

# Environmental Assessment

## EQIP – Fourmile Canyon

### Pecos River Watershed Aquifer Brush Control

#### Introduction:

This environmental assessment (EA) is being prepared by the United States Department of Agriculture Natural Resources Conservation Service (NRCS) to comply with the requirements of the National Environmental Policy Act of 1969 and implementing regulations at 40 CFR Parts 1500 – 1508. The EA will assist NRCS in determining whether the proposed action will have a significant impact on the quality of the human environment and therefore requires preparation of an Environmental Impact Statement.

#### Need for proposed action:

There is a need in the Pecos river watershed aquifer recharge area of South West Chaves County to control juniper brush invasion on rangeland and increase ground water recharge. The purpose of meeting this need is to improve rangeland health on the watershed so that the ranching industry in the area is sustainable, ground water recharge is improved, and habitat for existing wildlife is improved.

#### Background:

The geographic priority area is located in Southwest Chaves County at the upper elevations of the Pecos-Canadian Plains major land resource area (CP-4). This is the foothill region of the Sacramento Mountains. The area is approximately 180,000 acres in size, and the primary land type is rangeland. The NRCS ecological site descriptions describe this area as grassland at the lower elevation, and a savanna at the higher elevation. There are five major drainages that cut through the area and feed into the Pecos River. One third of this area (60,000 ac.) is located on major aquifer intake areas. These areas can be located on surficial geology maps. The area is mapped as the Yeso, which is an important recharge area for the Pecos Valley Artesian system.

The area supports a ranching economy through livestock grazing and recreation derived from wildlife. The area is threatened by the invasion of woody plant species. This invasive brush affects the stability of the ranching economy by reducing herbaceous vegetation for livestock and wildlife and by reducing precipitation effectiveness, which effects ground water recharge. Water is a limited resource in the arid South West. Water yield tends to decrease as woody cover increases. Brush management can be used to increase water yield by shifting vegetation composition from species associated with high evapotranspiration potential (trees) to species with lower evapotranspiration potential (grass).

## Alternatives:

Use Environmental Quality Incentives Program (EQIP) authorities to assist ranchers in the GPA area to apply ranch conservation systems.

Alternative 1: No Action.

Alternative 2: Proposed Action: Assist ranchers in the GPA area to apply ranch conservation systems that include brush management (mechanical, chemical, and fire), prescribed grazing (grazing management), upland wildlife habitat management. Fencing and watering facilities (pipelines, troughs, and wells) are facilitating practices needed to implement prescribed grazing and upland wildlife habitat management.

Alternative 3: This are approximately 60,000 acres of rangeland on the aquifer recharge areas of the Pecos River watershed that would benefit from the application of conservation systems proposed in alternative 2. This would treat more acres and would make additional water available for aquifer recharge.

## Alternatives Considered But Not Studied In Detail.

Alternative 4: One alternative was to use biological control as a tool to manage juniper invasion on the area. Research is needed to make this a viable alternative. There are no known biological agents. This alternative is beyond the scope of NRCS therefore it will not be evaluated further.

## Scoping Of Issues for Unique and Protected Resources in the Area.

NRCS conducted a review of the area to identify unique and protected resources and other special issues of concern. Members of the public had an opportunity to provide comments and identify concerns during a meeting on May 1, 2001 of the Penasco Soil and Water Conservation District. Comments were again solicited at a meeting on May 8, 2001 of the local workgroup. This group is responsible for recommending proposed EQIP actions. No controversy about the need for action or the actions themselves was raised during these meetings. NRCS or other Federal and State agencies identified no issues of concern during the meetings.

Threatened and Endangered Species of Concern: A record search shows the Mexican spotted owl, Bald eagle, Arctic peregrine falcon, and the Northern aplomado falcon are T&E species that can frequent the area. The Kuenzler hedgehog cactus is a T&E plant species that could be found in the area.

NRCS conducted a record search by way of the U.S. Fish and Wildlife Service and the NM Department of Game and Fish websites. Site-specific habitat evaluations and if necessary, field bird and plant surveys will be done before NRCS implements any

ground disturbing activities. If any of the birds or cactus listed above are found to be using the project site, consultations with US FWS will be initiated.

**Cultural Resources and Historic Properties:** NRCS completed a search of cultural resources records and the density of such sites is low in the GPA area. Nonetheless, to ensure that unidentified sites are not adversely affected. Site-specific field surveys will be done and consultation will be conducted with the New Mexico State Historic Preservation Officer (SHPO) before NRCS implements any ground disturbing activities.

