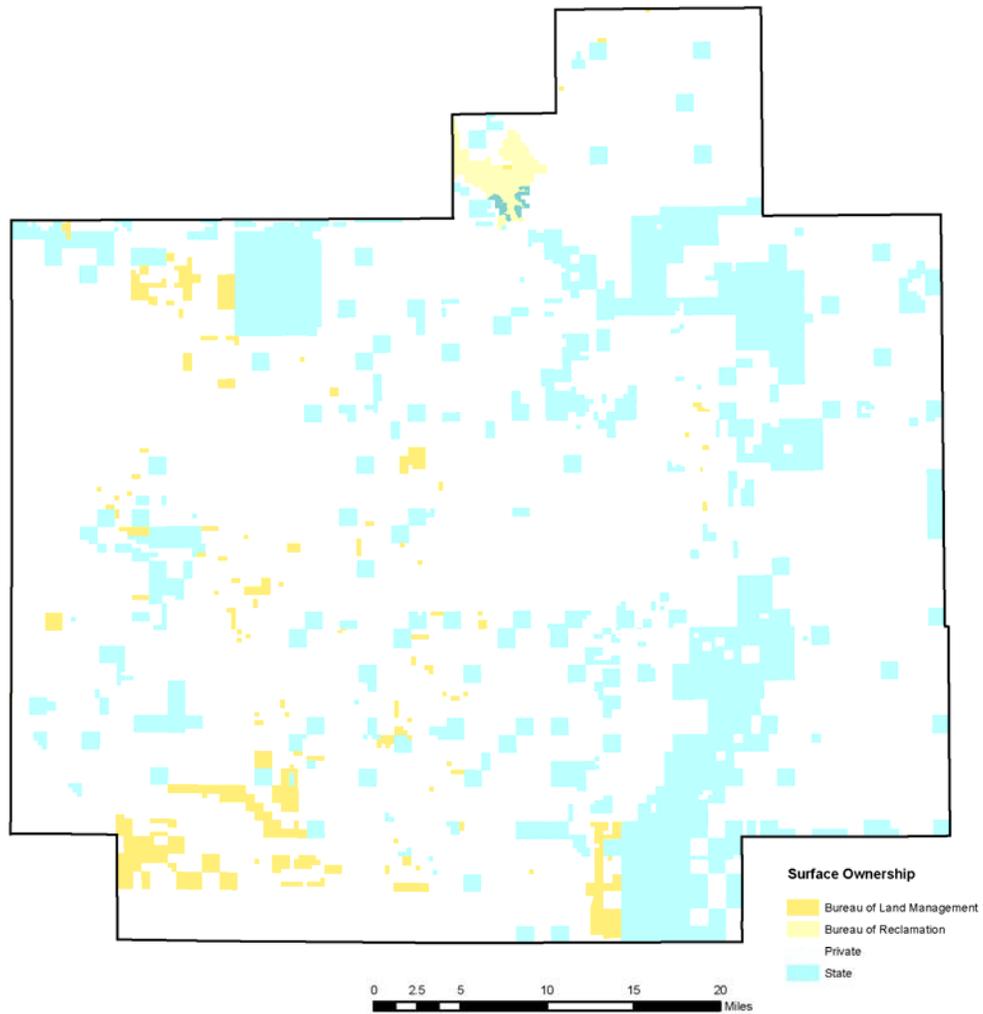


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Produced by the RFO GIS Specialist on Nov. 3, 2005.

