

ENVIRONMENTAL ASSESSMENT
EQIP - ESTANCIA CLOSED UNDERGROUND WATER BASIN
2002

INTRODUCTION:

This environmental assessment (EA) is being prepared by the United States Department of agriculture's Natural Resources Conservation Service (NRCS) to comply with the requirements of the National Environmental Policy Act of 1996 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:

Purpose of and Need for Action: The purpose and need in the Estancia Closed Underground Water Basin Geographic Priority Area (GPA) is to improve water quality and quantity and extend the available water supply beyond the predicted length of 120 years to maintain safe drinking water and sustain agriculture, to reduce the noxious weed population, maintain top soil, and improve soil fertility,

BACKGROUND:

The Estancia Underground Water Basin (GPA) consists of 1,446,400 acres and includes rangeland, woodland, pasture, irrigated pastureland, irrigated cropland, dry cropland, and increasing amounts of urbanland. The land use includes:

458,779 acres Rangeland
286,237 acres Woodland
44,959 acres Pastureland
32,037 acres Irrigated Cropland
51,033 acres Dry Cropland
21,489 acres Urbanland
14,634 acres Dry Salt Flats
586 acres Non-forested Wetlands
654 acres Strip-mines, Quarries, and Gravel Pits
72 acres Inland Waters (Reservoirs and Lakes)

The watershed boundary measures approximately 2,260 square miles and includes the southern portions of Santa Fe County, the eastern portions of Bernalillo County, a small portion of southwestern San Miguel County, and much of the western part of Tarrant County.

The range of annual precipitation is 12 -18 inches and the topographical elevation range from 6100 ft to 10,000 ft. One of the major resource concerns in the basin is groundwater depletion. In some areas water levels have dropped 50-60 ft. from the years 1950 to 1985. As the depth to groundwater increases, saltwater intrusion is degrading water quality for all land uses. Increasing urbanization is encroaching on agricultural lands, causing changes in land use and competition for the limited resources.

The Estancia Basin is classified hydrologically as a closed basin, meaning that there is no water draining out of the basin. There are no significant streams in the area, with the majority of surface water flow occurring as ephemeral flows in drainages and arroyos. Currently, rates of groundwater depletion are greater than rates of recharge, resulting in saltwater intrusion. There currently exist a number of wells in the central part of the basin that produce water too saline for irrigation or livestock watering. The Estancia Basin Regional Water Plan estimates that there is only a 120-year water supply in the basin at its current use, and accelerated new water rights applications (12,847-acre feet since 1995) further threaten that supply.

The majority of the Basin is rural and is dominated by farming and ranching. Agriculture accounts for up to 95% of the groundwater used in the area. In the last ten years many more people have moved into the area. The population is increasing and there is an urban growth occurring in the areas along Interstate 40. Farmland and rangeland has been subdivided into residential lots ranging from 1 to 10 acres. In many of these lots the residents keep several horses and other livestock and have small garden plots.

Another primary resource concern is that of soil erosion by wind. Wind erosion is a concern due to climatic and topographical features and poor vegetative cover. Due to low average precipitation and intense wind conditions, blowing dust is common during the spring and early summer months. Vegetative cover is generally poor to fair on rangeland, with a lack of cool season grass species. Landowners require assistance with grazing land improvements through water development, fencing and brush management. This would also improve the wildlife habitat in the Basin. In high urban growth areas development is resulting in disturbed areas that are devoid of vegetation and in need of re-seeding. Some landowners are overgrazing small tracts of land. Through information and education, these urban areas could be improved.

The final resource concern is the invasion of noxious weeds, including mustard, thistle, and Russian Knapweed. These weeds require management and control to ensure protection from spreading to adjacent fields and road rights-of way.

ALTERNATIVES:

Alternative 1. No Action

Alternative 2. Proposed Action: Use NRCS's Environmental Quality Incentive Program (EQIP) authorities to assist ranchers in the GPA to apply conservation systems that

include drilling wells, installing watering troughs and water storage tanks, installing irrigation pipelines, install fencing to implement a grazing system that allows for deferred grazing and a rotation that improves productivity. Construct erosion control structures to reduce runoff water and reduce sediment deposition that allows for grasses to re-establish themselves in disturbed areas. Apply brush control practices to improve rangeland productivity and allow for re-seeding of the rangeland, restoring the area to its' natural ecological condition.