**Wetlands:** There are no actions planned on wetlands.

**Prime farmland:** The area contains no prime farmland.

## Impacts and Effects of Alternatives.

### Alternative 1. No Action

Landowners and other agencies will continue to apply ranch conservation practices, which include brush management on small acreage's, livestock water development, and fences without NRCS participation. Rangelands with low ecological site indexes will persist. Brush densities will remain at high levels. Rangeland health will remain at risk. Ground water recharge will remain below its potential. Rangelands will continue to support plant communities with low water use efficiency.

### Alternative 2. Proposed Action:

There are 180,000 acres of rangeland in the area with potential to benefit from the application of conservation systems that would include brush management, prescribed grazing, upland wildlife habitat management, and facilitating practices. NRCS expects to carry out brush management on only .05 percent of this acreage, or 10,000 acres. Prescribed grazing and upland wildlife habitat management would be carried out on an additional 10,000 acres. NRCS using research information conservatively estimates two inches of annual precipitation could be captured for recharge following brush management. This equates to approximately 1,300 acre-feet. Do to the limited amount of EQIP funds available the size of the area and the extent of conservation systems applied to improve forage production and aquifer recharge is limited.

This alternative includes brush management (mechanical, chemical, and fire) to reduce juniper invasion on shallow, loamy, shallow loamy, and swale rangesites. Brush management will be done to restore natural plant communities to reduce competition for space, moisture, and sunlight between desired and unwanted plants. It will improve forage accessibility, quality, and quantity for livestock and maintain or enhance wildlife habitat.

Mechanical brush management will disturb soils in areas where trees are grubbed. It will disturb 25 to 30 percent of the soil surface. Soil disturbance is extensive where pits are

dug, with destruction of soil structure and compaction. Large pits are created where the root mass is removed. Erosion rates will increase slightly following treatment, but over a period of two to five years perennial grasses will stabilize the area.

Water quantity will be impacted; brush control will improve precipitation efficiency. Areas treated will be changed from a plant community dominated by woody vegetation (high water use plants) to a plant community dominated by grasses (low water use plants). This change in the plant communities will allow more precipitation to be available for ground water recharge.

Water quality will be impacted, for a short period following the use of mechanical brush management. Disturbed areas will contribute sediment to overland flow. This will persist for one to two years following treatment. Vegetation will stabilize the site.

Mechanical brush control will impact air quality. Diesel smoke and dust will be a problem for a short period of time during the implementation period.

Mechanical brush control will restore the plant community on the area to a grassland. This will provide more herbaceous vegetation for livestock. Reestablish a grassland ecosystem.

Brush management will be done with habitat for wildlife (mule deer) in mind. Areas along draws, rock out-crops, steep slopes and ridge tops will be avoided. Travel lanes will be left to provide for movement of wildlife between habitat types.

Chemical brush control would be done by aerial application or hand application of herbicide. Chemicals would be applied prior to the rainy season. Precipitation will carry the chemical into the soil. The chemical is then taken up by the target species. It will take two or three growing seasons to completely kill the target species. Application of the herbicide will be done according to the label thus keeping effects of the chemicals within levels determined by the Environmental Protection Agency to be acceptable.

Application of herbicides does not disturb the soil, therefore there will be no increase in erosion. Areas with perennial streams and springs will not be treated with chemicals. There are no shallow water tables in the work area. Water quality will not be affected. The affects on water quantity are the same as previously discussed in alternative 2. The chemicals being used are in a pellet form or applied directly to the ground in small amounts. There will be no chemical drift associated with the practice. Air quality will not be affected. The herbicide rate used will be that needed to control the target species. Non-target species should show little impact from the chemical. With GPS capabilities, areas with high concentrations of desirable plants can be avoided. Chemical brush management would be planned and carried out in a manner to enhance wildlife habitat. Areas along draws, rock out-crops, and ridges and hilltops would not be treated. Travel lanes will be left along the draws to provide for movement of wildlife between habitat types. Areas treated will be small (50 to 100) acres in size. The brush management plan

will plan for the creation of edge effect. Chemical will be applied from the air in strip patterns.

Fire has long been a component of the rangeland ecosystems of the Southwest. Prescribed burns are different than wildfires, since they are applied under very specific climatic conditions and at specific times of the year in order to provide effective control of brush with minimum impacts on desired vegetation. Burning will significantly reduce the infiltration rate and increase the sediment yield of a site. This is due to the loss of protective cover, which dissipates raindrop energy and obstructs runoff. Depending on the intensity of the rainfall event following the burn these impacts can be minimal or severe. These impacts will be short lived (one to two growing seasons) as the vegetation on the site recovers. Fire is an excellent tool for managing wildlife habitat, because fires seldom burn the entire area, a mosaic effect is created. This will greatly increase edge effect and create a stratified plant community.

