

# Research Natural Areas

USDA Forest Service, Rocky Mountain, Intermountain, Southwestern and Great Plains States

SEARCH RNAs BY

County

GO

## BERNALILO WATERSHED

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A  
cooperative project  
of the

USDA Forest Service  
Northern Region,  
Rocky Mountain Region,  
Southwestern Region,  
Intermountain Region,  
Rocky Mountain Research  
Station,  
and the  
Montana Natural Heritage  
Program

General Information S.USNAHP\*80

- Created: 1997
- Size: 1030 (acres)
- Elevation Range: 5515 - 6000ft
- Location: *The RNA is located north of Albuquerque in the foothills and bajada of the Sandia Mountains.*

Site Description

Bernalilo Watershed RNA is the control area for watershed improvement projects implemented in the mid 1950's. This upland site is dominated by grasslands with low shrubs at the low end of and just below the one-seed juniper community. Primary grass species include: black grama (*Bouteloua eriopoda*), blue grama (*Bouteloua gracilis*), sand dropseed (*Sporobolus cryptandrus*) and various three-awns (*Aristida* spp.). Low shrubs include snakeweed (*Gutierrezia sarothrae*), plains yucca (*Yucca glauca*), fourwing saltbush (*Atriplex canescens*), cholla (*Opuntia imbricata*), and pricklypears (*O. polyacantha*, *O. phaeacantha*). Gravelly draws and broad washes support populations of Apache plume (*Fallugia paradoxa*), rabbitbrush (*Chrysothamnus nauseosus*) and sideoats grama (*Bouteloua curtipedula*). Pinyon (*Pinus edulis*) is found chiefly in washes at upper elevations within the RNA.

Climate and Enviromental Information

*Data not Available*

Vegetation - Bernalilo Watershed

Pinyon-Juniper (SAF 239, K21)

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United States  
Department of  
Agriculture

Forest  
Service

Cibola NF

13 Osuna Rd NE, Suite A  
Albuquerque, NM 87113  
505-761-4650

File Code 4060  
Route To

Date Sept 19 1997

Subject Bernalillo Watershed Research Natural Area

To Director, FMR

Enclosed is the original of the Bernalillo Watershed Research Natural Area, Sandia Ranger District, Cibola National Forest, Region 3. Copies have been sent to the Regional Forester, Region 3 and the Rocky Mountain Research Station. The Regional Office will ensure that the designation order is noted in the landownership status record.

KAREN M CARTER  
RNA Coordinator  
Cibola National Forest

Enclosure

cc

Sandia Ranger District  
R Fletcher Regional Office R-3



Caring for the Land and Serving People



## DESIGNATION ORDER

By virtue of the authority vested in the Secretary of Agriculture and further delegated to me under regulations at 7 CFR 2.42, 36 CFR 251.23 and 36 CFR 219.1 I hereby establish the Bernalillo Watershed Research Natural Area (RNA). It shall be comprised of approximately 1030 acres of land in Sandoval County, New Mexico, on the Sandia Ranger District of the Cibola National Forest, as described in the section of the Establishment Record entitled "Location."

The proposal to establish the Bernalillo Watershed Research Natural Area (RNA) occurred in the Record of Decision for the Cibola National Forest Land and Resource Management Plan (Forest Plan) when it was approved in 1985. An analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41 was completed and are documented in the Forest Plan and Final Environmental Impact Statement which are available to the public.

The Forest Supervisor for the Cibola National Forest has reexamined that portion of the Bernalillo Watershed area to determine whether the environmental effects of establishing an RNA have not changed since 1985. This analysis is documented in an environmental assessment (EA). Based on the analysis presented in the EA, it is my decision to adopt Alternative A to establish a portion of the Bernalillo Watershed as a RNA. Alternative A is selected because it provides long term protection and recognition of a grama galleta steppe and juniper grassland ecosystem. The Bernalillo RNA will be managed in compliance with all relevant laws, regulations and Forest Service Manual direction regarding RNAs, and in accordance with management direction identified in the Forest Plan.

The other alternative considered was Alternative B, the "No Action" alternative which would have continued management of that portion of the Bernalillo Watershed as a proposed RNA. Alternative B was not selected because it would only provide short term protection for this potential natural research area.

Alternative B is consistent with the Forest Plan. Although the proposed action, Alternative A, is consistent with the management direction in the Forest Plan, it is not consistent with the land allocation for this portion of the Bernalillo Watershed area. The Forest Plan is hereby amended to change the allocation of that portion of the Bernalillo Watershed area from "Proposed" to an "Established" RNA. This is a nonsignificant amendment of the Forest Plan (36 CFR 219.10(f)).


Legal notice of this decision will appear in the Federal Register. The Forest Supervisor of the Cibola National Forest shall notify the public of this decision and mail a copy of the Decision Notice and Designation Order to all persons on the Cibola Forest Plan mailing list.

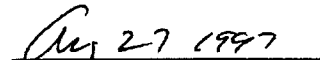
It has been determined through the environmental assessment that the proposed action is not a major Federal action that would significantly affect the quality of the human environment, therefore, an environmental impact statement is not needed. This determination is

based on the analysis of significance presented in the EA in accordance with (40 CFR 1508.27) with which I concur

This decision is subject to appeal pursuant to 36 CFR Part 217. Appeals must be in writing and postmarked or received by the Appeal Deciding Officer for the Chief of the Forest Service at USDA Forest Service P O Box 96090 NFS 3NW Appeals Office Washington DC 20090-6090 within 45 days of the date of the legal notice of this decision in the Albuquerque Journal. Review by the Secretary of Agriculture is wholly discretionary. If the Secretary has not decided within 15 days of receiving the Notice of Appeal to review the Regional Forester's Decision, appellants will be notified that the Regional Forester's decision is the final administrative decision of the U S Department of Agriculture (36 CFR 217.17(d)).

  
JOHN R. KIRKPATRICK

 CHARLES W. CARTWRIGHT JR.  
Regional Forester  
Southwestern Region  
USDA Forest Service

  
Date

## **DECISION NOTICE**

### **BERNALILLO WATERSHED RESEARCH NATURAL AREA**

**USDA—Forest Service  
Southwestern Region  
Cibola National Forest  
Sandia Ranger District  
Sandoval County, New Mexico**

The establishment of the proposed Bernalillo Watershed Research Natural Area (RNA) occurred in the Record of Decision for the Cibola National Forest Land and Resource Management Plan (Forest Plan) when it was approved in 1985. An analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41 was completed and are documented in the Forest Plan and Final Environmental Impact Statement which are available to the public.

