

**ENVIRONMENTAL ASSESSMENT
CENTRAL CLOSED/ESTANCIA BASIN
ENVIRONMENTAL QUALITY INCENTIVE PROGRAM**

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 to maintain a useable water supply for irrigated agriculture, communities, livestock and wildlife, and individual needs, reduce erosion, increase soil fertility, increase biodiversity improve ecological site potential, and improve economic stability in the Central Closed/Estancia Basin.

BACKGROUND:

The Central Closed/Estancia Basin GPA contains 2967 ac. of Cropland and 532,990 ac. of rangeland in south central Tarrant, northwestern Lincoln, and northeastern Socorro County in central New Mexico. The area is in the Canadian -Pecos Plains and Valleys (CP-3) Major Land Resource area. There are approximately 250 land owners including the US Forest Service, US Park Service, Bureau of Land Management, and New Mexico State Land Office. A map of the GPA is attached.

There are approximately 150 ranches and 1 large irrigated farm. The farm irrigates with ground water and produces alfalfa, beans, corn, and small grains. The ranch operations range from 5-950 animal units with 90% being strictly cow/calf.

The area contains approximately 27% limited resource farmers. Per capita income is lower and unemployment higher than the New Mexico or the national average. Even though there is not an excess of ready cash to be used for conservation measures, the love for the land and willing acceptance of stewardship responsibilities has been passed down from generation to generation for over 300 years. Landowners are concerned about the declining water table and are willing to give of their time, energy, and money to solve the problems.

The Estancia Basin is a closed underground water basin with no inlet or outlet streams. The basin water resource is currently declining. A major regional water plan has been developed for the Estancia Underground Basin. The regional water plan indicates a water table decline of as much as 100 ft. since 1900. The expected future of the basin alluvial water resource is 120 years. The loss of water resources is estimated at approximately 1,410,000 ac. ft. (17%) since 1910.

One of the largest users of water, through evapotranspiration, is pinon/juniper tree dominated upland sites. 428,766 acres are infested. The estimated water loss through trees is 316,956 ac. ft. or more per year. Recharge in the basin is only from direct precipitation. There is a net loss in potential consumptive water use of approximately 30,000 ac. ft. per year.

The brush invasion on the upland sites is also creating a loss of biodiversity, loss of useable forage and wildlife habitat, and non-point source (NPS) pollution. There is an ecosystem dominance of one-seeded juniper invading the basin on upland sites. The plant community has limited cool season herbaceous species representation and native shrub species are absent in much of the area. As sites are dominated by woody species, competition for moisture, space, light, and nutrients reduces herbaceous ground cover and increases wind and water erosion.

ALTERNATIVES:

ALTERNATIVE 1. NO ACTION

ALTERNATIVE 2. PROPOSED ACTION: Use NRCS Environmental Quality Incentives Program (EQIP) funds to assist land owners within the GPA to cost/share installation of the following conservation practices:

1. Brush Management (5000 ac.) - Removal, reduction, or manipulation of non-herbaceous plants.
2. Diversions (2500 linear feet) – Dirt structure built to divert or slow water flow.
3. Fencing – (10 miles) – A constructed barrier to livestock.
4. Grazing Land Mechanical Treatment – (1000 ac.) – Modifying physical soil and or plant conditions with mechanical tools by treatments such as pitting contour furrowing, and ripping or sub-soiling.
5. Livestock Pipeline (5 miles) - Pipeline installed for conveying water for livestock.
6. Pond (5 ea.) – A water impoundment made by constructing a dam or embankment or by excavating a pit or dugout.
7. Prescribed Burning (2000 ac.) – Applying controlled fire to predetermined areas.
8. Trough/Tank – (15 ea.) – A trough or tank, with needed devices for water control installed to provide drinking water for livestock.
9. Water Spreading (500 cu. yds.) – Diverting or collecting runoff from natural channels gullies, or streams with a system of dams, dikes, ditches, or other means, and spreading it over relatively flat areas.
10. Well (5 ea.) – A well constructed or improved to provide water for livestock and wildlife.
11. Wildlife Upland Habitat Management (5000 ac.) – Creating, maintaining, or enhancing areas, for food and cover for upland wildlife.

12. Prescribed Grazing (100,000 ac.) – The controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified objective.
13. Irrigation Water Conveyance (1000 ft.) – A pipeline and appurtenances installed in an irrigation system.
14. Irrigation Water Management (1000 ac.) – Scheduled frequency and amount of application of water to crops according to consumptive use needs.
15. Conservation Crop Rotation (3000 ac.) - Growing crops in a recurring sequence on the same field.
16. Residue Management (3000 ac.) – Managing the amount, orientation, and distribution of crop and other plant residues on the soil surface during part of the year, while growing crops in a clean tilled seedbed.