In cropland, apply water conservation practices such as, LEPA (Low Energy Precision Application) irrigation nozzles, land leveling, surge valve application, irrigation pipelines, drip irrigation and other irrigation water management (IWM) techniques to bring the irrigation systems into a 75-90% efficiency level. Install flow meters on all wells to assist in monitoring water use for irrigation scheduling. Install windbreaks to reduce wind erosion and provide shelter for the livestock. Chiseling will also reduce wind erosion by roughing the soil surface by bring up clods that protect the surface from eroding.

Residential lots are being called "mini" ranchettes by Realtors, giving the impression that the land can be grazed. The acreage in question is usually too small to supply the grazing needs of livestock. Windbreaks and re-seeding to native vegetation can reduce the wind and water erosion on these small parcels. Through education and information campaigns, public awareness of the resource concerns can be raised.

On all land uses in the Basin the invasion of noxious weeds is a problem. Management and control can be accomplished by mechanical or chemical means.

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 through a letter sent to them on May 26, 2001, providing them with an opportunity to make comments and identify concerns. No controversy about the need for action or the actions themselves was raised through the letter that was sent to them, and no resources or issues of concern were identified as a result of the correspondence or by NRCS or other Federal, State, and Tribal agencies but those discussed in this EA.

Threatened and Endangered Species and Species of Concern: The NRCS Estancia Field Office Technical Guide, the US Fish and Wildlife Service, and the New Mexico Game and Fish databases include federal and state listed threatened, endangered and candidate species.

CANDIDATE

Black-tailed prairie dog, *Cynomys ludovicianus*
Swift fox, *Vulpes velox*

PROPOSED THREATENED

Mountain plover, *Charadrius montanus*

THREATENED

Bald eagle, *Haliaeetus leucocephalus*
Mexican spotted owl, *Strix occidentalis lucida*

ENDANGERED

Black-footed ferret, *Mustela nigripes*
Rio Grande silvery minnow, *Hybognathus amarus*
Southwestern willow flycatcher, *Empidonax traillii extimus*
Whooping crane, *Grus americana*
Holy Ghost ipomopsis, *Ipomopsis sancti-spiritus*

The Black-tailed prairie dog, swift fox, mountain plover and black-footed ferret may be affected by practices installed by this program. All others will not be affected as determined by NRCS.

NRCS will consult with US Fish and Wildlife Service when site-specific projects may affect listed species.

Cultural Resources and Historic Properties: NRCS completed a search of cultural resource records and the density of such sites is low in the GPA. In some areas of New Mexico, acequias, or irrigation ditches, can be hundreds of years old. NRCS found ditches that are over 100 years old in this GPA. Nonetheless, to ensure that unidentified sites are not adversely affected, all irrigation ditches/acequias will be treated as historical sites. 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. Native American tribes and pueblos have been invited to local meetings and have been consulted about the alternatives and actions. No concerns have been expressed.

IMPACTS AND EFFECTS OF ALTERNATIVES:

Alternative 1. No Action:

The No Action Alternative has the most severe impact on the land used, since water use is so important to the Basin. The Basin already shows indications of saltwater intrusion

into the ground water due to the rates of groundwater depletion exceeding the rates of recharge. If water use continues at the predicted accelerated rate the usable, drinkable water will be depleted before the estimated 120-year supply. Wind and water erosion will continue to accelerate if no action is taken to reduce or curtail the erosion process. This will remove the topsoil needed for soil fertility, reduce the quality of the water due to turbidity and continue to cause air quality problems during high winds in the spring and early summer.

Soil erosion by water causes gullies; removes topsoil from unprotected crop fields, over grazed pastures and rangeland. The runoff from these fields, pastures and rangeland is carrying soil particles that may be loaded with pesticides, herbicides and other chemicals. These suspended soil particles reduce water quality, are carried downstream and deposited in the rivers and streams. The sediment deposits can choke out vegetation, causing streambanks and rivers to become unstable and erosive, adding to the erosion problem.