The Forest Supervisor for the Cibola National Forest has reexamined that portion of the Bernalillo Watershed area to determine whether the environmental effects of establishing an RNA have not changed since 1985. This analysis is documented in an environmental assessment (EA). Based on the analysis presented in the EA, it is my decision to adopt Alternative A to establish a portion of the Bernalillo Watershed as a RNA. Alternative A is selected because it provides long term protection and recognition of a grama galleta steppe and juniper-grassland ecosystem. The Bernalillo RNA will be managed in compliance with all relevant laws, regulations, and Forest Service Manual direction regarding RNAs, and in accordance with management direction identified in the Forest Plan.

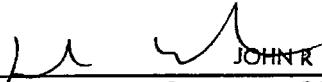
The other alternative considered was Alternative B, the "No Action" alternative, which would have continued management of that portion of the Bernalillo Watershed as a proposed RNA. Alternative B was not selected because it would only provide short term protection for this potential natural research area.

Alternative B is consistent with the Forest Plan. Although the proposed action, Alternative A, is consistent with the management direction in the Forest Plan, it is not consistent with the land allocation for this portion of the Bernalillo Watershed area. The Forest Plan is hereby amended to change the allocation of that portion of the Bernalillo Watershed area from "Proposed" to an "Established" RNA. This is a nonsignificant amendment of the Forest Plan (36 CFR 219.10(f)).

It has been determined through the environmental assessment that the proposed action is not a major Federal action that would significantly affect the quality of the human environment; therefore, an environmental impact statement is not needed. This determination is based on the analysis of significance presented in the EA in accordance with (40 CFR 1508.27) with which I concur.

This decision is subject to appeal pursuant to 36 CFR Part 217 Appeals must be in writing and postmarked or received by the Appeal Deciding Officer for the Chief of the Forest Service at USDA Forest Service P O Box 96090 NFS 3NW Appeals Office Washington DC 20090-6090 within 45 days of the date of the legal notice of this decision in the Albuquerque Journal The notice of appeal must include sufficient narrative evidence and argument to show why this decision should be changed or reversed (36 CFR 217 9) Requests to stay the approval of this amendment of the Forest Plan will not be granted (36 CFR 217 10(b))

Implementation of this amendment will be effective seven days following the publication of the legal notice of this decision notice in the Albuquerque Journal Anyone interested in more information concerning this amendment should contact Dave Sire Ecosystem Analysis and Planning Staff 517 Gold Avenue SW Albuquerque NM 87102 or call (505) 842 3214 You may also contact Cibola National Forest Environmental Coordinator Jimmy E Hibbetts 2113 Osuna Road NE Albuquerque NM 87113 or call (505) 761 4650

  
JOHN R. KIRKPATRICK  
for CHARLES W. CARTWRIGHT JR  
Regional Forester  
Southwestern Region  
USDA Forest Service

Aug 27, 1997  
Date

MANAGEMENT PRESCRIPTIONS  
 APPLICABLE TO ALL AREAS  
 (Continued)

Decision Variables	Activities	Applicable Analysis Areas	Standards and Guidelines
Research Natural Areas		4 5 8 14 18	<p>Managers Navajo Medicine Men s Association and with Land Grants including but not limited to San Mateo Cebolleta Tajique Torreon Manzano and Chilili will be held followed by issue sessions</p> <p>Prior to issue sessions community contacts will be asked to submit to the Forest Service a list of appropriate information needed to participate effectively in the issue session</p> <p>The Forest Service realizes that this information many times is technical therefore adequate time is need between information dissemination and the actual issue session for community people to understand and use the data</p> <p>The following areas will be studied for possible designation as Research Natural Areas (RNAs)</p>



MANAGEMENT PRESCRIPTIONS  
 APPLICABLE TO ALL AREAS  
 (Continued)

Decision Variables	Activities	Applicable Analysis Areas	Standards and Guidelines
			<p>1 Approximately 882 acres in Little Water Canyon in Management Area 8 and 28 acres in Management Area 14 have been designated for establishment as a Research Natural Area</p> <p>2 Approximately 300 acres (Black Kettle) in Management Area 4 for the protection and study of the native vegetation</p> <p>3 Approximately 300 acres on Kiowa NG and 300 acres on Rita Blanca NG in Management Area 5 for the protection and study of native vegetation</p> <p>Establishment of the Little Water Canyon RNAs and study of the other potential sites in Management Areas 4 and 5 will be completed in Period 2. Once designated as a RNA the following standards and guidelines will apply</p> <p>Emphasize natural processes protect natural features and preserve examples of naturally occurring ecosystems in an unmodified condition for research and educational purposes</p>
080	C03		<p>Allow vegetation manipulation only when necessary to preserve the vegetation for which the area is being studied</p> <p>Emphasize diversity of vegetation species that can result in wildlife species diversity</p>
140			<p>Allow use by livestock as a tool to apply effects of grazing and animal impact emulating previous herds of large ungulates (bison elk and proghorn) Maintain existing fence surrounding study areas</p>
270	G02		<p>Propose withdrawal of Research Natural Areas from mineral entry but not from mineral leasing</p>
160			<p>Prohibit all firewood activities within the study areas</p>
480			<p>Allow no new road construction</p> <p>Allow no trail construction</p>
010	A15		<p>Allow nonmotorized dispersed recreation activities provided they do not modify the area or threaten or impair the research or educational value of the study areas</p>

MANAGEMENT AREA 2  
(Continued)