ALTERNATIVES CONSIDERED BUT NOT STUDIED IN DETAIL:

One alternative discussed was to implement brush management only without grazing management practices. This alternative was not studied in detail because it would not effectively reduce erosion, increase soil fertility, nor expand biodiversity.

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. The Claunch-Pinto Soil and Water Conservation District identified this GPA for potential conservation activities in 4 newsletters (circulation 2000), on 2 conservation tours, and at several “open to the public” monthly meetings. The Local Work Group met on 5/9/01 to receive public comment and discuss action proposed for the GPA. A list of individuals, agencies, and groups invited to participate in the Local Work Group meeting is attached.

As the Estancia Basin Regional Water Plan was developed, 20 public meetings were held, several newspaper articles and brochures published, and many informational presentations completed. Terrain /vegetation management (brush management and diversions) was identified in the regional water plan as a solution for basin recharge areas.

No major controversy was registered concerning the proposed action.

Threatened and Endangered Species of Concern: A record search of the US Fish & Wildlife Service and the NM Game & Fish biota information systems shows the Mexican Spotted Owl, Bald Eagle, and the Gray Vireo are species that could frequent the area. General Habitat Associations for the Mexican Spotted Owl and the Bald Eagle are generally different from the areas being treated in this GPA. Distribution and Habitat Associations for the Gray Vireo both limit the possibility of impact on the species. NRCS has determined that there will be no effects on the Gray Vireo and Bald Eagle. Future consultation with the US Fish and Wildlife Service will occur on the Mexican

spotted owl prior to implementation of the proposed action. Other species shown on FWS county lists will not be affected by the proposed action as determined by NRCS.

Cultural Resources and Historic Properties: NRCS has completed a cultural resources records search, and known sites were identified. The density of such sites is low. To ensure site-specific protection, field surveys will be conducted on each land disturbing practice. Consultation will be conducted with the NM State Historic Preservation Officer (SHPO) before construction begins. Physical evidence from field surveys or preexisting evidence, as a result of SHPO consultation, will dictate that projects will be moved and/or redesigned.

Riparian: No actions are planned in riparian areas.

Wetlands: No actions are planned in wetlands.

IMPACTS AND EFFECTS OF ALTERNATIVES:

ALTERNATIVE 1. NO ACTION:

This alternative will continue with current activities. Historically, landowners have developed and implemented a few conservation plans. Currently, Less than 1 % of the GPA area receives improved resource management in any one year. The identified resource concerns will continue to accelerate. The ongoing conservation program, which includes limited technical and financial assistance from NRCS, will continue at the same or reduced levels. This will result in approximately 5-10% of juniper invasion area being treated in 20 years. No accelerated resource planning and application will be available to landowners.

Lack of proper management and treatment will continue the degradation and loss of resources. Invasion of rangeland by pinon and juniper will expand, resulting in ecological site degradation. Erosion will continue to increase which will result in loss of ecosystem site potential. Water loss through evapotranspiration will increase, recharge will lessen, and runoff will decrease in quality. Soil structure and condition will degrade. Food and habitat for wildlife and livestock will continue to decline. This alternative provides very limited resource benefits, and the area economy will continue to be depressed. It would not support basin resource sustainability and health.

ALTERNATIVE 2. PROPOSED ACTION:

Impacts and effects of the proposed conservation practices included in the proposed action are as follows:

1. **Brush Management** – Pinon-Juniper trees will be controlled through mechanical, chemical, and hand applications. Mechanical work will be done with a crawler tractor, rubber tired front-end loader, tree shear, or tree saw. Two crawler tractors with a cable or chain between could be used. Chemical controls will be limited to light infestation areas of primary invasion with brush less than 5 ft. in height. All chemical applications will be completed by

a licensed applicator in accordance with label directions. Very little chemical controls will be planned. Hand controls will be accomplished by hand axing or chaining.

Short-term impacts: Soil will be disturbed when crawler tractors are used (5-25% of the area would be disturbed). Dust and carbon monoxide will temporarily be in the air in isolated areas. Small pits will be created where roots are removed. Up to 95% of the brush will be removed. Local animals will be displaced.

Long-term impacts: Reduced wind and water erosion due to increased herbaceous vegetation establishment within a 3-5 year period. Increased water recharge and reduced runoff. Lane & Barns, 1986, show that deep percolation below the pinon-juniper root zone results in return flow or base flow in intermittent and perennial streams. Eddleman, 1995, found that a 12" diameter western juniper transpired 14 gallons of water per day on an average spring day and 32 gallons per day on an average summer day. Reduced suspended particulate material due to increased herbaceous cover. Increased biodiversity. Local ecological site condition evaluations are documented showing 3 species of vegetation prior to brush management activities and 10-15 species after brush controls. Improved economic condition due to increased productivity.