Heavy winds during the spring and early summer months unearth soil particles. The unearth soil particles produce dust clouds which pollute the air and cause a health hazard. Topsoil is lost reducing the amount of available topsoil to produce crops. The soil particles also enter homes, reducing air quality and causing breathing problems, and dust accumulation on furniture and other stationary objects. Automobiles and other machinery are also effected, clogging intakes and reducing the efficiency of the machinery.

If no action is taken to address the invasion of noxious weeds, they will take over the rangeland and encroach on cropland, reducing crop yields and further decrease the production of native forage species on rangeland.

Without information and education provided to the residential community, real estate agents and the mini rancher, the landowners will continue to abuse and destroy the fragile ecosystem that exists in the Basin. This will have the same short and long-term effects as with the agricultural community; loss of topsoil, reduce soil fertility, and poor water quality.

Table 1, Alternative 1.

Total acres irrigated by type of irrigation, 1990

county	flood	drip	sprinkler	total
Bernalillo	50	0	0	50
Santa Fe	1265	110	5165	6540
Torrance	5765	10	12225	18000
Total	7080	120	17390	24590

The New Mexico State Engineer has allocated three acre-feet per acre of cropland that is irrigated. In 1990 sprinkler irrigation accounted for 17,390 acres of cropland irrigated. At three acre-feet per acre, that amounts to 52,170 acre-feet of water used for sprinkler irrigation.

Alternative 2. Proposed Action:

If alternative 2 were implemented, there would be impacts to water quantity and quality, soils quality and erosion, air quality, crop production, wildlife habitat, quality of life and economics. As indicated above, steps would be taken on a site-specific basis to ensure no cultural resources or historic or traditional properties are adversely affected.

Environmental Quality Incentive Program (EQIP) funds will be used to supply water to livestock on rangeland, install fencing for grazing systems, improve water use efficiency on cropland, improve vegetative cover, install windbreaks to reduce wind erosion and apply water control practices to reduce water erosion, and provide educational and technical assistance to landowners throughout the basin.

Wells will be drilled to supply water to livestock on rangeland where there is no water. Heavy equipment will be brought in to drill the wells. The heavy equipment will cause compaction to the soils in the areas traveled by the equipment and the area of the drilling. This will cause minimal and temporary effects to the areas in question. Many times the travel lanes are already there and no additional compaction will occur. The area of the drilling is small and will support the pumping equipment. The pipeline from the well to the storage tanks and watering troughs is buried. A trencher or backhoe is used to bury the pipeline. The disturbance is usually less than ten feet wide times the length of the pipeline. Any soil that is removed to bury the pipe is put back in the trench to cover the pipe.

Within two years native plant species re-seed and establish themselves. Irrigation pipelines are installed in much the same way, with the same amount of minimal disturbance.

Installation of fencing to implement a grazing system is done by first determining the acres needed to for the number of livestock. Once size is determined the fields are laid out. Installation of the fence is done by digging post holes at the prescribed distance, by hand or machinery. Posts are put in place and back filled. (Note: steel posts are driven into the ground without digging and backfilling. If digging holes then more impacts to cultural resources are expected.) After the poles are in place, the fence wire is stretched out along the pole line and nailed (wired) in place. Gates are place at convenient places so that the livestock can be moved from pasture to pasture with minimal difficulty.

The following conservation practices that reduce the velocity and amount of water runoff will reduce water erosion, improve water quality and maintain productive crop fields, pastures and rangeland. Reduced turbidity and deposition will maintain the health of streams and rivers and the vegetative cover.

Erosion control structures are earthen type structures that are constructed using heavy equipment, moving earth to the area of water concentration to reduce the velocity of the water, thus reducing erosion. These structures are usually placed across the slope to

collect the runoff water, store it temporarily until it percolates into the soil or directed to a safe outlet. Other structures are used to trap sediment deposition, providing a seedbed, and allowing grasses to re-establish themselves. These structures are usually placed in the stream channels; they may be trees, logs or rock that trap the sediments.

Brush control is done by removing the unwanted brush. The unwanted brush is removed by cutting the trees at the base and grubbing the stump, using a tractor with a chain, a dozer, a backhoe or a front end loader or any other means possible. In some cases the entire plant is grubbed out. Once the brush is removed, it is stock piled and it is either burned or cut up for other uses such as firewood or building materials.