	Decision Variables	Activities	Applicable Analysis Areas	Standards and Guidelines
Transportation/Travel	010	L19	2	Maintain roads to Levels 3 4 and 5 in developed recreation sites
	010 110 230	A03 C03 F01 K03 L01	2	Manage an average road density of 1.5 miles of road per square mile  All Forest System roads south of I 40 and west of Highway 337 are to be closed to public passenger vehicle use except when opened for public wood product sales. These roads are available for administrative use and for recreational trail use.
	010	L21	2	Perform trail preconstruction engineering at the rates indicated below  Period 1 8.5 miles Period 2 7.0 miles Period 3 9.0 miles
	010 160 480	L01 L14 L29	2	Perform preconstruction and construction engineering at the following rate with emphasis on existing old roads  Period 3 2 miles
	010 470	L19	2	Maintain Forest System roads to Levels 3 4 and 5 at the rate of 90 miles per period
		L19	2	Maintain Forest System roads to Level 2 at the rate of 45 miles per period
Research Natural Areas			2	<b>Apply the following standards and guidelines to manage the 1 030 acre Bernalillo Watershed Research Natural Area</b>
			2	<b>Emphasize natural processes protect natural features and preserve examples of naturally occurring ecosystems in an unmodified condition for research and educational purposes</b>
	080	C03	2	<b>Allow vegetation manipulation only when necessary to preserve the vegetation for which the area is being studied</b>
	270 280		2	<b>Maintain mineral withdrawal on the Bernalillo Watershed Permit mineral leasing but exclude surface occupancy</b>
	160		2	<b>Prohibit all firewood activities within the RNA</b>
	480		2	<b>Allow no new road or trail construction within the RNA</b>
	010	A15	2	<b>Allow nonmotorized dispersed recreation activities provided they do not modify the area or threaten or impair the research or educational value of the RNA</b>

USDA - Forest Service  
Southwestern Region  
Cibola National Forest  
Sandia Ranger District  
Sandoval County New Mexico

On July \*\* 1997 Regional Forester Charles W Cartwright Jr Southwestern Region made a decision to formally designate 1 030 acres of the Bernalillo Watershed as a Research Natural Area This area is located approximately four miles southwest of Placitas New Mexico This decision will result in a nonsignificant amendment to the Cibola National Forest Land and Resource Management Plan

The associated Decision Notice and Finding of No Significant Impact are available upon request from the Forest Service Southwestern Region 517 Gold Avenue SW Albuquerque NM 87102

This decision is subject to appeal pursuant to Forest Service regulations at 36 CFR Part 217 Appeals must be filed within 45 days from the date of publication of this legal notice Notices of appeal must meet the requirements of 36 CFR 217 9

ESTABLISHMENT RECORD

for

BERNALILLO WATERSHED RESEARCH NATURAL AREA

within

Cibola National Forest

Sandoval County New Mexico

ESTABLISHMENT RECORD

BERNALILLO WATERSHED RESEARCH NATURAL AREA

USDA FOREST SERVICE  
SOUTHWESTERN REGION  
CIBOLA NATIONAL FOREST  
SANDIA RANGER DISTRICT  
SANDOVAL COUNTY, NEW MEXICO

Recommended by *Floyd Thompson* Date 9-30-93  
Floyd Thompson, District Ranger  
Sandia Ranger District

Recommended by *Jeanne A. Derby* Date 9/30/93  
Jeanne A. Derby, Forest Supervisor  
Cibola National Forest

Recommended by *Art Briggs* Date 11/1/93  
Art Briggs, Chairman  
Southwestern Research Natural Area Committee

Recommended by *Larry Henson* Date 11/3/93  
Larry Henson, Regional Forester  
Southwestern Region

Recommended by *Denver P. Burns* Date 11/18/93  
Denver P. Burns, Station Director  
Rocky Mountain Forest and Range Experiment Station

## INTRODUCTION

The Bernalillo Watershed Research Natural Area (RNA) comprises approximately 1,030 acres (412 hectares) in the foothills of Sandia Mountain in central New Mexico. The proposed RNA is located in the Sandia Ranger District, Cibola National Forest in Sandoval County, and is all acquired National Forest System lands.

Grama-galleta steppe has been noted as an important ecosystem for protection within the RNA program (USFS Regional Guide, 1983 Table 3-1). The Bernalillo Watershed was selected for representation of this grassland type. The Bernalillo Watershed has been reseeded and protected from grazing since 1953, and provides an excellent example of grama-galleta steppe along with the adjacent juniper-grassland type, both of which are in good condition.

## LAND MANAGEMENT PLANNING

The need for representation of this biotic community was identified in the Southwestern Regional Guide (August 1983). The Cibola National Forest Land and Resource Management Plan (USFS 1985 78-79) prescribes that approximately 990 acres (400.7 hectares) of the Bernalillo Watershed in Management Area 2 has been designated for establishment as a Research Natural Area, with establishment to be completed in Period 1. More accurate mapping and acreage computation has established the acreage within the RNA as 1,030 acres (412 hectares). The environmental analysis conducted as part of the planning process supports the recommendation to establish this Research Natural Area.

## JUSTIFICATION STATEMENT FOR ESTABLISHMENT OF AREA

This grassland type is in high demand for livestock grazing in New Mexico, and few examples exist which are not in grazing allotments. Though not a pristine area, the Bernalillo Watershed was originally dedicated to reduce erosion on these gently sloping piedmont alluvial fans. Reseeding and exclusion from grazing since 1950 has allowed this area to return to very near its potential natural vegetation. Much interest has been placed on contrasts between this area, used as a control, and other grasslands along alluvial piedmonts in central New Mexico where various grazing systems are being practiced. Ongoing studies have been conducted on the area for the last 25 years under the auspices of the USFS Rocky Mountain Station and the University of New Mexico. Establishment of the area as an RNA would ensure protection of its distinctive attributes for continued study.

## PRINCIPAL DISTINGUISHING FEATURES

Native grasses and shrubs provide almost continuous cover on the convex interfluvial surfaces. The principal grasses are black grama (*Bouteloua eriopoda*), blue grama (*B. gracilis*), sand dropseed (*Sporobolus cryptandrus*), and three awns (*Aristida* spp.). Low shrubs include snakeweed (*Gutierrezia sarothrae*), plains yucca (*Yucca glauca*), fourwing saltbrush (*Atriplex canescens*), cholla (*Opuntia imbricata*), and pricklypears (*O. polyacantha*).

