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**UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Ecological Services**
Suite D, 3530 Pan American Highway, NE
Albuquerque, New Mexico 87107

~~July~~ ^{August} 29, 1989

Lt. Colonel Steven M. Dougan
District Engineer
Corps of Engineers, U.S. Army
P. O. Box 1580
Albuquerque, New Mexico 87103

| ALBUQUERQUE F.O. | |
|------------------|-------------------|
| | Peterson |
| | Donahoe |
| | Burien |
| ↙ | Hanson 8/29/89 |
| | McDonald |
| | Mullins |
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Dear Colonel Dougan:

This report summarizes investigations by the U.S. Fish and Wildlife Service (Service) pertaining to mitigation tree planting for the Corps of Engineers (Corps) project "Cuchillo Dam, Truth or Consequences Unit, Rio Grande Floodway, Sierra County, New Mexico." The Service submitted a Fish and Wildlife Coordination Act Report to the Corps in May, 1986 which included a recommendation to establish four acres of trees to mitigate wildlife impacts of the proposed Cuchillo Dam. The Corps requested the Service develop a detailed plan for the mitigation. In a letter to the Corps dated November 17, 1988 the Service concluded, that as a result of personal studies, cottonwood establishment in the floodpool of Cuchillo Dam was not feasible. This report contains a detailed evaluation of the conditions along Cuchillo Negro Creek relative to tree planting.

The study area is within the floodpool of the proposed Cuchillo Dam located 10 miles northwest of Truth or Consequences and 3 miles downstream from the town of Cuchillo, New Mexico (Figure 1). The Service monitored existing wells in the floodpool and recorded water table depth during the summer and fall of 1988. Several local residents also provided valuable information for this study.

During the growing season (July through September) water depth was measured at four wells (Table 1 and Figure 2). Ground water was deepest at the Miller well, 21 feet, and shallowest at the floodplain well, 1.9 feet. Even though the water table is near the surface at the floodplain well, planting cottonwoods there would not be advisable because flood flows constantly scour the gravel in the area. The only feasible location for trees is on the adjacent land terrace which is about four feet above the floodplain. However, it would be hard to establish trees on the terrace because of the difficulty of obtaining poles over 12 feet long and the problems of digging a hole to the proper depth. Pole planting sites should have a water table that is from 1 to 10 below the surface.