De Baca County

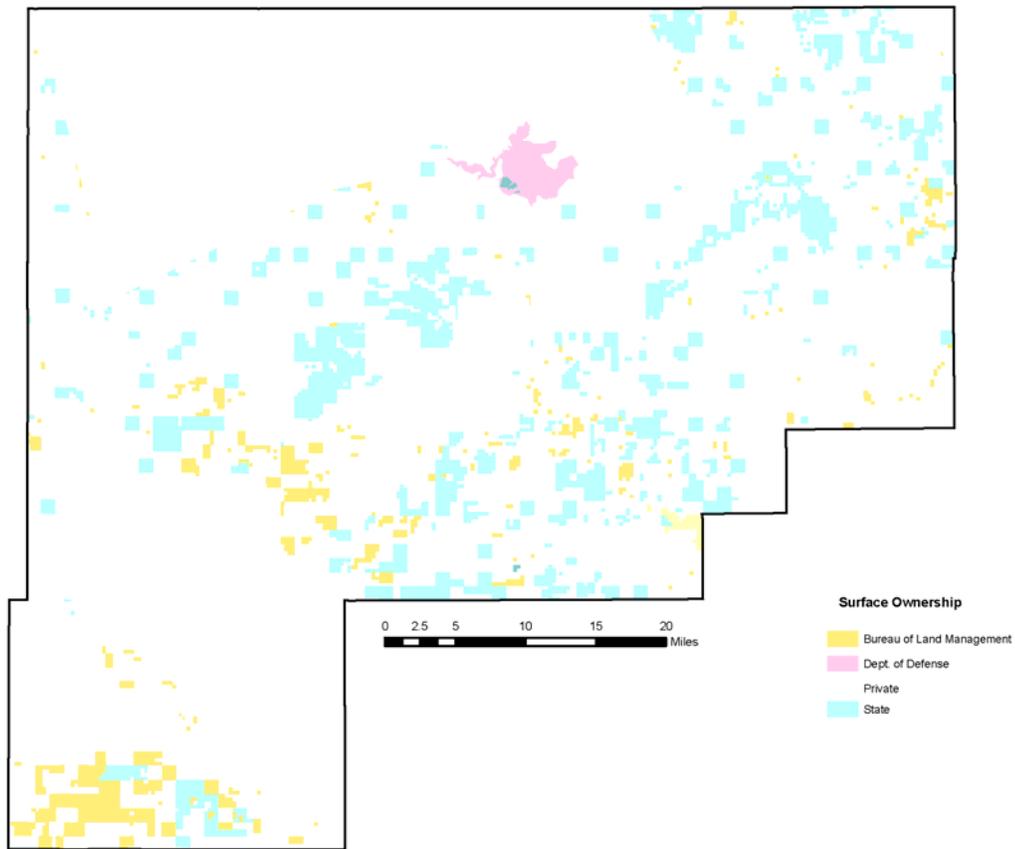
Proposed Treatment on Public Land



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Guadalupe County

Proposed Treatment on Public Land

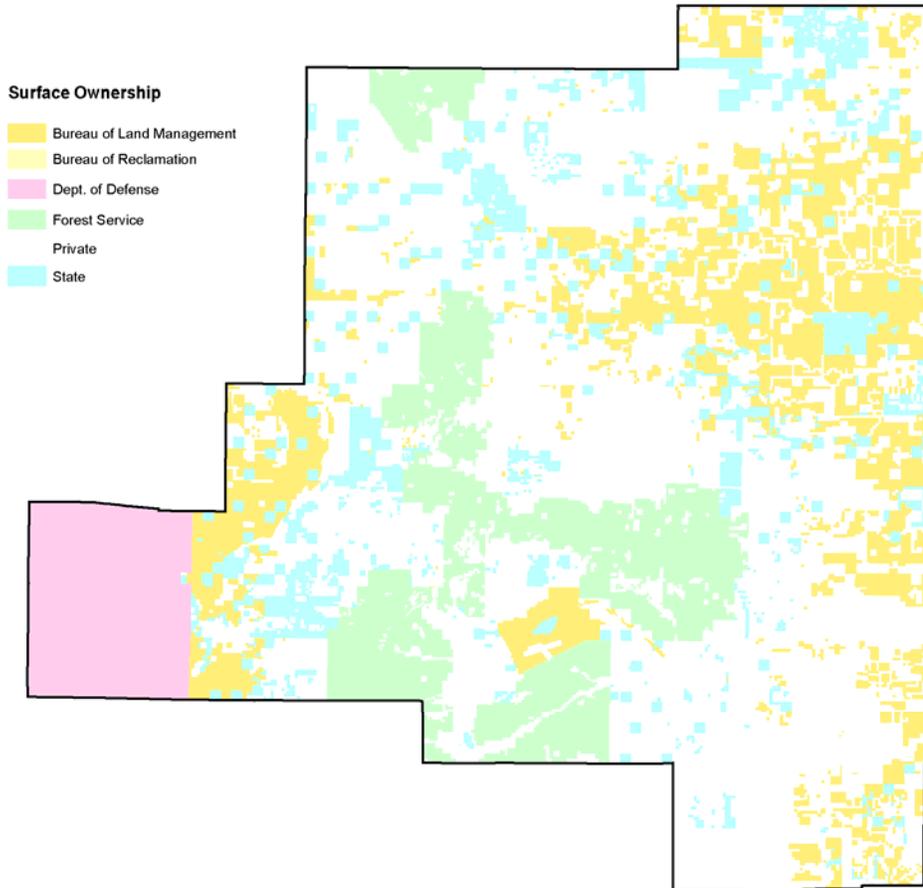


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Lincoln County

Proposed Treatment on Public Land

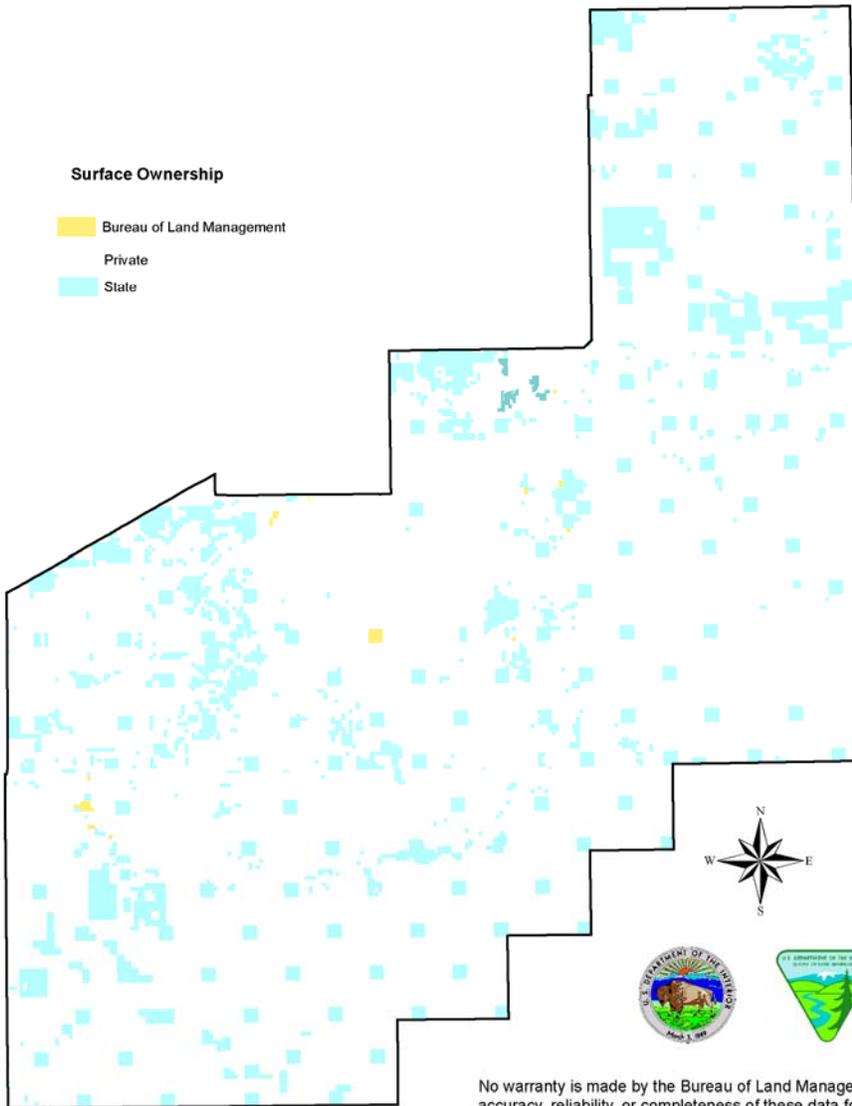


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Quay County

Proposed Treatment on Public Land



Surface Ownership

- Bureau of Land Management
- Private
- State

0 2.5 5 10 15 20 Miles



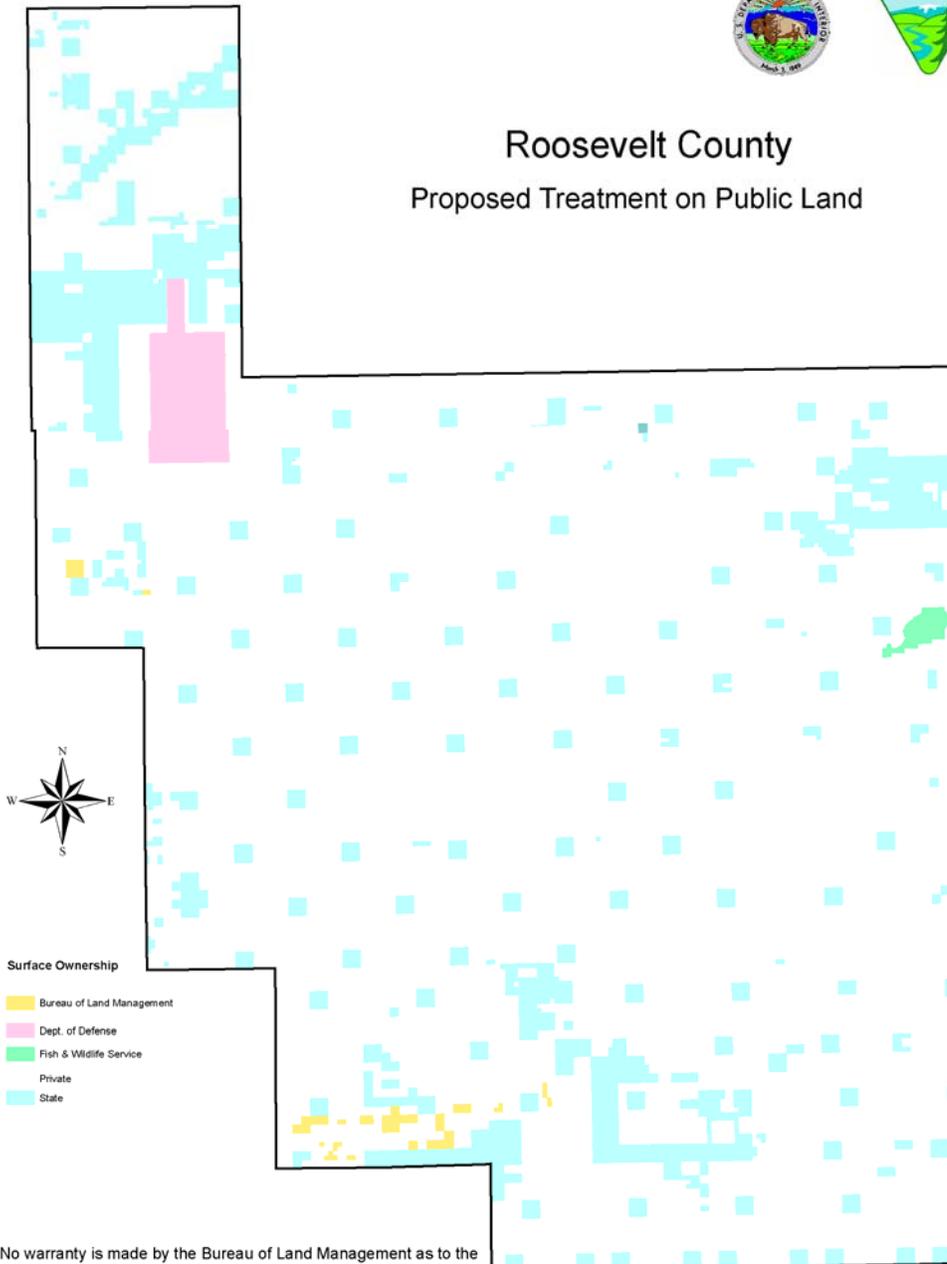
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Roosevelt County

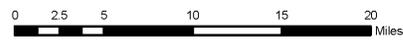
Proposed Treatment on Public Land



Surface Ownership

- Bureau of Land Management
- Dept. of Defense
- Fish & Wildlife Service
- Private
- State

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Produced by the RFO GIS Specialist on Nov. 3, 2005.

BACKGROUND

In 1991, the Bureau of Land Management released the Record of Decision for the Vegetation Treatment on BLM Lands in Thirteen Western States Environmental Impact Statement. The EIS analyzed the impacts of integrated vegetation management. The methods included in integrated vegetation management are manual, mechanical, biological, prescribed burning and chemical.

In 1997, BLM released the Record of Decision for the Roswell Resource Management Plan (RMP). The RMP established six Desired Plant Communities within the planning area. Five of the six communities include a threshold for treatment of mesquite (*Prosopis glandulosa*) (50 plants per acre).

PURPOSE AND NEED FOR THE PROPOSED ACTION:

The Roswell Field Office is conducting evaluations to determine if public land meets the Standards for Public Land (rangeland) health. These evaluations fulfill requirements set forth by the Record of Decision for New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing, 2001. The assessments are conducted within identified watersheds each year by a multi-disciplinary team.

One result of the evaluations is an indication there are areas within the Roswell Field Office where mesquite is either encroaching or dominating the shrub component of various ecological sites. This trend also indicates a need to change the way mesquite occurrence (in relation to vegetative treatments) is described in the 1997 Roswell RMP.

Mesquite is a native plant that occurs on a wide variety of ecological sites in the Roswell Field Office (RFO). Monitoring protocol collects data that expresses mesquite occurrence as a percentage of cover within the shrub component instead of plants per acre. When mesquite begins to be a majority of the shrubs or is found on ecological sites in which mesquite does not occur naturally, it is an indication of an imbalance in the species mix occurring on a site. The increased occurrence of mesquite may negatively affect the hydrologic functions on a site.