*tha O phaeacantha*) These grasslands commonly display cappings of cryptogams (lichens mosses, algae) on the soil crust One-seed junipers (*Juniperus monosperma*) are present here in low to moderate density

Gravelly draws and broad washes are lined with populations of apache plume (*Fallugia paradoxa*), rabbitbrush (*Chrysothamnus nauseosus*) and sideoats grama (*Bouteloua curtipendula*) Pinyon (*Pinus edulis*) is found chiefly in washes at upper elevations within the RNA, where juniper is also most common

### LOCATION

Bernalillo Watershed lies approximately 18 miles (29.1 km) northeast of Albuquerque New Mexico, at the foothills of Sandia Mountain The proposed RNA is located in the Placitas USFS 7.5' quadrangle (latitude 35°18', longitude 106°30') Township 12 North Range 4 East Sections 1 2 3 10 11 and 12 (Map 1) Elevation ranges from a high of slightly over 6 000 ft (1,828.8 m) at the southeast edge, sloping gently to approximately 5 515 ft (1 681.0 m) at the northwest extremes The proposed RNA comprises approximately 1 030 acres (412 hectares)

From the center of Albuquerque, take Interstate 25 north 15 miles (24.1 km, Map 2) Turn east off the Interstate onto State Highway 165 and proceed 3.0 miles (4.8 km) to where unpaved Forest road 445 turns to the right (south) This all-weather road circumnavigates the Research Natural Area (Map 3), returning to State Highway 165 about 0.6 miles (1.1 km) east of the first turn-off for FR 445 The RNA can be entered on foot from any point along this road This is gently rolling open country and foot travel is an easy matter

A boundary description of the proposed Bernalillo Watershed RNA is as follows

The boundary of the RNA is set back 100 feet inside FR 445 which surrounds most of the area with the exception of that portion adjacent to State Highway 165 in which case the boundary is set back 100 feet inside of the right-of-way fence A plat prepared by Douglas J Williams dated June 14, 1993 following page displays the boundary location

### AREA BY COVER TYPES

The distribution of cover types was determined from field surveys conducted in the summer of 1986 and from interpretation of 1981 aerial photography Table 1 outlines the estimated total areas of vegetation types based on the Society of American Forester's forest type system (Eyre 1980) and (Kuchler 1964) Map 4 depicts the distribution of SAF Type 239 plus a grassland type not covered in the SAF forest categories, on the candidate research natural area

**Table 1** Estimated Areas of Vegetation Types in the Bernalillo Watershed Research Natural Area

Type	Society of American Foresters Cover Type <sup>1</sup>	Kuchler PNV Type <sup>2</sup>	Surface Area	
			Acres	Hectares
Pinyon - Juniper	SAF 239	K 21 Juniper - Pinyon Woodland	855	342 0
Gramma - Galleta	[none]	K-47 Gramma -Galleta Steppe	175	70 0
		TOTAL	1 030	412 0

<sup>1</sup>Eyre 1980<sup>2</sup>Kuchler 1964

### PHYSICAL AND CLIMATIC CONDITIONS

Bernalillo Watershed RNA is located in a narrow strip of semi-arid climate between the northern extent of an arid climate zone along the Rio Grande Valley and the subhumid woodland and forest covered Sandia Mountain to the east. The nearest long term weather station is at Albuquerque, slightly higher elevation at the RNA results in a minor increase in precipitation levels, slightly lower temperatures, and shorter frost free season. Average annual rainfall for the Bernalillo Watershed is 14 inches (35.6 cm), and average annual snowfall is 28 inches (71.2 cm). Cool season precipitation (falling between November and April) accounts for 33 percent of annual precipitation. Mean annual temperature is 52° F (11.1° C), with a July average of 74° F (23.3° C) and a January average of 31° F (-0.6° C). The frost free period lasts an average of 160 days.



## DESCRIPTION OF VALUES

### Flora

A broad survey of habitat types (HT) was conducted during the 1986 field work. A brief review follows. No publication adequately classifies woodland-grassland habitat types for northern or north-central New Mexico. USDA Forest Service (1986) Forest and woodland habitat types of southern New Mexico and central Arizona served as the best available key for Bernalillo Watershed. Much of the open juniper savanna is classified in this guide as Juniperus monosperma/Bouteloua HT.

Grasses comprise up to 70 per cent of the cover on the flat, open grasslands topping the gently sloping piedmont alluvial fans on the west side of the RNA. Black grama (Bouteloua eriopoda) dominates, occurring with ring muhly (Muhlenbergia torreyi), blue grama (Bouteloua gracilis), sand dropseed (Sporobolus cryptandrus), and galleta (Hilaria jamesii). Broom snakeweed (Gutierrezia sarothrae) is the most common shrub here with plains yucca (Yucca glauca) and cholla (Opuntia imbricata) occasional to common. This grama galleta grassland comprises about 20% of the RNA.

Juniper is the dominant and typically the only tree on the slightly steeper slopes, which make up the remainder of the proposed RNA. Shrub live oak (Quercus turbinella) appears as a large shrub at the upper (southeast) end of the RNA. Pinyon (Pinus edulis) is reproducing successfully along the north facing washes near the east boundary of the area but drops out where the slope flattens out below. The grass mix on the juniper slopes is similar to that found in the open grassland described above, with Bouteloua eriopoda remaining dominant, B. gracilis more common, sideoats grama (B. curtipendula) appearing frequently, and Muhlenbergia torreyi appearing less frequently. Gutierrezia is less common in the woodland. JUMO/BOGR HT prevails throughout.

The several dry washes are dominated by rabbit brush (Chrysothamnus nauseosus), along with apache-plume (Fallugia paradoxa), brickellia (Brickellia californica) and occasional squawberry (Rhus trilobata). Bouteloua curtipendula and B. eriopoda are the principal grasses in these arroyos which also occasionally contain big bluestem (Andropogon gerardii) and bush muhly (Muhlenbergia porteri). Vegetation here probably is closest to Juniperus monosperma/Chrysothamnus nauseosus Fallugia paradoxa habitat type (JUMO/CHNA FAPA HT) as described in the literature.

A small population of grama grass cactus Pediocactus papyracantha, a New Mexico Endangered plant and Federal candidate species occurs on one portion of the proposed RNA. No other threatened or endangered plants are known to occur on Bernalillo Watershed.

The following plant list was compiled from field observations on October 29 1986.