Once the brush is removed facilitating practices such as livestock pipelines, livestock water storage's, livestock drinkers, and fences may be constructed to implement prescribed grazing.

If a pipeline and its associated drinkers and storages is installed a trench will be excavated to receive the pipeline. The excavated trench will then be covered. This excavated area will be 4 to 6 feet wide and could be several miles in length. The excavation will be done with a dozer or grader.

The soil surface will be disturbed along the pipeline route. Soil erosion will increase slightly, but the area will grass over within one or two growing seasons. (Ground disturbance for a pipeline one mile in length would be .6 tenths of an acre)

Construction of livestock pipelines will have little effect on water quality or quantity.

Construction of livestock pipelines, will impact air quality during construction. Diesel smoke and dust will be a problem for a short period of time during the implementation period.

Construction of livestock pipelines will effect plant communities. Grazing distribution and harvest efficiency can be improved for livestock and wildlife.

Pipelines construction will provide a permanent and readily available supply of water for livestock and wildlife year round.

If fencing is installed, a right of way will be cleared using a dozer. Right of ways will be cut by clearing woody plant species along a course 10 to 15 feet wide, and could be several miles in length. Fencing will be used to control the duration of use and season of use for a pasture by livestock.

The soil surface will be disturbed during construction of the right of way. Soil erosion will increase slightly, but the area will grass over in one or two growing seasons. (Ground disturbance for a pipeline one mile in length would be 1.8 acres)

Fence construction would have little effect of water quality or quantity and air quality.

The construction of fences will effect plant communities. Fences would provide managers the capability to control the length of time a pasture is grazed as well as the time of year it is grazed. Plant vigor would be improved.

The construction of fences would effect livestock and wildlife. Fences would provide managers the capability to better meet the nutritional needs of their livestock through planned grazing. Pastures could be deferred to better meet the needs of wildlife.

Prescribed grazing is the planned harvest of vegetation with grazing animals. Grazing is managed with the intent to achieve improved health and vigor of selected plants. It is used to achieve a stable and desired plant community and provide and maintain food, cover, and shelter for livestock and wildlife. Prescribed grazing wood promotes economic stability of the ranching community.

Upland wildlife habitat management is the creation, maintenance, or enhancing areas, for food cover for mule deer. Mechanical brush management would be planned and carried out in a manner to enhance habitat. Areas along draws, rock out-crop, and ridges and hilltops would not be grubbed. Travel lanes will be left to provide for movement of wildlife between habitat types.

Land uses will not change as a result of implementing this alternative. Cash flow may increase for individuals, but investment requirements will increase with improvements. These systems should reduce labor requirements. Management knowledge and ability to manage these systems will need to increase. Risk of investment loss is moderate. Profitability may remain static. Overall, client and community well being will be improved as rangelands are returned to a more productive state.

Estimated cost for implementation of these alternatives is \$550,000 for a five-year program.

Table 1 – Alternative 2

	Treatment with NRCS EQIP Assistance Alone	Treatment by Landowner Initiative, Other Agency Assistance and NRCS Cumulatively
Mechanical - Brush Managment	8,000 ac.	10,000 ac.
Livestock pipeline	20,000 ft.	40,000 ft.
Fencing	25,000 ft.	35,000 ft.
Prescribed Grazing	10,000 ac.	20,000 ac.
Upland Wildlife Habitat Management	10,000 ac.	20,000 ac.

### Alternative 3:

This alternative employs the same actions and practices as Alternative 2 except that it treats more acres.

There are 60,000 acres in the aquifer recharge areas that need treatment. Under this alternative 50 percent of these acres would be treated with brush management to control juniper invasion. This work would be completed through NRCS assistance, landowners on their own, and other agencies. Cumulatively all sources would install 50,000 ft. of livestock pipelines and 50,000 ft. of fencing. Prescribed grazing and wildlife upland habitat management would be implemented on 60,000 ac.

Precipitation effectiveness would be increased by two inches a year on the acres treated with brush management. This equates to approximately 5,000 ac-ft. annually.

All other environmental considerations are the same as alternative 2 above.

Because of increased acres treated in Alternative 3 it is more desirable, however, limitations of EQIP funds will not allow completion of this alternative. Estimated cost for implementation of this alternative is \$2,100,000.

Table 2, Alternative 3

	Treatment with NRCS EQIP Assistance Alone	Treatment by Landowners Initiative, Other Agency Assistance and NRCS Cumulatively
Mechanical - Brush Management	25,000 ac.	30,000 ac.
Livestock pipeline	40,000 ft.	50,000 ft.
Fencing	35,000 ft.	50,000 ft.
Prescribed Grazing	60,000 ac.	60,000 act.
Upland Wildlife Habitat Management	60,000 ac.	60,000 ac.