The ecological site guides (state and transition models) describe a number of vegetative states that may exist and are used in evaluations of rangeland health parameters whether a particular plan may be affecting healthy rangelands. RFO proposes to use the ecological site guides and the evaluation protocol to set a new treatment threshold based on the percent cover as expressed in the appropriate ecological site guides. This environmental assessment (EA) would analyze the impacts of changing the treatment threshold and the impacts of chemical treatments for reducing mesquite densities.

CONFORMANCE TO LAND USE PLANNING

The proposed action conforms to the Roswell Resource Area Resource Management Plan and Record of Decision (1997); the New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management and Record of Decision (2001), which amended the Roswell

RMP; and the Vegetation Treatment on BLM Lands in Thirteen Western States, Final EIS (USDI BLM, May 1991).

RELATIONSHIPS TO STATUTES, REGULATIONS AND OTHER PLANS

The proposed actions and alternatives 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.); the Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901 et seq.); the Carlson-Foley Act (1968); and the Federal Noxious Weed Act (1974), as amended by Section 15 - Management of Undesirable Plants on Federal Lands.

SCOPING, CONSULTATION, AND COORDINATION

The proposed action is the result of discussions among the staff of the BLM Roswell Field Office and public meetings between RFO, residents of the surrounding area, representatives of the State of New Mexico, representatives of Chaves and Lincoln Counties, and other interested parties.

PROPOSED ACTION:

The goal of the Proposed Action is in two parts. The first is to change the way mesquite occurrence is expressed in the RMP, from plants per acre to percentage of cover within the shrub component, which is the manner data is collected during monitoring. The second is to enhance watershed and native vegetation conditions within the Roswell Field Office area by reducing populations of mesquite, *Prosopis glandulosa* or *P. jugans*. The objective would be to reduce mesquite in areas where mesquite is determined to be adversely affecting functioning native ecosystems by the application of an approved herbicide.

The Proposed Action would establish a mesquite treatment threshold of one-third the shrub cover composition in a specific site. In other words, should the mesquite component of shrubs meet or exceed one-third of the total percent of shrub cover, the site would be eligible for treatment to reduce mesquite. The goal of mesquite treatment would not be eradication from the site. Instead, the goal of mesquite treatment would be to reduce mesquite occurrence so that it fits into the parameters of the ecological site guides.

The Proposed Action would utilize the following best management practices (BMPs) for chemically or mechanically treating mesquite:

- The specific mesquite treatment areas will be evaluated on an individual, site specific basis. For any treatment project both pre- and post-treatment monitoring data will be collected.
- Only herbicides approved for use by the Environmental Protection Agency (EPA), BLM, and the State of New Mexico would be applied on public lands.
- Application of herbicides may be made via either aerial or ground methods.
- Aerial application of the herbicide would be conducted when the correct phenological stage of mesquite growth occurs; generally between the first of June and the end of September.