Abbreviated Plant List for Bernalillo Watershed RNA

<u>Latin Name</u>	<u>Common Name<sup>1</sup></u>	<u>Reference<sup>2</sup></u>
<b>GRASSES AND GRASS-LIKE PLANTS</b>		
<u>Andropogon gerardii</u>	Big bluestem	BD/MT
<u>Aristida fendleriana</u>	Fendler three awn	FS BD/MT
<u>Aristida longiseta</u>	Red three-awn	FS BD/MT
<u>Bouteloua curtipendula</u>	Sideoats grama	FS BD/MT
<u>Bouteloua eriopoda</u>	Black grama	FS BD/MT
<u>Bouteloua gracilis</u>	Blue grama	FS BD/MT
<u>Bouteloua hirsuta</u>	Hairy grama	FS BD/MT
<u>Eragrostis intermedia</u>	Plains lovegrass	FS
<u>Hilaria jamesii</u>	Galleta	FS BD/MT
<u>Lycurus phleoides</u>	Wolftail	FS BD/MT
<u>Muhlenbergia porteri</u>	Bush muhly	FS BD/MT
<u>Muhlenbergia torreyi</u>	Ring muhly	FS BD/MT
<u>Poa arida</u>	Plains bluegrass	BD/MT
<u>Sitanion hystrix</u>	Bottlebrush squirreltail	FS BD/MT
<u>Sporobolus cryptandrus</u>	Sand dropseed	FS BD/MT
<u>Stipa comata</u>	Needle and thread	FS
<u>Stipa neomexicana</u>	New Mexican needlegrass	FS
<u>Tridens pulchella</u>	Fluffgrass	BD/MT
<b>FORBS</b>		
<u>Allium sp</u>	Onion	FS
<u>Aster bigelovii</u>	Bigelow aster	BD/MT
<u>Astragalus spp</u>	Milkvetch	FS
<u>Castilleja sp</u>	Paintbrush	BD/MT
<u>Cirsium sp</u>	Thistle	BD/MT
<u>Conyza canadensis</u>	Horseweed	BD/MT
<u>Cucurbita foetidissima</u>	Butfalogourd	BD/MT
<u>Erigeron concinnus</u>	Fleabane	FS
<u>Eriogonum polycladon</u>	Sorrell buckwheat	BD/MT
<u>Euphorbia sp</u>	Spurge	FS BD/MT
<u>Oreochrysum spinulosus</u>	Spinyleaf goldenweed	FS
<u>Hymenopappus filifolius</u>	White-ragweed	FS
<u>Hymenoxys acaulis</u>	Nostem rubberweed	FS
<u>Lesquerella rectipes</u>	Bladderpod	FS
<u>Leucelene ericoides</u>	White aster	FS
<u>Melampodium leucanthum</u>	Plains blackfoot	FS/BD/MT
<u>Penstemon sp</u>	Beard tongue	FS
<u>Salsola kali</u>	Russian thistle	BD/MT
<u>Senecio longilobus</u>	Threadleaf groundsel	FS BD/MT
<u>Solanum elaeagnifolium</u>	White horsenettle	BD/MT

<u>Sphaeralcea coccinea</u>	Globemallow	FS BD/MT
<u>Stephanomeria pauciflora</u>	Wirelettuce	BD/MT
<u>Verbena</u> spp	Verbena	FS BD/MT
<u>Zinnia grandiflora</u>	Rocky Mountain zinnia	FS

#### HALF SHRUBS SHRUBS AND TREES

<u>Artemisia frigida</u>	Fringed sagebrush	BD/MT
<u>Atriplex canescens</u>	Four-wing saltbush	FS BD/MT
<u>Brickellia californica</u>	California brickellia	BD/MT
<u>Chrysothamnus nauseosus</u>	Rubber rabbitbrush	BD/MT
<u>Coryphantha vivipara</u>	Coryphantha	FS
<u>Echinocereus</u> sp	Hedgehog cactus	BD/MT
<u>Eurotia lanata</u>	Wintertat	BD/MT
<u>Fallugia paradoxa</u>	Apache plume	BD/MT
<u>Gutierrezia sarothrae</u>	Broom snakeweed	FS BD/MT
<u>Juniperus monosperma</u>	One-seed juniper	FS BD/MT
<u>Nolina texana</u>	Beargrass	BD/MT
<u>Opuntia arbuscula</u>	Pencil cholla	BD/MT
<u>Opuntia clavata</u>	Club cholla	BD/MT
<u>Opuntia engelmannii</u>	Engelmann pricklypear	FS BD/MT
<u>Opuntia imbricata</u>	Cholla	BD/MT
<u>Opuntia polyacantha</u>	Plains pricklypear	FS BD/MT
<u>Pinus edulis</u>	Pinyon	BD/MT
<u>Quercus turbinella</u>	Shrub live oak	FS BD/MT
<u>Rhus trilobata</u>	Squawberry	BD/MT
<u>Yucca glauca</u>	Small soapweed	FS BD/MT

<sup>1</sup>Common names used according to USDA Forest Service 1974 or Martin & Hutchins 1981

<sup>2</sup>FS = Bernalillo Watershed Transect Data Rocky Mountain Experiment Station USFS Southwest Region Albuquerque 1982

BD/MT = observed by Bill Dunmire (The Nature Conservancy) and Mollie S Toll (Department of Biology University of New Mexico) on October 29, 1986

## Fauna

No rare endangered or sensitive animal species are known to inhabit this area. Mule deer are the only ungulates now using the area, but this is not considered important deer habitat. Evidence of black tailed jackrabbits is abundant. There is no perennial or open stream water on this RNA, and therefore riparian species are absent.

The following animal list was derived from the RUN WILD III computer-stored data base (Lehmkuhl and Patton 1982 Patton 1979) from the following habitat types, for Sandoval county, New Mexico

- 1 Pinyon juniper series
- 2 Plains grassland biome grama grass series
- 3 Plains grassland biome galleta grass series

These habitat types currently in the data base most closely correspond to those occurring in the proposed RNA

### Potential Animal List for Bernalillo Watershed RNA

<u>Common Name</u>	<u>Latin name</u>
BIRDS	
Bluebird mountain	<u>Sialia currucoides</u>
Bluebird western	<u>Sialia mexicana</u>
Chickadee mountain	<u>Parus gambeli</u>
Dove mourning	<u>Zenaida macroura</u>
Falcon prairie	<u>Falco mexicanus</u>
Finch, house	<u>Carpodacus mexicanus</u>
Flicker, northern	<u>Colaptes auratus</u>
Flycatcher ash-throated	<u>Myiarchus cinerascens</u>
Grosbeak black-headed	<u>Pheucticus melanocephalus</u>
Hawk, ferruginous	<u>Buteo regalis</u>
Hawk red-tailed	<u>Buteo jamaicensis</u>
Hawk sharp-shinned	<u>Accipiter striatus</u>
Hummingbird black-chinned	<u>Archilochus alexandri</u>
Jay, blue	<u>Cyanocitta cristata</u>
Jay, pinyon	<u>Gymnorhinus cyanocephalus</u>
Junco dark eyed	<u>Junco hyemalis</u>
Kingbird Cassin's	<u>Tyrannus vociferans</u>
Lark horned	<u>Eremophila alpestris</u>
Meadowlark western	<u>Sturnella neglecta</u>