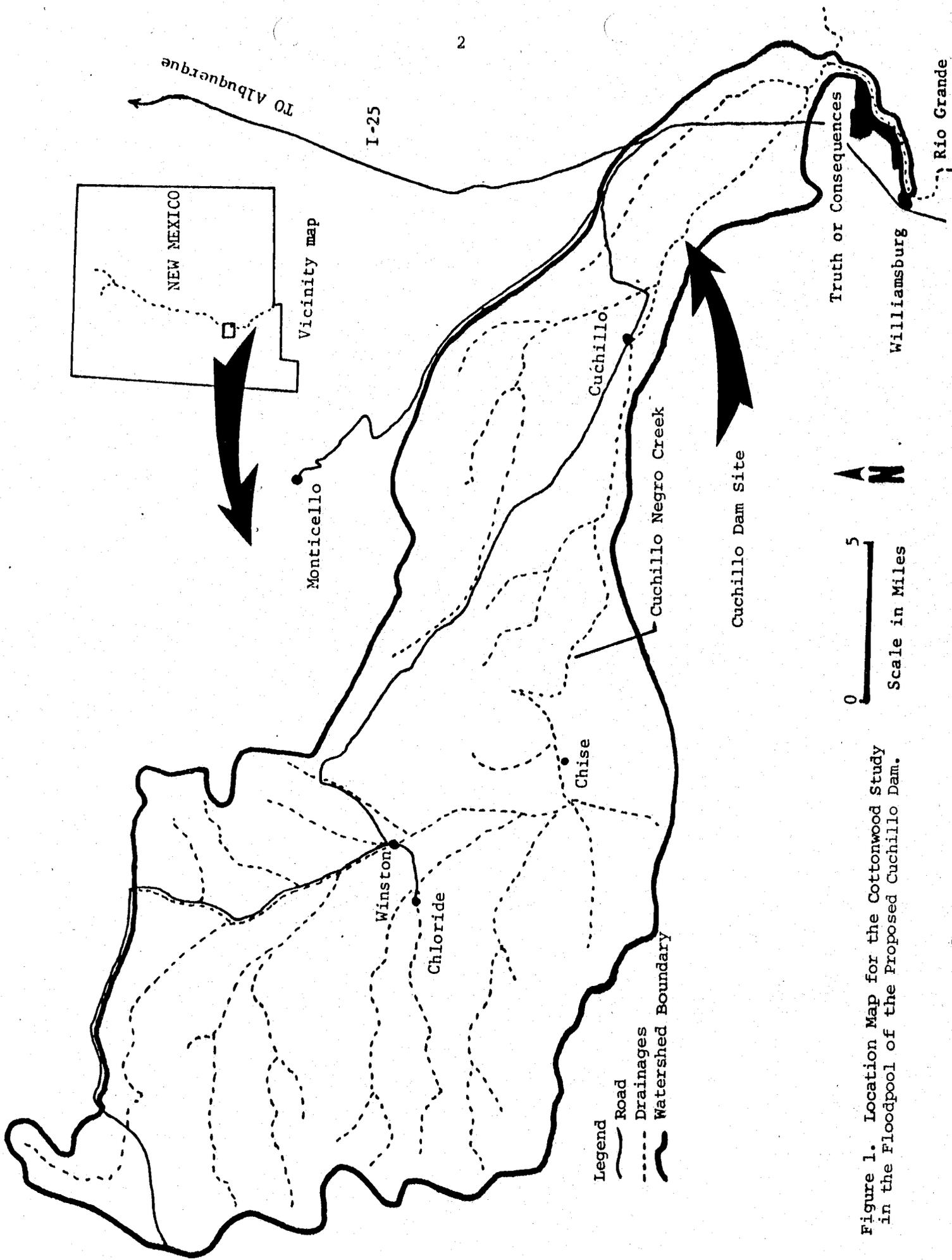


Figure 1. Location Map for the Cottonwood Study in the Floodpool of the Proposed Cuchillo Dam.

Table 1. Depth to ground water (in feet) at various locations within the Cuchillo Dam Floodpool Area.*

| Date | Miller Well | Rock House Well | Windmill Well | Floodplain Well |
|--------------------|-------------|-----------------|---------------|-----------------|
| July 15, 1988 | 18.0 | 17.7 | | 4.9 |
| August 17, 1988 | | | 13.1 | 5.4 |
| September 8, 1988 | 18.6 | 14.5 | 12.0 | 1.9 |
| September 29, 1988 | 20.95 | 15.4 | 12.25 | 2.3 |
| October 20, 1988 | 21.3 | 17.0 | 13.1 | 3.1 |

* Locations can be found on Figure 2.

Elevation contours of the proposed floodpool area are presented in Figures 3 and 4. The ground water is deepest at the upper end of the floodpool area and shallowest near the damsite. Even if trees could become established in the shallowest ground water areas, flood flows may scour them out or bury them in silt. The Corps has predicted over the 100 year life of the dam that 63 feet of silt will be deposited.

Cottonwood pole planting has been tried by Raymond Miller, at the Miller well. Four cottonwood poles were planted in February, 1986, at a depth of eighteen inches; the water table was at eighteen feet. After three growing seasons with constant watering, the main trunk of three of the four trees had died. However, sprouts were emerging from the ground at the base of the dead trunks. Two of the trees had grown between 7 and 10.5 feet and two trees had not grown at all. A fifth tree was planted in February, 1987, and grew 8.5 feet in two growing seasons. These plantings suggest it will take more than 15 years of watering before the cottonwood poles grow large enough to sustain themselves.

In summary, we recommend against cottonwood pole planting in the Cuchillo Dam floodplain because of the deep water table, scouring and siltation events and the poor success of poles already planted in the area. We suggest the Corps explore alternate vegetation sites or use more drought tolerant trees and shrubs. Areas located in floodplains with a permanent water flow such as the Rio Grande would be desirable. We have contacted the Bureau of Reclamation about planting trees in suitable areas along the Rio Grande upstream of Caballo Reservoir. They have no objection to the Corps using the area for mitigation provided they, the Corps, fund the project. The Plant Materials Center, located at Los Lunas, New Mexico should be able to provide the Corps with more suitable trees and shrubs for the Cuchillo area.