- Ground applications would be made at any time of the year, except when the ground is frozen.
- Treatments are conducted in such a manner to reduce straight edge lines, and contain areas or islands of untreated mesquite left for the preservation of habitat important to the maintenance of existing and future populations of game and non-game animals.
- Treatments would serve to create a regional mosaic within the landscape.
- No herbicide application would be allowed in known habitat for special status plant species (federal, state, BLM-sensitive), without consultation with the US Fish and Wildlife Service (federal-listed species) or the New Mexico Energy, Minerals and Natural Resources Department (state-listed species).
- Site-specific mitigation and design features would be incorporated in the Administrative Decision document.
- Appendix 9 of the Roswell RMP, p. AP9-13, outlines the policies, standards and practices to be used on public land in the Roswell Field Office when treating vegetation with herbicides. These requirements are derived from BLM policy, the Final EIS on Vegetation Treatment on BLM Lands in Thirteen Western States, decisions made in Roswell Resource Area Land use plans, and mitigations developed through environmental assessments.
- The applicable federal regulations concerning the storage and disposal of herbicides and herbicide containers would be followed. These are described in the Environmental Protection Agency "Regulations for Acceptance and Procedures for Disposal and Storage," Federal Register May 1, 1974, pages 15236 through 15241. This notation can be found on the label of each herbicide.
- The following are minimum widths (measured horizontally) for unsprayed buffer strips for all herbicides applied adjacent to the Pecos River, or any livestock watering locations unless the herbicide is labeled for use over water, ranch houses or known locations or threatened or endangered plants.

<u>Type of application</u>	<u>Buffer</u>
Aerial Spraying:	
Spraying altitude	
10 - 15 feet above ground	100 feet
Vehicle spraying	25 feet
Hand application	10 feet

Herbicides (liquid formulation) will be wiped on individual plants within 10 feet of water where application is critical

- Foliar or liquid herbicides will not be applied from the air within a minimum of 200 meters (657 feet) of special habitat features such as aquatic habitats, raptor nest sites, desirable native desert trees, caves, wildlife waters, exclosures, certain wildlife study sites, and important prairie chicken lek sites.
- Protective buffer zones will be provided around important riparian or wetland habitats along streams, rivers, lakes that are not designated to be treated, and around xeroriparian areas along important dry water courses. Xeroriparian areas are defined as vegetation zones occurring in or adjacent to ephemeral desert washes or stream courses, exhibiting

more luxuriant growth as an influence of increased available water. Some species of vegetation may be the same as those that occur on the adjacent uplands, but the growth forms are noticeably larger than the upland plants.

- The response of vegetation to treatment will be monitored by methods established prior to treatment. Onsite evaluation of herbicide effectiveness and resulting secondary succession will be conducted. Data gathered will be used to improve the brush control process.
- All livestock will be removed from treated pastures prior to aerial spraying or ground spraying applications involving foliar spray. Livestock should be removed after the first ½ inch of moisture following pellet treatment. Herbicide label requirements will be met when grazing domestic animals after application.
- A livestock grazing deferment of the treated area would be determined by vegetative response.
- A deferment of two growing season deferment should provide adequate rest, however, precipitation and vegetative growth will dictate if more or less deferment is necessary. The growing season is generally designated as June through September, during which the area usually receives the predominant part of precipitation.
- A resumption of livestock grazing would be made with the consultation of the grazing permittee and BLM.
- Considerations for wildlife habitat, watershed conditions and livestock operations will be factored into each project. These may include leave out areas, timing of treatment and additional management actions after treatment.
- Mechanical methods of treatment would be used in locations where herbicide application is not appropriate, such as floodplains, riparian areas and some sites within Areas of Critical Environmental Concern (ACECs).
- Before surface disturbing mechanical treatments are allowed on any site, surveys for the presence of cultural resources would be conducted. Cultural sites discovered by these surveys would be avoided or left out of the treated area.
- For any site proposed for pesticide (herbicide) treatment, the potential for groundwater contamination will be evaluated with the Environmental Protection Agency (EPA) rating system, DRASTIC (Aller et al. 1985). If the site proposed for treatment has a DRASTIC index greater than 100, it has a moderate to high potential for groundwater contamination, and will require a more detailed analysis prior to a decision being made on the proposed treatment. Factors that will be studied further include: pesticide solubility, mobility, speciation, and degradation, and highly localized recharge areas. A DRASTIC analysis for the entire Roswell Field Office Area has not been performed or incorporated into this EA. Therefore, a detailed DRASTIC analysis will be prepared for all pesticide treatment projects developed under this EA prior to pesticide treatment project implementation and prior to a decision being made on each of the proposed pesticide treatments. The Drastic Analysis for each proposed pesticide treatment will be included with the Documentation of Land Use Plan Conformance and National Environmental Policy Act (NEPA) Adequacy (DNA) review and decision document. A DNA will be prepared for each proposed Mesquite pesticide (herbicide) treatment project.

ALTERNATIVES CONSIDERED BUT NOT ANALYZED:

The alternative of No Aerial Herbicide Application, and No Use of Herbicides have been analyzed in the Vegetation Treatment on BLM Lands in Thirteen Western States, Final EIS and considered in the Record of Decision. Further discussion in this EA is unnecessary since site specific conclusions and impacts would be essentially the same as in the FEIS.

Other treatment methods such as mechanical, fire and "hand pulling" have been analyzed within the Vegetation Treatment on BLM Lands in Thirteen Western States, Final EIS. Discussion of those impacts may be found there. A copy of the document is available for review at the BLM Roswell Field Office.

NO ACTION ALTERNATIVE

This alternative would continue current authorized actions and policies found in the Roswell RMP, its amendments, and the Vegetation Treatment on BLM Lands in Thirteen Western States Final EIS. The Roswell Field Office would not initiate mesquite treatment on an area until the numbers of mesquite reached the treatment threshold of 50 plants per acre.

LOCATION OF PROPOSED ACTION:

Treatment is proposed within the Roswell Field Office, from Townships 12 North to Township 26 South, and Range 8 East to Range 38 East, New Mexico Principle Meridian. Refer to attached Maps 1 through 6.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS:

Historical and present use of the subject lands is predominately livestock grazing and energy development. The regional industries are ranching, oil and gas development and seasonal hunting. Land use authorizations such rights-of-ways, leases, permits would continue to be issued on a case by case basis.

The Roswell RMP contains an overall description of the environment in which the area of the proposed action is a part. Refer to the RMP and the following for a complete description

The following critical elements are not present or affected by the proposed action:

- Prime or Unique Farm Lands
- Native American Religious Concerns
- Wastes, Hazardous/Solid
- Wild & Scenic Rivers
- Wilderness
- Low Income/Minority Populations

AFFECTED RESOURCES

Areas of Critical Environmental Concern (ACEC) – Mesquite treatments on the Overflow Wetlands ACEC have been analyzed in EA No. NM-060-2003-168. Mesquite treatments within this ACEC are to be located only on the uplands, out of the floodplains and riparian areas.