Nighthawk common  
 Nuthatch pygmy  
 Oriole Scott s  
 Owl short eared  
 Phoebe black  
 Pygmy owl, northern  
 Quail, scaled  
 Raven, common  
 Roadrunner, greater  
 Robin American  
 Shrike loggerhead  
 Siskin, pine  
 Solitaire Townsend s  
 Sparrow black throated  
 Sparrow Brewer s  
 Sparrow chipping  
 Sparrow lark  
 Swift white throated  
 Tanager western  
 Thrasher Bendire s  
 Titmouse plain  
 Towhee brown  
 Vireo gray  
 Warbler black throated gray  
 Waxwing cedar  
 Wood-pewee western  
 Wren, Bewick s  
 Wren rock

#### MAMMALS

Badger  
 Chipmunk Colorado  
 Cottontail desert  
 Coyote  
 Deer mule  
 Gopher Botta s pocket  
 Jackrabbit black tailed  
 Lion mountain  
 Mouse brush  
 Mouse deer  
 Mouse hispid pocket  
 Mouse, northern grasshopper  
 Mouse pinyon  
 Mouse, plains pocket  
 Mouse rock  
 Mouse silky pocket

Chordeiles minor  
Sitta pygmaea  
Icterus parisorum  
Asio flammeus  
Sayornis nigricans  
Glaucidium gnoma  
Callipepla squamata  
Corvus corax  
Geococcyx californianus  
Turdus migratorius  
Lanius ludovicianus  
Carduelis pinus  
Myadestes townsendi  
Amphispiza bilineata  
Spizella breweri  
Spizella passerina  
Chondestes grammacus  
Aeronautes saxatalis  
Piranga ludoviciana  
Toxostoma bendirei  
Parus inornatus  
Pipilo fuscus  
Vireo vicinior  
Dendroica nigrescens  
Bombycilla cedrorum  
Contopus sordidulus  
Thryomanes bewickii  
Salpinctes obsoletus

Taxidea taxus  
Tamias quadrivittatus  
Sylvilagus auduboni  
Canis latrans  
Odocoileus hemionus  
Thomomys bottae  
Lepus californicus  
Felis concolor  
Peromyscus boylii  
Peromyscus maniculatus  
Peromyscus hispidus  
Onychomys leucogaster  
Peromyscus truei  
Perognathus flavescens  
Perognathus difficilis  
Perognathus flavus

Mouse western harvest  
 Mouse white footed  
 Porcupine  
 Rat banner tailed kangaroo  
 Rat Merriam s kangaroo  
 Rat Ord's kangaroo  
 Shrew dwarf  
 Shrew Merriam s  
 Skunk striped  
 Squirrel golden mantled ground  
 Squirrel spotted ground  
 Squirrel rock  
 Squirrel white tailed antelope  
 Weasel long tailed  
 Woodrat Mexican  
 Woodrat Stephen s  
 Woodrat white throated

Reithrodontomys megalotis  
Peromyscus leucopus  
Erethizon dorsatum  
Dipodomys spectabilis  
Dipodomys merriami  
Dipodomys ordii  
Sorex nanua  
Sorex merriami  
Mephitis mephitis  
Spermophilus lateralis  
Spermophilus spilosoma  
Spermophilus variegatus  
Ammospermophilus leucurus  
Mustela frenata  
Neotoma mexicana  
Neotoma stephensi  
Neotoma albigula

#### REPTILES

Lizard collared  
 Lizard sagebrush  
 Lizard side blotched  
 Lizard tree  
 Rattlesnake western diamondback  
 Whiptail little striped  
 Whiptail plateau striped

Crotaphytus collaris  
Sceloporus graciosus  
Uta stansburiana  
Urosaurus ornatus  
Crotalus atrox  
Cnemidophorus inornatus  
Cnemidophorus velox

### Geology

The Rio Grande depression a major north south trending basin in central New Mexico is flanked on either side by uplifts Bernalillo Watershed lies on the eastern border of this basin at the foot of the Sandia Mountains which have a core of pre Cambrian rocks locally exposed at the surface and overlain by sedimentary formations ranging in age from Cambrian through Tertiary (New Mexico Geological Society 1952)

The area of the proposed RNA is underlain by alluvial deposits The southern portion consists of valley fill and alluvial fan material With decreasing elevation to the north and west this material grades into terrace alluvium consisting of sand gravel, and alluvial fan material Kelley and Northrop (1975) describe this area in detail and provide a geological map

### Soils

Undulating to rolling and hilly upland dissected by intermittent drainages and arroyos in the southeastern part of Sandoval County is categorized as Rough Broken Land Embudo association (NMSU 1971 13) The soils predominantly classified as fine loamy mixed and mesic Typic Haplustalfs are forming in unconsolidated old alluvium which is coarse to medium textured and gravelly Generally soils of this association are calcareous and have gravelly sandy loam or gravelly loamy fine sand surface layers Experience prior to 1950 indicates that the soils are highly subject to erosion

### Lands

There are no known outstanding rights or rights-of way within the proposed boundaries

### Cultural

There are no known cultural resource sites within the RNA Cultural information from similar areas nearby indicate moderate to high potential for presence of archeological sites, usually in the form of surface lithic and ceramic scatters

## IMPACTS AND POSSIBLE CONFLICTS

### Mineral Resources

No known mineral resources exist in this area. As of 6/19/59, the area was withdrawn from mineral entry (Department Interior Withdrawal [EO 10355] BLM Serial No NM 034615). The RNA is covered by three existing oil and gas leases. No activity concerning these leases has occurred. Sufficient stipulations exist for protection of the surface.

### Grazing

Livestock have been permanently excluded from the area since 1950. No impacts or conflicts are expected as the area will remain closed to grazing. The RNA has two cross fences separating it into four pieces of unequal size. The perimeter, delineated by Forest Road 445, needs to be fenced to exclude unauthorized livestock including cattle and horses from private and Pueblo Indian lands nearby. Approximately 4.9 miles (7.9 km) of fencing at an estimated cost of \$14,700 (in 1987 dollars) will be required to complete the perimeter fence.