Installing the LEPA irrigation nozzles is done by removing the existing irrigation nozzles and replacing them with LEPA nozzles. In some cases extensions are needed to get the nozzles closer to ground. This eliminates evaporation since the nozzles are closer to the ground, leaving less water to evaporate. The recommended spacing for the nozzles is five feet. Some of the existing nozzles are further than five feet apart, so additional outlets must be drilled in the center pivot main line to achieve the correct spacing.

The LEPA irrigation nozzles will reduce the water usage on cropland; there will be less chance of salt-water intrusion since the drawdown would be reduced by the more efficient system, providing higher quality water for livestock, crops and domestic use. More efficient water use will reduce the amount of water being used and extend the predicted life of the aquifer.

There are a total of 17,390 acres in the Basin that are using a sprinkler system. At present rates the total acre-feet of water use is 52,170. Converting from sprinkler to LEPA there is a saving of 10-15%. That is 7,825-acre feet of water saving by converting to LEPA. This frees up water for other uses without any additional drawdown.

Effective water conservation through improved system efficiency will benefit the water quality as less soil will be washed away and fewer chemicals lost to deep percolation in the soil. Because of the more efficient water use on cropland additional wells can be drilled to supply water to livestock on rangeland without using more water. The water saving on cropland out weighs the use on rangeland and domestic use. Improving the efficiency of the existing irrigation system will allow the producers to irrigate using less water, producing better crops, with larger yields and healthier pastures. The rancher will also benefit by having available water for the livestock.

Land leveling is accomplished by scraping high spots in the field and placing the material from the high spots into the low spots on the same field to adjust the grade. Land leveling provides for a uniform grade of slope so irrigation water will flow onto fields in a way that allows infiltration into the soil at an optimum rate.

Surge valve application is done to protect the pipeline from sudden high-pressure surges in the line, causing damage to the line. These valves are installed in the main line next to the pump.

Drip irrigation is used on some cropland and on windbreaks. The drip irrigation is installed by burying the main line on the edge of the field and bring up to the surface a stub that is attached to the lateral lines that are set at a prescribed spacing.

Irrigation Water Management (IWM) is determining and controlling the rate, amount, and timing of irrigation water in a planned and efficient manner. It requires the person irrigating to know the amount needed for the crop, the waterholding capacity of the soil, the amount going through the openings from the line and the size of the field. The timing of the application of water will determine the amount.

Flow meters are installed on the main line at the well location to assist in monitoring water use for irrigation scheduling.

The installation of windbreaks are done most of the time along fence rows or in fields located where they are the most beneficial in protecting the bare soil and providing shelter for the livestock,

Windbreaks are installed by preparing a planting area, clearing any debris or vegetation that may be along the fencerow. Because of the lack of precipitation an irrigation system must also be installed. The irrigation system consists of a water source, a main line to the area of planting and a lateral line to the trees with emitters at each tree. Since this is a temporary system the water lines may be laid on top of the ground. Holes are dug at prescribed distances using hand tools or machinery.

Installing windbreaks and chiseling the cropland prior to the heavy winds, wind erosion will be reduced. The reduction of wind erosion will improve air quality, and keep the soil particles on the ground, saving topsoil and maintaining the productivity of the soil. Reduced wind erosion will also reduce the amount of dust entering homes and the clogging of machinery air intakes.

The installation of windbreaks will reduce wind and water erosion providing a richer more fertile soil, and reduce the invasion of noxious weeds allowing native species to re-establish themselves. Healthier cropland, rangeland and residential land will result.

Chiseling will reduce soil erosion by roughing the soil surface. Chiseling brings up clods that protect the soil surface from eroding. Chiseling is done by pulling a chisel plow through a field using a farm tractor. The chiseling is done perpendicular to the prevailing wind.

The invasion of noxious weeds is causing poor rangeland and pastures and reducing crop yields. Through the EQIP program producers can control the noxious weeds by mechanical or chemical means.