The 1997 Roswell RMP states that no range improvements or vegetation treatments geared towards livestock production are to take place in the Mescalero Sands ACEC. However, projects within the ACEC designed for resource enhancement or protection will be considered.

Any mesquite treatments within the North Pecos River ACEC would take place only on the uplands, out of the floodplains and riparian areas, and only after monitoring data indicates mesquite is beginning to exceed threshold of one-half the cover for shrubs as described in the ecological site guide.

Mesquite is not present within or adjacent to the Fort Stanton ACEC.

Mesquite treatments could occur adjacent to the caves which make up the Roswell Cave Complex ACEC. The Roswell Cave Complex ACEC comprises nine cave systems as follows: Angora-Corn cave, Bat Hole Cave, Coachwhip Cave, Crockett Cave, Crystal Caverns-Devils Well Caves, Martin-Antelope Gyp Cave, Millrace Cave, Torgac Cave, and Zia Christine Cave. No-treatment buffers around cave entrances would be commiserate in size to fenced exclosures.

Environmental Consequences – Since mesquite is not present within or adjacent to the Fort Stanton ACEC, no mesquite treatments are anticipated. Therefore, there would be no impacts to the Fort Stanton ACEC.

Implementation of prescription guidelines for application would prevent adverse affects on the cave systems identified in the Roswell Cave Complex ACEC.

Confining mesquite treatments to the uplands of the Overflow Wetlands ACEC and the North Pecos River ACEC would limit direct impacts to the floodplains and riparian areas. Restoring the vegetation of the uplands to a more natural condition would indirectly provide benefits to the floodplains and riparian areas by improving both wildlife habitat and ecological function. The long term benefits of improved ecological function outweigh the short term impacts of the treatments.

Since any vegetation treatment within the Mescalero Sands ACEC must have the goal of resource enhancement or protection, any mesquite treatment would have to have improving vegetative condition, watershed enhancement and protecting wildlife habitat as its objective. The long term benefits of improved ecological function outweigh the short term impacts of the treatments.

Air Quality - The air quality in the Roswell Field Office is generally very good. Summer winds flow from the southeast, becoming southwesterly in the winter and early spring. Winds average 10 miles per hour (mph) in the fall and 16 mph in the spring. Peak velocities can exceed 50 mph.

Air quality is rated as a Class II area, which allows for moderate development with the standards of the State of New Mexico and Federal Air Standards. Within the boundary of the Field Office the Salt Creek Wilderness and the White Mountain Wilderness, which together contain 58,494 acres of land, are classified as Class I air quality areas. Class I areas have air quality that is pristine.

Environmental Consequences - The most significant impacts on air quality would be moderate noise. Other impacts such as air-borne dust, minimal chemical drift, and vehicle emissions would be apparent. Impacts would be temporary, small in scale, and quickly dispersed. These factors, combined with standard management practices, minimize the significance of potential impacts. Federal, State and local air quality regulations would not be violated.

The use of aircraft to apply the herbicide could temporarily cause noise levels to reach 90 dba; however, no long-term effects are anticipated.

Cultural Resources – Chemicals used could skew dating of cultural materials. The areas treated will be noted for the cultural files. Where treatment will be mechanical in nature, cultural inventory surveys may be required prior to surface disturbing activities. Where survey is required, significant archeological and historic sites will be located and avoided.

Soils - Soil in the Roswell Field Office was surveyed as a cooperative effort between the USDA Soil Conservation Service (SCS), the Bureau of Land Management and the New Mexico Agricultural Experimental Station between 1956 and 1987. Detailed soil information is in the Soil Survey of Chaves County, NM., Northern Part (SCS 1980), Soil Survey of Chaves County, N.M., Southern Part (SCS 1980), Soil Survey of Lincoln County Area, N.M. (SCS 1983), Soil Survey of DeBaca County, N.M. (SCS 1986), Soil Survey of Roosevelt County (SCS 1967), Soil Survey of Southwest Quay County Area, N.M. (SCS 1956), Soil Survey of Eddy County, N.M. (SCS 1971).

General Soils and Potential Plant Community Description
for Guadalupe, Quay, Curry, Roosevelt, DeBaca, Lincoln and
portions of Chaves County located north of Township 16 South.

Alluvial soil varies in depth from shallow in the western portion of the resource area to deep along the Pecos River. Shallow alluvial soil is found on rolling hills, and is susceptible to water erosion, particularly in draws and drainages.

Soil in the eastern portion of the resource area is primarily derived from limestone, gypsum and windblown sediments. This soil ranges from being nearly level to gently sloping, and range in depth from shallow to deep. Area of steep, rocky soil occurs along the breaks and ridges of the Pecos River and Mescalero Ridge.

Soil beyond the floodplain of the Pecos River, but still within the river's influence, is on level to moderately sloping topography and have varied textures. High concentrations of calcium and gypsum carbonates (caliche) occur in the substratum. Soil within the Pecos River

floodplain consists of alluvial deposits with textures varying from clay to sand, and slopes that are nearly level.

Environmental Consequences - Vegetation treatments may affect the characteristics of the soil by altering the abundance and types of vegetation that may shield soil from erosion, or alter the presence and abundance of soil microorganisms or larger organisms that contribute to overall soil quality.

Removal of solid stands of vegetation by chemical treatment may result in short-term, insignificant increases in surface erosion that would diminish as vegetation reoccupies the treated sites.

Although herbicides would not alter a soil's physical properties, there may be indirect effects on soil microorganisms. Depending on the application rate and the soil environment, herbicides can either stimulate or inhibit soil organisms. When herbicide-treated vegetation decomposes, the resulting addition of organic matter to the soils can support increased populations of microorganisms. Soil microorganisms can metabolize herbicides and often are reported to be responsible for herbicide decompositions. (Norris and Moore, 1981).

The proposed actions effects on the soil are tangible. The increased organic material caused initially by mesquite leaves, stems and roots and secondarily by the increased production of grasses and forbs improvement the fertility of the soil. The increases standing production and litter causes a gradual leveling of the undulating lands forms in the treated areas

There would be no soil disturbance associated with this action. It is expected that the increased basal ground cover of grasses and forbs would improve watershed conditions. Runoff and soil erosion would be slowed with greater on-site retention of precipitation. Nonpoint source pollution is not expected to occur in the short or long term.

Floodplains

Portions of the project area are located in the 100-year floodplain or Zone A or "Area of the 100-year flood". The 100-year floodplain ranges in width from less than one-quarter mile to more than one mile in the project area. For administrative purposes, the 100-year floodplain serves as the basis for floodplain management on public lands. It is based on Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency (1983). Current development on the floodplain consists of two-track roads, oil and gas developments, and miles of fence.

In general, the Pecos River channel is moderately entrenched and slightly confined by the valley. Channel banks are relatively stable, but are actively being cut in some locations. This is most likely due to entrenchment of the channel rather than disturbance associated with land use activities. The channel material is primarily a sand/silt bed with small to medium debris. The stream gradient is relatively flat (0.25 percent).

The riparian vegetation community is tied to landform within the floodplain and is influenced by flooding intervals. The land form is comprised of exposed and stabilized river bars, the floodplain, and terraces.