Other effects were considered in the discussion, but the effects in Table 3 relate to the needs and are the only ones used for comparison to make the final decision.

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## Comparison of Alternatives:

Table 3 – Comparison of Alternatives  
Effects on Needs

Alternative	Brush Invasion	Ground Water Recharge	Rangeland Health	Wildlife Habitat	Ranch Sustainability	Cost
1. No action	Will continue to increase at 3%/yr.	Potential will remain low	Remain at risk	Habitat ratings will continue to decline	Sustain-ability will continue to decline	0
2. System Sm. W/ brush management	Will be halted on 10,000 ac.	Increase by 1,300 ac-ft annually	Will improve on 20,000 ac.	Will improve on 20,000 ac	Sustain-ability will show slight improve-ment	550,000
3. System Lg. W/ brush management	Will be halted on 30,000 ac	Increase by 5,000 ac-ft annually	Will improve on 60,000 ac.	Will improve on 60,000 ac.	Sustain-ability will show moderate improve-ment	2,100,000

### Persons and Agencies Consulted:

Penasco Soil and Water Conservation District Board and attendees at (May 1, 2001 board meeting) (Available for public review in F.O.)

Local work group and attendees of (May 8, 2001 meeting). (Available in FO.)

New Mexico Cooperative Extension Service - Dr. Keith Duncan

Bureau of Land Management – Susan Britt

Farm Services Agency, CED – Malcom McCarty

### References:

NRCS Field Office Technical Guide, Section III, Quality Criteria.

NRCS Field Office Technical Guide, Section IV, Standards and Specifications.

U.S. Fish & Wildlife Service, Threatened and Endangered species list for NM.

New Mexico Fish and Game, BISON repost for Chaves Co.

Improving Rainfall Effectiveness On Rangeland, Texas Agricultural Extension Service, The Texas A&M University System, Allan McGinty, Thomas L. Thurow and Charles A. Taylor, Jr.

How an Increase or Reduction In Juniper Cover Alters Rangeland Hydrology, Texas Agricultural Extension Service, The Texas A&M University System, and Thomas L. Thurow and Justin W. Hester.

*New Mexico Brush Inventory*, New Mexico Department of Agriculture, Gary L. Garrison, Dr. Kirk C. McDaniel.

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**Finding of No Significant Impact  
For the Implementation of EQIP  
In the Fourmile Canyon  
GPA**

**INTRODUCTION:**

The Fourmile Canyon Geographic Priority Area is a federally assisted action under the Environmental Quality Incentives Program (EQIP), with assistance from the Natural Resources Conservation Service (NRCS). An environmental assessment was conducted in consultation with Local, State, and Federal agencies. Data developed during the assessment are available, upon request, from:

U. S. Department of Agriculture  
Natural Resources Conservation Service  
Artesia SWCD Office  
3105 W. Main Box 11A  
Artesia, NM. 88210

The Environmental Assessment (EA) is attached for reference.

Determination of Significance:

Table 1 Determination of Significance of Proposed Action.

<b>Context</b>	<b>Intensity</b>	<b>Reason for Non Significance</b>
Ground water recharge .05% total GPA potential yield (1300 acre feet)	Water recharge diminishing each year for the life of the project (50 years)	Dependent on available precipitation and continued management for the project life.
Native plant community (woody species) Invasion of young trees	18% of GPA will be treated (8,000 acres)	Dependent of follow-up Management during project life and beyond
Public health and safety (air quality) Less than 18% of the agriculture area will be disturbed	Practice construction will temporarily generate dust at scattered locations throughout the GPA. Implementation will take place throughout the year.	Rural character of the area minimizes air quality problems at any one time.
Cultural resources – 33 sites recorded.	Medium density in the area shown in records search	Sites will be avoided if encountered.
Surface water quality No detectable change in Surface water quality will occur	Probability of surface water degradation due to pesticide contamination is minimized over the life of the practices	Surface water quality will neither improve or decline

Other considerations related to context and intensity are discussed as follows. All agriculture operations in the area are very similar and the producers will be given the opportunity to participate depending upon individual need. No other issues or concerns have been expressed at any public meeting so controversy is small. These actions have all been performed in the past with known and acceptable results. Endangered species have been addressed in the EA and there is likely no effect on species considered and no further consultation is necessary. No national, state, or local laws will be violated by this action.

#### Finding of No Significant Impact

This finding is based on the evidence presented in the EA of impacts and alternatives for this GPA. Based on the assessment and the reasons given in Table 1 above. I find the alternatives analyzed in the EA will have no significant impact on the quality of the human environment. Therefore an environmental impact statement will not be prepared.



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ROSENDO TREVINO  
State Conservationist

*December 20, 2001*

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Date