Wildlife would benefit by the installation of windbreaks, providing food and shelter. Producers would also benefit economically with more efficient irrigation systems, healthier rangeland, pastures and more productive crops. Mini ranchettes would benefit from information and education,

An estimate of the extent to which each of these practices would be implemented within the GPA and the cumulative effects is shown on table 2.

TABLE 2, Comparison of Alternatives
Comparison of Alternatives

Effects on Needs	No Action	Alternative 2
Irrigation Efficiency (%)	<75%	75-90%
Water Supply (acre-feet saved)	0	7,825
Water Erosion (Tons/acre/year saved)	0	3.6
Wind Erosion (Tons/acre/year saved)	0	52.4
Water quality	0	?
Noxious Weeds	0	?
Soil fertility	0	?

TABLE 2, ALTERNATIVE 2.

	Treatment with NRCS EQIP Assistance Alone	Treatment by Landowners Initiative, Other Agency Assistance
Livestock pipeline – Ft.	75137	7000
Diversions – CY	9552	900
Well Drilling – No./ft.	5/2250	1/500
Watering Trough – No./gal.	22/138,339	2/10,000
Irrigation Pipeline – Ft.	16150	1500
Fencing - Ft.	70550	7000
Brush Management – Ac.	1686	200
Terrace – CY	5964	0
LEPA Irrigation Nozzle – No. Drops	4708	1000
Drip Irrigation – Ft.	165	0
Windbreak - Ft.	165	100
Crop Residue Management – Ac.	2796	0
Irrigation Water Management – Ac.	3520	0
Pond – CY	7526	2500
Prescribe Grazing – Ac.	66496	0
Crop Rotation – Ac.	2796	0
Range Planting – Ac.	311	50

PERSONS AND AGENCIES CONSULTED:

Edgewood and East Torrance Soil and Water Conservation District Records.

Contacted local work group by mail on May 26,2001 to request comments on concerns and issues related to the GPA and the EA. See list of participants as Appendix A

REFERENCES:

NRCS Field Office Technical Guide, Section III, Quality Criteria

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

NRCS Field Office Technical Guide, Section V, Conservation Effects

RUSLE (Revised Universal Soil Loss Equation)

WEQ (Wind Erosion Equation)

Finding of No Significant Impact for the Implementation of EQIP In the Estancia Closed Underground Water Basin

INTRODUCTION

The Estancia Closed Underground Water Basin 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:

U.S. Department of Agriculture
Natural Resources Conservation Service
521 5th Street
P.O. Box 58
Estancia, NM 87016

The Environmental Assessment (EA) is attached for reference.

DETERMINATION OF SIGNIFICANCE

Table 1. Determination of Significance of Proposed Action.

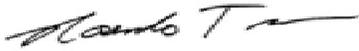
Context	Intensity	Reasons for Non-Significance
Water saved - 15% of total Water used by agriculture (7,825acre-feet) is saved	Permanent water savings each year.	Other water users may use the saved water.
Groundwater – reduction in salt water intrusion.	15% savings in water use annually.	Water savings will be taken up by other wells
Public Health and Safety (Air Quality) -Heavy winds	10% of effected areas will install windbreaks, a long term effect.	Winds will continue to effect unprotected areas.
Cumulative Impacts – 10% of agricultural area will be effected.	Increased irrigation efficiency on treated acres will continue for the life of the practices and management is permanent.	Actions by all other sources are only 1% more than NRCS alone.

Other considerations related to context and intensity are discuss as follow: Farms are similar in the basin and are not unique compared to other irrigated farms in the state. No issues or concerns have been expressed at any public meeting, so controversy is small. Results of actions are known from past experience in the area, thus uncertainty and risk are low. Precedent for future action will be very limited because nearly all farmers interested in this proposal are going to participate in the first round. There will be no impact to National Register of Historic Places or cultural resources because the acequias

are more than 100 years old and have been identified. A determination of affect but not likely to adversely affect the acequias has been made, therefore no more consultation is necessary.(Isn't this referenced to endangered species? Has this determination been made yet?) No national, state, local or tribal laws will be violated by this action.

Finding of No Significant Impact:

This finding is based on the evidence presented in the environmental assessment of impacts and alternatives for this geographic priority area. Based on the assessment and the reasons given in table one, I find that 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