Environmental Consequences – Herbicide treatments that remove solid stands of vegetation may result in short-term, insignificant increases in surface erosion to the floodplain that would diminish as vegetation reoccupies the treated site. The floodplain may be affected or impacted by accidental direct application or drift or after treatment through surface runoff. The impacts to the floodplain would be greatly reduced when vegetation cover is reestablished.

Vegetation - Vegetation descriptions for this management area are described by the seven Community Types, which were developed and described in the Roswell Resource Management Plan, October, 10, 1997. Further information on those communities can be found in the Draft RMP, Appendix 11.

The potential plant community vegetation in the Grassland Community consists of the following grasses: bluestem spp., sideoats grama, black grama, blue grama, hairy grama, galleta and tobosa, sand dropseed, vine mesquite. The shrub component would include such species as skunkbush sumac, yucca, cactus, winterfat, four-wing saltbush, mormon tea and dalea. The forbs would include buckwheat, croton, globemallow, and threadleaf groundsel.

The Mixed Desert Shrub potential plant community consists of such grasses as black grama, blue grama, sideoats grama, sand dropseed and bush muhly. Four-wing saltbush, yucca, littleleaf sumac, globemallow and buckwheat are also listed.

Pinon, juniper, oak and skunkbush sumac are among the shrub species listed as part of the potential plant community in the Pinon Juniper Community. The grass species include little bluestem, blue grama, black grama, sideoats grama and metcalf muhly. The forbs include yarrow, buckwheat, globemallow, and indian paintbrush.

The Shinnery Oak Community contains sand bluestem, little bluestem, mesa, sand, and giant dropseed and giant sandreed. Annual mustard, annual sunflower, gaura, penstemon, and globemallow are included in the potential plant community. Shinnery oak, sand sagebrush and small soapweed are included in the shrubs.

Drainages, Draws and Canyons Community contains such grasses as blue grama, sideoats grama, giant sacaton, alkali sacaton, vine mesquite, tobosa and galleta, and western wheatgrass. The forbs would include buckwheat, globemallow, verbena, and desert holly while the shrubs include juniper, pinon, four-wing saltbush, winterfat and skunkbush sumac.

Potential plant community lists are being developed for the Riparian Community within the Roswell Field Office. Riparian areas are found along the Rio Bonito, Pecos River, wetlands, springs and seeps, and certain playas. The existing plant community along the Rio Bonito is comprised of cottonwood trees, willows, cattails, sedges and fescues. The plant community along the Pecos River is dominated by Tamarix with scattered cottonwood trees and seep willow.

Mesquite has encroached to the point that it covers wide areas and is in direct competition with all other plants for the available soil moisture. This competition restricts the proliferation of more desirable forage grasses and forbs, causing limitations on livestock, wildlife and soil stability.

Environmental Consequences - Effects of the proposal would be to decrease the density and composition of mesquite while increasing the density and composition of desirable grasses and forbs. Forage production, ground cover and wildlife habitat would be improved. Although the treatment targets mesquite, some injury or loss of non-targeted species may occur. Those species include other desirable forbs and shrubs.

Vegetation treatments would have beneficial and adverse effects on terrestrial vegetation within the area. Target (mesquite) and non-target vegetation in treated areas would be directly affected. The overall effect of treating vegetation would be to achieve the desired successional stage, and to create a reliable forage and browse source for wildlife and livestock.

Annual plants are generally more sensitive than perennial plants to chemical treatments because they have limited food storage organs and annual plant populations are greatly reduced if plants are killed before producing seed. Perennials are most sensitive when exposed to herbicides during active growth and before plants become reproductive also will have the greatest negative effect on populations of many annuals. The ability of annual or perennial plants to maintain viable seeds in the soil for several years reduces their susceptibility to herbicides. Control of some woody plants on some sites may open the community to dominance by annuals. (Evans and Young 1985).

Susceptibility of perennial plants to herbicides depends largely on their ability to re-sprout after aerial shoots are damaged (Table 3-3 of the FEIS, page 3-23). Plants that have the ability to re-sprout after aerial shoot damage are generally least sensitive to herbicides. These plants are damaged most when exposed to herbicides when translocation to meristematic areas and to roots occurs. (Sosebee, 1983). This generally occurs only when soil temperatures are adequate for root activity and soil water is available. These plants are generally more susceptible to soil-active herbicides that persist in the soil long enough to be taken up when optimum translocation conditions occur.

Differences in active growth periods and phenology of non-target and target species that correspond to differences in sensitivity to herbicides can be used to minimize damage to non-target species.

Response of non-target species to broad-spectrum herbicides may be highly dependent on the rate of the application. Damage to non-target species is minimized if they are tolerant of these herbicides applied at rates sufficient to reduce target species.

An even application of the chemical herbicides Reclaim and Remedy at the proposed 0.5 pounds of active ingredient per acre will reduce the present composition of mesquite to an estimated 10% by the second year after application. This is an estimated 64% average root kill on mesquite using this combination and amount of active ingredient per acre of herbicide. This reduction of mesquite reduces or eliminates the competition for soil water, which is critical in loamy or sandy loam soils where the moisture holding capacity is good but the soil itself is relatively shallow. The lack of competition will readily allow grass and forbs to flourish, producing an abundance of livestock and wildlife forage.

The change in the composition of the vegetative community will have the affect of changing the entire treated area from a desert shrubland habitat to a grassland habitat in a very short period of time (approximately 2-3 years.). A change from shrubland to grassland will change the animal community to one that is representative of grassland habitats.

Using herbicides according to EPA labeling is the most efficient and effect way to control some competing vegetation and noxious weeds.

Non-Native and Invasive Species - A noxious weed is defined as a plant that causes disease or has other adverse effects on the human environment and is, therefore, detrimental to the public health and to the agriculture and commerce of the United States. Generally, noxious weeds are aggressive, difficult to manage, parasitic, are carriers or hosts of harmful insects or disease, and are either native, new to, or not common in, the United States. In most cases, however, noxious weeds are non-native species.

The list currently includes the following weeds: 1) African rue, 2) black henbane, 3) bullthistle, 4) camelthorn, 5) Canada thistle, 6) Dalmatian toadflax, 7) goldenrod, 8) leafy spurge, 9) Malta starthistle, 10) musk thistle, 11) poison hemlock, 12) purple starthistle, 13) Russian knapweed, 14) Scotch thistle, 15) spotted knapweed, 16) teasel, 17) yellow starthistle, 18) yellow toadflax, 19) Russian olive, 20) Tamarix species, 21) Siberian elm.

Of the noxious weeds listed, the ones with known populations in the Roswell Field Office are African rue, non-native *Cirsium* spp. such as bull thistle and Canada thistle, leafy spurge, goldenrod, Malta starthistle, Russian knapweed, Russian olive, poison hemlock, teasel, musk thistle, Tamarix species and Scotch thistle. Some noxious weeds co-exist in the same locations Also "problem weeds" of local concern are cocklebur, buffalobur and spiny cocklebur. "Problem weeds" are those weeds which may be native to the area but whose populations are out of balance with other local flora.