2. **Diversions** – Small dirt structures (25-75 cu. yds.) will be constructed using a crawler tractor, front-end loader, or farm tractor.

Short-term impacts: There will be disturbed soil and complete denuding of vegetation on small sites approximately 250 – 500 sq. ft.

Long-term impacts: The structures will systematically slow runoff and sedimentation while increasing groundwater recharge. Bare ground area will revegetate within 3-5 years.

3. **Fencing** – Pasture division is necessary for livestock distribution control for implementation of progressive grazing management systems. Most (95%) of the fences will be 4-wire barbed wire. The remaining 5% will be woven wire. Fences will be designed to allow deer and antelope movement.

Short-term impacts: Trees and shrubs will be cleared in the fence right-of-way. The clearing will be 20 ft. wide for the length of the fence. The openings will become livestock and wildlife movement routes. The fence structure will become perch sites for songbirds and raptors. There will be an aesthetic impact.

Long-term impacts: The cleared area will revegetate to herbaceous species within a 3-5 year period. The fences will allow control of livestock movement to develop grazing management systems that will increase plant vigor, litter, seed production, and seedling establishment.

4. **Grazing Land Mechanical Treatment** – Several herbaceous sites have a monoculture of blue grama grass. Ripping these sites with a farm chisel, approximately 6 “ deep on 1’ centers.

Short-term impacts: Herbaceous vegetation will be killed and soil disturbed on approximately 10% of the treated area.

Long-term impacts: Interspaces for water percolation and cool season species growth. Increased biodiversity will result.

5. **Livestock Pipeline** – Pipelines are necessary to support grazing management programs. Pipelines will be constructed with plastic pipe (1”-1.5”). The pipe will be buried 24.” Underground by mechanical means using a grader, crawler cat, or rubber tired trencher.

Short-term impacts: Trees and shrubs will be cleared on the pipeline right-of-way. The clearing will be 20’ wide. All vegetation will be removed and soil disturbed on a 6’ wide path the complete length of the pipeline for grader installations and 2’ wide for crawler tractor or rubber tired trenchers. There will be an aesthetic impact. Wildlife distribution will increase.

Long-term impacts: Progressive grazing management will be implemented. Wildlife Populations and diversity will increase.

5. **Pond** – Larger dirt structures (500-1000 cu. yds.) will be constructed using a crawler tractor, rubber tired front- end loader, or farm tractor.

Short-term impacts: There will be disturbed soil and complete denuding of vegetation on sites approximately 5000 sq. ft. in size.

Long-term impacts: The structures will slow runoff and sedimentation, increase groundwater recharge, provide water for livestock and wildlife distribution, and become a tool for use in a grazing management program.

6. **Prescribed Burning** – The natural impact of fire will be reintroduced on selected loamy and limy ecological sites. The fires will be conducted under a prescription of 10-20 % relative humidity, < 70-degree temperature, and 10-15 mph winds. Soil moisture will be present. Burns will be in early spring or late fall when growth and reproduction is not present. A bare ground, mineral line will be constructed to remove all vegetation in an area approximately 20’ wide

around the entire burn area. A black line consisting of preburned material from the 20' bare ground line to 500' within the prescribed burn area around the entire project will be required according to NRCS Field Office Technical Guide. What plants, what density, what height?

Short-term impacts: Depending on the intensity and duration of the burn, various percentages of the vegetation will be removed. Typical burns remove approximately 50-75% of the vegetation. Soil impacts including biota effects will be reduced due to prescription parameters. Individual animals will be temporarily displaced. There will be an aesthetic impact.

Long-term impacts: Refer to long-term impacts under Brush Management above.

7. **Trough/Tank** – Steel and fiberglass water holding facilities will be constructed and placed.
The largest tanks will require 1000 sq. ft. of level ground. Construction will be by hand with the possible use of a rubber tired front-end loader or farm tractor.

Short-term impacts: Soil disturbance and vegetation removal will be required. There will be a visual impact. Water will be continually available. Wildlife distribution will increase.

Long-term impacts: Progressive grazing management will be implemented. Wildlife Populations and species diversity will increase.

8. **Water Spreading** – Small earth structures, less than 2' high, will be constructed. Structures will be up to 500' long.

Short-term impacts: Approximately 10' of soil disturbance and vegetation removal along the length of the structure will occur.