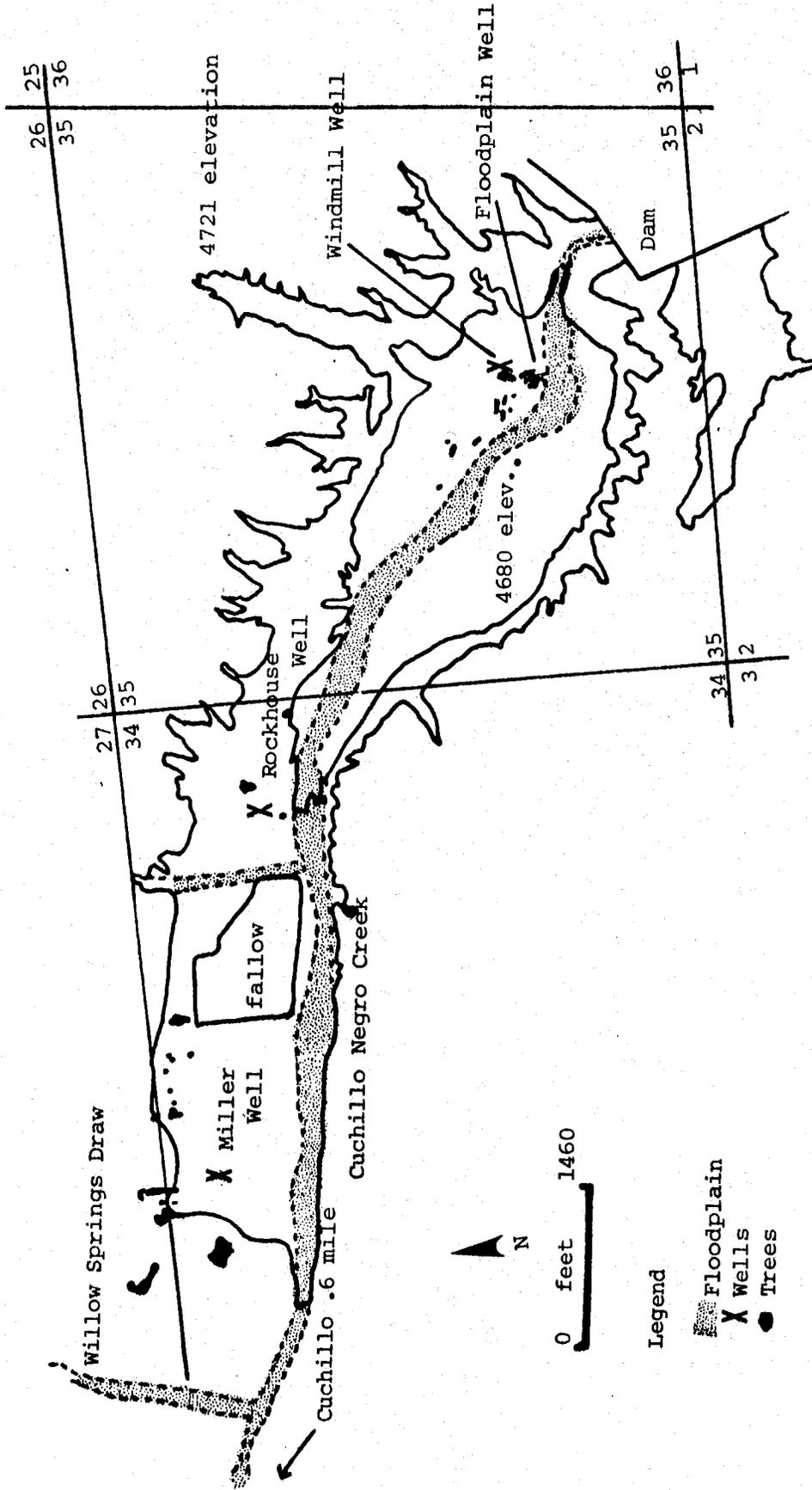


Figure 2. Wells in the Proposed Cuchillo Dam Floodpool where Ground Water Table Measurements were Taken.