Infestations of noxious weeds can have a disastrous impact on biodiversity and natural ecosystems. Noxious weeds affect native plant species by out-competing native vegetation for light, water and soil nutrients. Noxious weeds cause estimated losses to producers \$2 to \$3 billion annually. These losses are attributed to: (1) Decreased quality of agricultural products due to high levels of competition from noxious weeds; (2) decreased quantity of agricultural products due to noxious weed infestations; and (3) costs to control and/or prevent the noxious weeds.

Further, noxious weeds can negatively affect livestock and dairy producers by making forage either unpalatable or toxic to livestock, thus decreasing livestock productivity and potentially increasing producers' feed and animal health care costs. Increased costs to operators are eventually borne by consumers.

Noxious weeds also affect recreational uses, and reduce realty values of both the directly influenced and adjacent properties.

Recent federal legislation has been enacted requiring state and county agencies to implement noxious weed control programs. Monies would be made available for these activities from the federal government, generated from the federal tax base. Therefore, all citizens and taxpayers of the United States are directly affected when noxious weed control prevention is not exercised.

Environmental Consequences –The Proposed Action or the Alternative would not generate impacts to noxious weeds. Monitoring activities, which would trigger a proposed mesquite treatment, would also reveal noxious weed infestations.

Water Quality Drinking/Ground –

Surface Water: The majority of the resource area is located within the Pecos River Basin of New Mexico; a portion in western Lincoln County drains to the Tularosa Basin, and the remaining acreage exists as scattered parcels in the Canadian River and Texas Gulf Basins. Major tributaries of the Pecos River with a high percentage of BLM surface ownership include: the Rio Hondo (including the Rio Bonito and Salado Creek Watersheds), the Rio Felix; Salt Creek; Arroyo del Macho (including Cowboy Draw); and Long Arroyo. Fresh surface water can be obtained from perennial and ephemeral rivers and streams, ephemeral playas, perennial and ephemeral springs, and natural or manmade dirt water holding tanks. The Pecos River and the Rio Bonito River are considered to be perennial rivers.

Ground Water - The New Mexico State Engineer (1991) has declared nine “underground water basins” in the resource area: Upper Pecos; Fort Sumner; Tucumcari; Curry County; Portales; Lea County; Roswell; Hondo; and Tularosa. Agriculture is the primary use of groundwater in the resource area, with additional demands by a municipality, industry, livestock and wildlife. Ground water is located in two primary aquifers separated by a confining layer. The shallow aquifer is made up of unconsolidated alluvium (Quaternary and Tertiary Age), and the lower aquifer consists of consolidated limestones and sandstones (Permian Age). The depth to ground water typically ranges from less than 10 to 100 feet in the unconsolidated alluvium, and from 300 to 1,000 feet or more in the consolidated limestones and sandstones. Fresh groundwater for domestic, irrigation, and stock use can be obtained from deposits of Quaternary Alluvium, Gatuna Formation, Cub Mountain, Mesaverde Group, Mancos Shale, Dakota Sandstone, Chinle Formation, Santa Rosa Formation, Dewey Lake Formation, Rustler Formation, Salado Formation, Artesia Group and the San Andres Formation. Known depths to water range from 1 foot to approximately 700 feet + (New Mexico Office of the State Engineer data).

Environmental Consequences –

Water Quality – Drinking/Ground

SURFACE WATER:

NON-MECHANICAL REMOVAL

Herbicides may enter streams during treatment through accidental direct application or drift, or after treatment through surface or subsurface runoff. To pollute the water, the Herbicide must be present in the water at concentrations high enough to impair water quality at a point of use. Direct application of herbicides to surface water may occur if aircraft accidentally fly over streams, lakes, or ponds during pesticide application. Drift of herbicides into surface water would depend on the application method, existence of buffer zones, and the weather. Buffer zones reduce drift impacts on sensitive areas, while wind increases drift impacts. After treatment, herbicides may enter streams by subsurface flow or by movement in ephemeral channels. For herbicides mitigation requires buffers of 100 feet (aerial), 25 feet (ground-vehicle), and 10 feet (ground-hand), and nozzles producing large (200-micron) droplets be used. Impacts from Herbicides would be minimal in perennial and intermittent streams because they are protected by 10-foot (ground-hand), 25 foot (ground-vehicle), and 100-foot (aerial) buffers.

GROUNDWATER

Herbicides, after treatment, may move through the soil and into underlying ground-water aquifers by leaching. To pollute ground water, they must then move laterally at concentrations high enough to impair water quality at a point of use. Key factors affecting peak concentration are herbicide properties, soil, depth to water table, and the distance to the point of use.

Visual Resources - The resource area contains 5 different Visual Resource Management Area (VRM) Classes. Class I areas are designated in areas where natural ecological changes and very limited management activity is allowed. Any contrast created within the characteristic landscape must not attract attention. This classification is applied to Visual Areas of Critical Environmental Concern, wilderness areas, wild and scenic rivers, and other similar conditions. Class II areas may allow changes to the basic elements (form, line, color, texture) caused by management activities, but the activity should not be evident in the landscape. The contrast may be seen but should not attract attention. Class III areas allow that contrasts to the basic elements caused by a management activity may be evident and begin to attract attention in the landscape. The changes, however, should remain subordinate in the existing landscape. The treatment sites along the highway rights-of-way are categorized as Visual Class III. The areas will be visible to the public. Class IV Visual Resource Management Areas allow changes that attract attention to the contrasts and a dominant feature in the landscape in terms of scale. However, the changes should repeat the basic elements of the landscape. A majority of the resource area is considered to be Class IV VRM areas. The fifth VRM Class is “Unclassified”, and is only found in the White Sands Missile Range located on the western edge of Lincoln County.

Environmental Consequences - There would be no impact to visual resources.

Recreation – Recreational users would include hunters, cavers, OHV riders, hikers, equestrian users, bird watchers, sightseers, oil and gas workers, and photographers. Recreation may be affected during treatment prescriptions, but the affects would be limited and short term.

Environmental Consequences - There would be no long term impact to recreation.

Cave/Karst – The proposed action is located in all areas of cave/karst occurrence designated (Low), (Medium), and (High). Chemical treatment should not be applied within 200 meters of a known significant cave or karst feature. Chemical treatments would be applied in such manner as to exclude chemical introduction into a cave or karst feature from rain or snow run-off.

Since some caves, especially in formations of gypsum tend to be close to the surface. Mechanical treatment in these areas present the risk of breaking through the surface into the cave opening. Sink holes present a clear and present danger to equipment and operators.

Burning prescriptions would not affect the cave/karst areas. See the previous discussion of the Roswell Cave Complex ACEC.

Environmental Consequences – If prescription guidelines are in place there should be no impact to cave/karst resources.

Wetlands/Riparian Zones - There are wetland and riparian areas within the RFO area. The primary areas are the Rio Bonito, Pecos River, wetlands, springs and seeps, certain playas, and xeroriparian areas associated with draws.