### Timber

This area is sparsely covered with pinyon-juniper woodland, primarily in stringers associated with drainages. Removal of firewood and any other forest products has not been permitted since 1955. There are no commercial forest acres.

### Watershed Values

Bernalillo Watershed is located in the Middle Rio Grande Basin of New Mexico, on the western slope of the Sandia Mountains and bench lands east of the community of Bernalillo. That portion contained within the National Forest is bounded by Cañon Agua Sarca on the north and Cañon del Agua on the south. Both drainages flow directly into the Rio Grande within less than 3 miles (4.8 km) of the forest boundary. The Bernalillo Watershed RNA is centrally located within the watershed. Of the 4,422 acres (1,789.5 hectares) of the Bernalillo watershed within the National Forest, the RNA occupies approximately 1,030 acres (412 hectares). The RNA comprises about 10 percent of the total watershed (9,050 acres or 3,662.4 hectares).

The candidate RNA lies within the larger Bernalillo Watershed Project which was started in 1953 under the sponsorship of the Santa Fe-Sandoval Conservation District, working with the Forest Service and the Soil Conservation Service. Project work, consisting of contour terracing, soil pitting, and reseeding with native grasses mostly above and outside the RNA, was completed in 1955 (USDA Forest Service, n.d.). The value of the soil stabilization achieved by this project was demonstrated many times in



later years when torrential rain storms failed to cause floods and erosion that prevailed on lands adjacent to the project area

#### Recreation Values

Recreation use in this area is diverse and ranges from jogging, hiking, and horseback riding to nature study, training for competitive "dog trials", and pinyon picking. Those who use the area include residents near the forest boundary, and others who come from farther away. All of the watershed within the National Forest is closed to ORV travel except on designated roads. Posting of the RNA perimeter and other appropriate closure devices will help attain compliance of the ORV closure within the RNA and will not impair recreation opportunities in areas outside of the RNA.

#### Wildlife and Plant Values

The Bernalillo Watershed RNA contains known populations of the grama grass cactus Pediocactus papyracanthus (Engelm.) Britt & Rose, a New Mexico State listed threatened and endangered (T & E) plant species. The presence of this species, which is very sensitive to overgrazing and other forms of disturbance, demonstrates that some portions of the RNA remain in an undisturbed condition. This provides a valuable contrast to those portions which were highly disturbed during construction of erosion control measures. No T & E animal species are known to occur in the area. The proposed RNA lies within the Sandia Game Refuge.

#### Wilderness, Wild and Scenic River, National Recreation Area Values

None of the above congressionally designated areas have been proposed for the Bernalillo Watershed RNA or vicinity.

#### Transportation Plans

The entire watershed within the National Forest is administratively closed to off-road travel. An obvious management need for protection of the RNA against damage from ORVs is to post the RNA. Forest Road 445, which circumscribes the RNA, can remain in place without adversely affecting the RNA.

#### Utility Corridor Plans

A major electric power transmission line crosses the southeast portion of the RNA. Periodic maintenance inspections are conducted from a vehicle using a primitive two-track road beneath the power line. This access may continue for actual repair needs only. Inspections can be conducted on foot.

## MANAGEMENT PLAN

The Cibola National Forest Plan prescribes that there will be no harvest of firewood and no assigned grazing capacity on Research Natural Areas. The prescriptions also prohibit road or trail construction, new utility corridors, off-road vehicle travel, open campfires and recreational use if degradation results. However, non-motorized dispersed recreation activities are permitted provided they do not significantly modify the area or threaten or impair the research or educational value of the area. No flora, fauna, or other materials may be collected other than for research approved by the Station Director. Further watershed treatment activities are not allowed within the RNA until studies and determination are completed.

### 1 Vegetation Management

The Forest Plan provides that prescribed fire using planned and unplanned ignitions will be allowed on the Bernalillo Watershed RNA to maintain fire dependent ecosystems. Suppression action is limited to the use of hand tools, and fire retardant chemicals must not be used unless necessary to protect life and property outside the study area. Vegetation manipulation is allowed only when necessary to preserve the grama galleta steppe vegetation for which the area is being studied.

## ADMINISTRATIVE RECORDS AND PROTECTION

Administration and protection of the Bernalillo Watershed RNA will be the responsibility of the Cibola National Forest. The District Ranger, Sandia Ranger District, Tijeras, NM, has direct responsibility.

The Director of the Rocky Mountain Forest and Range Experiment Station or his designee will be responsible for any studies or research conducted in the area, and requests to conduct research in the area will be referred to him. He or his designee will evaluate research proposals and coordinate all studies and research in the area with the District Ranger. All plant and animal specimens collected in the course of research conducted in the area will be properly preserved and maintained within university or federal agency herbaria and museums approved by the Rocky Mountain Station Director.