Long-term impacts: Runoff will be slowed. Water recharge will increase. Cool season plant Species will revegetate the disturbed area in 3-5 years.

9. **Wells** – Wells are needed to supply permanent sources of water. Water depth will range from 250 ft. to 1000 ft. Rotary and cable-drilling rigs will be used.

Short-term impacts: A drilling pad approximately 10'X10' will be cleared of vegetation and soil disturbed. Noise pollution and visual impacts will occur for approximately 2-5 days.

Long-term impacts: Progressive grazing management will be implemented. Wildlife populations and species diversity will increase.

10. **Wildlife Upland Habitat Management** – Brush will be removed to create habitat as described under Brush Management above.
Short-term impacts: Refer to Brush Management above.

Long-term impacts: Individual wildlife populations and the expanse of the wildlife community will increase.

11. **Prescribed Grazing** – Management is essential to sustain impacts of the conservation practices.

Short-term impacts: Control of livestock grazing patterns, intensity, and duration.

Long-term impacts: Ecological condition will change. Biodiversity will increase. Water infiltration will increase and runoff will decrease.

12. **Irrigation Water Management** – Management is essential to reduce irrigated water use. According to the Estancia Basin Regional Water Plan, 95% of the water usage in the basin is for irrigated crops.

Short-term impacts: Water use will be reduced.

Long-term impacts: The life of the Estancia Basin aquifer can be extended past 120 years by saving 50-100 ac. ft. of water per year.

13. **Irrigation Water Conveyance** – Pipelines carry water with more efficiency. The pipelines would be 6"-10" plastic (PVC) pipe buried 3' underground. The trenching would be done with a rubber tired backhoe or a large trencher. Most pipelines would be placed on previously disturbed sites with little or no vegetation.

Short-term impacts: Soil will be disturbed.

Long-term impacts: Irrigation water efficiency will improve by 25%. NRCS estimates that an excess of 50 ac. ft. per year would be saved. The life of the Estancia Basin can be expanded past 120 years.

14. **Conservation Crop Rotation** – Management is important to retain soil fertility and reduce erosion. Rotations will be in accordance with approved plans designed to match soil needs identified in the Field Office Technical Guide.

Short-term impacts: Soil fertility and structure will be effected.

Long-term impacts: Soil fertility will be improved

15. Residue Management – Crop residue remaining at the soil surface will shield the cropland from erosion potential

Short-term impacts: More organic matter will be available for incorporation into the soil profile. Less wind erosion will occur. Less water will evaporate from the soil surface.

Long-term impacts: Soil health will be improved. More biota will be present in the soil profile. Less irrigation water will be needed.

Estimated total cost for implementation of this alternative is \$200,000 for a 4- year period. There is estimated water savings of approximately 14,192 ac.ft. Per summer period. Additional effects and specific construction specifications are documented in the Field Office Technical Guide.

TABLE 1 – ALTERNATIVE 2 (CUMULATIVE EFFECTS)

Practice	EQIP FUNDING	Total Amount (including other agency and landowner)
Brush Mgmt.	5000 ac.	6700ac.
Diversions	2500 ft.	3000 ft.
Fencing	52800 ft.	75000 ft.
Grazingland Mech. Treat.	1000 ac.	1000 ac.
Livestock Pipeline	26400 ft.	39600 ft.
Pond	5 ea.	7 ea.
Prescribed Burn	2000 ac.	2000 ac.
Trough/Tank	15 ea.	20 ea.
Water Spreading	500 cu yds.	500 cu. yds.
Wells	5 ea.	7 ea.
WL Upland Hab. Mgmt.	5000 ac.	5000 ac.
Prescribed Grazing	100,000 ac.	125,000
Irr. Water Convey	1000 ft.	1000 ft.
Irr. Water Mgmt.	1000 ac.	1000 ac.
Cons. Crop Rotation	3000 ac,	3000 ac.
Residue Mgmt.	3000 ac.	3000 ac.

TABLE 2 COMPARISON TABLE Effects on Needs.