Environmental Consequences - There would be no long term negative impact to wetland/riparian areas. It is expected that some riparian vegetation that may occur at the outer limits of the buffer zone for vehicle-mounted sprayers could be affected by herbicides. It is expected that hand spraying to within 10 feet of stream banks could affect some riparian vegetation growing in close association with mesquite

Wildlife -

Environmental Consequences - Wildlife species depend directly on vegetation for habitat; so any change in the vegetation of a particular plant community is likely to affect the wildlife species associated with that community. Any change in community vegetation structure or composition is likely to be favorable to certain animal species and unfavorable to others.

Therefore, any changes in vegetation community structure or composition affect resident wildlife populations. Effects on wildlife from vegetation management would be both positive and negative, depending on the species affected and the type of treatment used.

Chemical treatments, like mechanical methods, traditionally have been applied most frequently to decrease woody plants, and increase the production of grasses. The control of woody species, especially by selective herbicides, often results in the initial control of associated broadleaf forbs; both categories of plants contain species which may be important food for many different

wildlife species. Chemical treatments can be designed to increase and decrease other vegetation components for the benefit or exclusion of different groups of wildlife species which are associated with different types of habitat. Enhancing the structural diversity of vegetation by controlling shrubs and increasing understory species in a mosaic pattern should increase bird diversity. Some negative impacts can be lessened if the period of treatment avoids the bird nesting season and other critical seasons when loss of cover would be critical to wildlife; for example, during the critical reproductive periods (from April to June).

After treatment of mesquite, the increase of forb and grass species would most likely lead to an increase in use of the treated areas by wildlife species. In some cases, mesquite control would be used to directly enhance wildlife habitat by reducing cover, e.g., removing invading mesquite in prairie dog colonies.

Threatened and Endangered Species - The Roswell Field Office contains habitat for several wildlife and plant species that are listed as Special Status Species (federal, state and BLM sensitive). The complete list of Special Status Species and the Species Accounts are found in Appendix 2 of the Roswell, Approved Resource Management Plan. Of primary concern are plant species. Federally listed plant species are Kuenzler's hedgehog cactus and the Pecos sunflower. The Pecos sunflower potentially occurs in wetland/riparian zones.

Environmental Consequences - There would be no impact to known populations of threatened and endangered animal species. There would be no impact to Kuenzler's hedgehog cactus and Pecos sunflower. Known populations of T/E plant species would be omitted from treated areas. The Pecos sunflower potentially occurs in wetland/riparian zones, but no populations are known to occur within the proposed treatment areas.

Livestock Grazing - Bureau of Land Management grazing permits exist throughout the area proposed for treatment. The objective of the proposed action is watershed restoration, therefore subsequent increases in forage allocations for livestock will not be made until it has been determined that the increased forage is available on a long term and sustainable basis.

Environmental Consequences - The goals of rangeland treatment for livestock include suppressing plant species that are low quality forage and improving forage production by promoting a more desirable mix of vegetation. Short term reductions of authorized grazing use may be required to enhance the success of the treatments. Livestock would be affected directly by changes in forage supply and quality. Chemical treatments would be applied when livestock are not in the pasture to be treated.

Mineral and Oil and Gas development - There are existing leases/permits for mineral materials and oil and gas throughout the Roswell Field Office.

Environmental Consequences - There would be no impact to oil and gas development.

Lands, Realty and Rights-of-Way - Rights-of Way for pipelines, power lines, communication sites and access routes are permitted within the Roswell Field Office area.

Environmental Consequences - There would be no impact to realty or rights-of-way.

Description of Impacts - Impacts associated with the use of these herbicides on mesquite on public land are addressed in detail in **Vegetation Treatment on BLM Lands in Thirteen Western States, Final EIS (USDI BLM, May 1991)**. That document deals with the affected environment, methods of treatment and application rates, soil/vegetative responses, risk assessment, hazards, concerns, and toxic characteristics and behavior. A copy of the document is available for review in the Roswell Field Office.

The No Action Alternative will not change the present conditions significantly. The area will primarily remain in status quo condition with the area dominated by mesquite and its present effects. Wildlife populations will remain unchanged under the No Action alternative. No increase of forage or stabilization of the soil will occur.

CUMULATIVE IMPACTS

The cumulative impacts of the proposed action would be minimal. The cumulative impacts of the No Action alternative would be much more drastic.

The effectiveness of grazing and wildlife habitat management programs is enhanced by the increasing size of restored grasslands. Early initial treatment of mesquite and an aggressive follow-up treatment program would have a positive cumulative effect of slowing or stopping encroachments. The treated areas will have the effect of creating a more diverse vegetative composition of allowing for increased vegetative cover; increased production of grass and forbs, while retaining mesquite as part of the shrub component.

Any cumulative impact of the proposed treatment of mesquite on wildlife will be dissipated by the condition of the surrounding treated areas outside of individual allotments. The conditions will result from the dates that the other areas were treated, the life span of those projects, and whether they have recently treated (less than three years) or are nearing the end of the projects life span (approximately 15 to 20 years), or have never been treated. Wildlife will be utilizing the different areas at varying levels of use for feeding, protection, cover and reproduction.

Long lasting effects of chemicals on wildlife will not occur, according to the FEIS on Vegetation Treatment on BLM Lands in Thirteen Western States. All herbicides permitted for use on public lands are non-carcinogenic and non-mutagenic.

It is anticipated that recreational use of the area where mesquite is controlled will increase. This increase will be primarily by hunters seeking the quail and dove utilizing the increase amount of forage.

The chemical nature of the herbicides proposed for mesquite control is such that no residue will be left in the soil or atmosphere after approximately 150 days.

DESCRIPTION OF MITIGATION MEASURES AND RESIDUAL IMPACTS:

Mitigation Incorporated Into the Proposed Action - Affected allottees and landowners along proposed treatment areas would be notified prior to treatment. Mitigation needed for protection of grazing animals or nesting birds would be implemented as per label instructions on the chemical utilized.

For subsequent treatments, an evaluation for potential impacts to endangered species will be conducted prior to treatment. If any endangered plant species are found within the proposed treatment areas, the project will be designed to avoid impacts.

Impacts to the following resources and values would not be mitigated under any alternative and are considered to be residual impacts:

- Short-term reduction in air quality from dust and engine emissions and increased noise levels resulting from the equipment being used in the application of the herbicide.
- Short-term change in chemical composition of the uppermost soils layers due to the change in abundance of organic matter.
- Short-term change in habitat of wildlife species.

To avoid impacts to the oil and gas industry and to allow for safety, all oil and gas operators and right-of-way holders will be contacted prior the start of any eradication regardless of method used.

No additional mitigating measures will be needed if the standard operating procedures and design features previously discussed are adhered to.

Monitoring - Monitoring studies would continue to document changes in vegetation and ground cover.

Summary - The results of the Proposed Action will definitely alter the vegetative species mix in the treated areas. The Proposed Action will result in beneficial effects to the soil, water and animal life although they may be different than present.

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