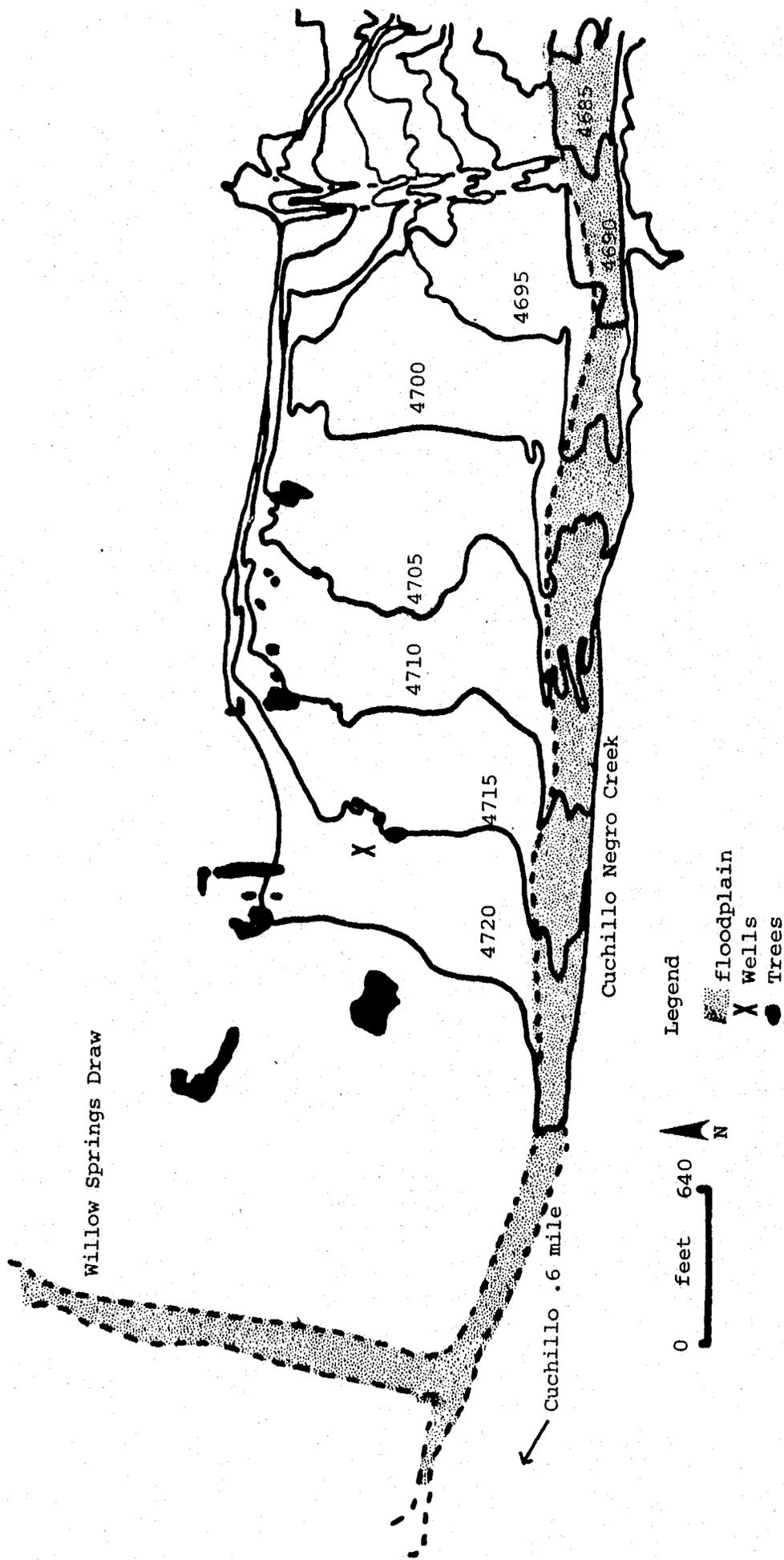


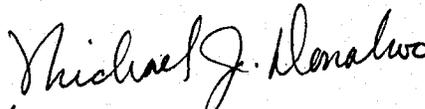
Figure 3. Elevation Contours of the Proposed Cuchillo Dam, Upper Portion, Downstream of Cuchillo, New Mexico.



Figure 4. Elevation Contours of the Proposed Cuchillo Dam, Lower Portion, Downstream of Cuchillo New Mexico.

If species other than cottonwoods are selected the Service will need to evaluate wildlife benefits of the new vegetation. The Service will then determine the amount of acreage required for adequate mitigation. If we can be of further assistance, please call Brian Hanson at (505) 883-7877 or FTS 474-7877.

Sincerely yours,


for John C. Peterson
Field Supervisor

cc:

Regional Director, U.S. Fish and Wildlife Service, Fish and Wildlife
Enhancement, Albuquerque, New Mexico