Practice	Alternative 1	Alternative 2	Difference
Brush Mgmt.	500 ac.	5000 ac.	4500 ac. (11,785 ac. ft. of water)
Diversions	250 ft.	2500 ft.	2250 ft.
Fencing	26400 ft.	52800 ft.	26400 ft.
Grazingland Mech. Treat.	0	1000 ac.	1000 ac.
Livestock Pipeline	10560 ft.	26400 ft.	16400 ft.
Pond	1 ea.	5 ea.	4 ea.
Prescribed Burn	0	2000 ac.	2000 ac. (2357 ac. ft. of water)
Trough/Tank	5	15 ea.	10 ea.
Water Spreading	0	500 cu yds.	500 cu. yds.
Wells	2 ea.	5 ea.	3 ea.
WL Upland Hab. Mgmt.	0	5000 ac.	5000 ac.
Prescribed Grazing	20,000 ac.	100,000 ac.	80,000 ac. (SI change 25 to 50)
Irr. Water Convey	0	1000 ft.	1000 ft.
Irr. Water Mgmt.	0	1000 ac.	1000 ac.. (50 ac. ft. of water)
Cons. Crop Rotation	3000 ac.	3000 ac.	0
Residue Mgmt.	3000 ac.	3000 ac.	0

PERSONS AND AGENCIES CONSULTED:

- Claunch-Pinto Soil and Water Conservation District
- United States Forest Service
- Farm Service Agency
- NM Farm & Livestock Bureau
- Local Work Group (List of participants attached)

REFERENCES:

- NRCS Field Office Technical Guide, Section III, Quality Criteria
- NRCS Field Office Technical Guide, Section IV, Standards and Specifications
- US Fish & Wildlife Service, Threatened and Endangered species list for NM
- NM Game & Fish, BISON report, internet
- Lane & Barnes, 1986 – Lane, Leonard J. and Fairley J. Barnes. “Water Balance Calculations in Southwest Woodlands.” Pinon-Juniper Conference, Reno, NV.
- Eddleman, 1995 – Telephone conversation between Dr. Lee Eddleman, Oregon State University, and Richard Spencer, District Conservationist, NRCS, Mountainair, NM.
- USDA Natural Resources Conservation Service, 1999, “Abo Arroyo Watershed Health Plan”,

**FINDING OF NO SIGNIFICANT IMPACT
FOR THE IMPLEMENTATION OF EQIP
IN THE CENTRAL CLOSED /ESTANCIA BASIN GPA**

INTRODUCTION:

The Central Closed/Estancia Basin 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 undertaken in connection with the development of this proposed action. This assessment was conducted in consultation with Local, State, and Federal agencies. Data developed during the assessment are available, upon request, from:

**US DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
MOUNTAINAIR FIELD OFFICE
P.O. BOX 129
MOUNTAINAIR, NEW MEXICO 87036**

The Environmental Assessment (EA) is attached for reference.

DETERMINATION OF SIGNIFICANCE:

Table 1

CONTEXT	INTENSITY	REASON FOR NON-SIGNIFICANCE
Water Saved per year – 14,192 ac. ft. (1.4% total woody species consumptive usage)	Permanent water savings each year for a 20 year period.	Aquifer depletion will be slightly slowed . Water allocation is beyond NRCS control. Consumptive use on untreated area will remain at 996,460 ac. ft./yr.
Native Plant Community Treatment – 6000 ac. of brush invasion area is treated	Change in vegetation for 20- 50 years.	P/J sites (422,766 ac.) throughout the GPA will essentially remain unchanged.

The above Table 1 addresses impacts on environment. Other considerations related to context and intensity are discussed as follows:

1. Public Health or Safety – Any chemical brush control will be conducted by a licensed applicator in compliance with approved label directions. No significant impacts.

2. Unique Character of the Area – There are 65 million acres of P/J vegetation in New Mexico, Colorado, Utah, and Arizona, therefore, this area is not considered unique. All project areas will be inventoried for historical and/or culture sites and conservation practices redesigned or moved to avoid impacts. No significant impacts.
3. Controversy – No major controversy was presented at public meetings or received from outreach efforts. No significant impacts.
4. Uncertainty – The proposed actions under Alternative 2 have been carried on in the area for over 60 years. Results have been measured, analyzed, and observed over time by professionals to stimulate ecosystem health. No significant impacts.
5. Precedent for Future Actions – Actions of this type have been carried on for a long period of time in this GPA and this proposal is not precedence setting. No significant impacts.
6. Cumulative Impacts – The cumulative impacts are only slightly larger than Alternative 2. No significant impacts.
7. Effects on National Register of Historic Places or Cultural Resources – All project areas will be inventoried for historical and/or cultural sites and conservation practices redesigned or moved to avoid impacts. No significant impacts.
8. Endangered Species or Critical Habitat – No effect determination for endangered species. No significant impacts .
9. Violation of the Laws – There are no violations of laws know to occur. No significant impacts.

FINDING OF NO SIGNIFICANT IMPACT:

This finding is based on the evidence presented in the Environmental Assessment and the analyses of Alternatives for this GPA. Based on the assessment and the reasons given 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.



ROSENDO TREVINO
State Conservationist

December 20, 2001

Date