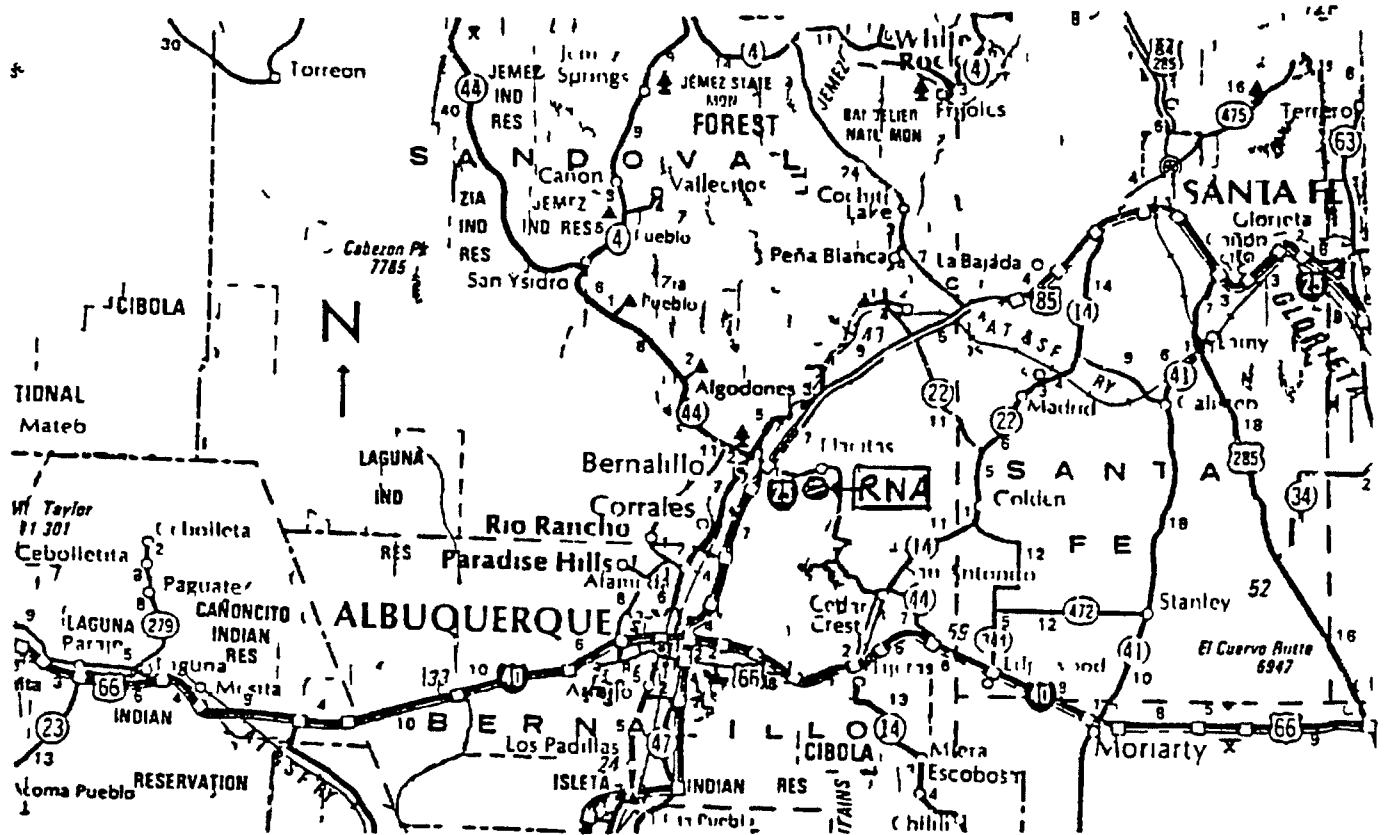
Records for the Bernalillo Watershed RNA will be maintained in the following offices:

Regional Forester, Southwestern Region, Albuquerque, NM  
 Rocky Mountain Station, Fort Collins, CO  
 Cibola National Forest, Albuquerque, NM  
 District Ranger, Sandia Ranger District, Tijeras, NM

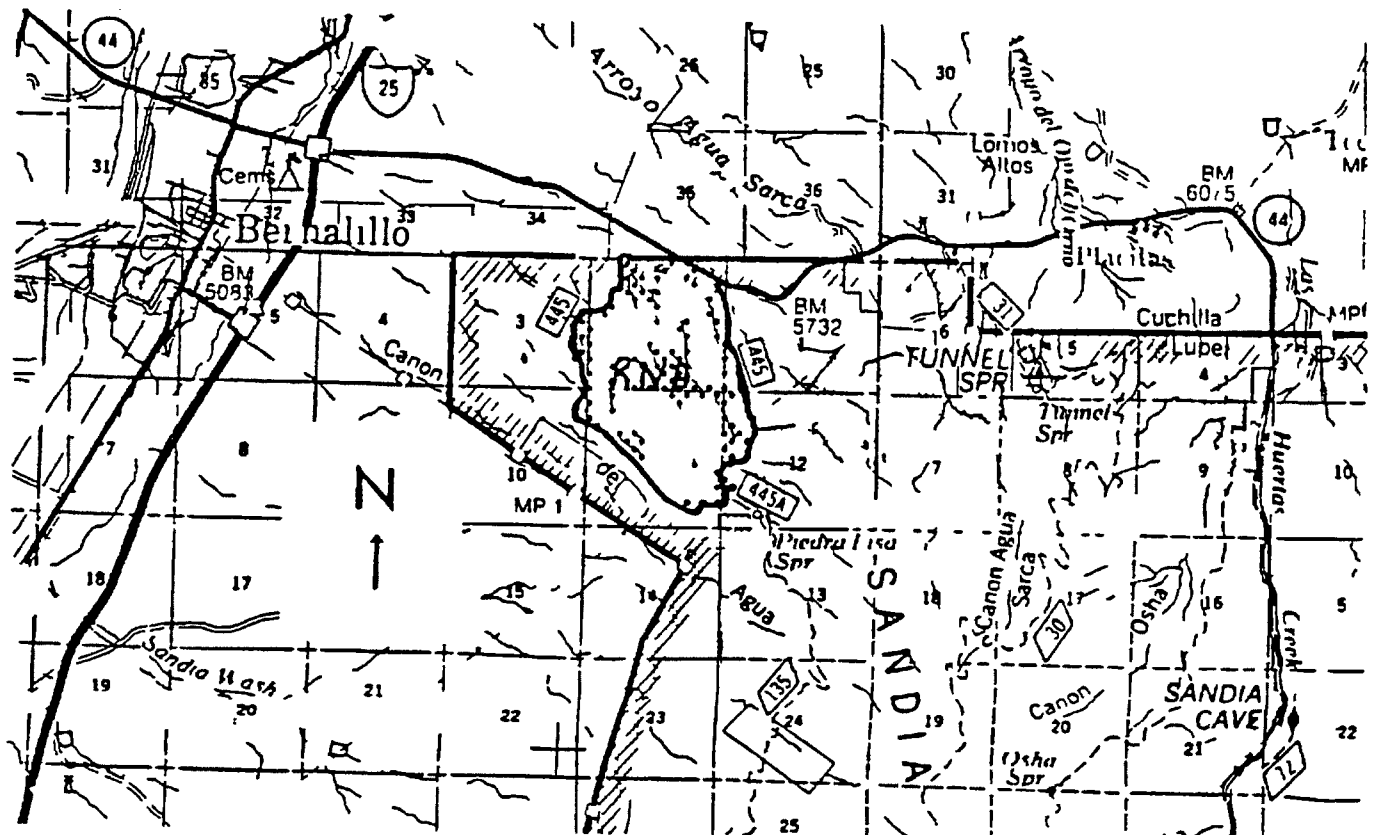
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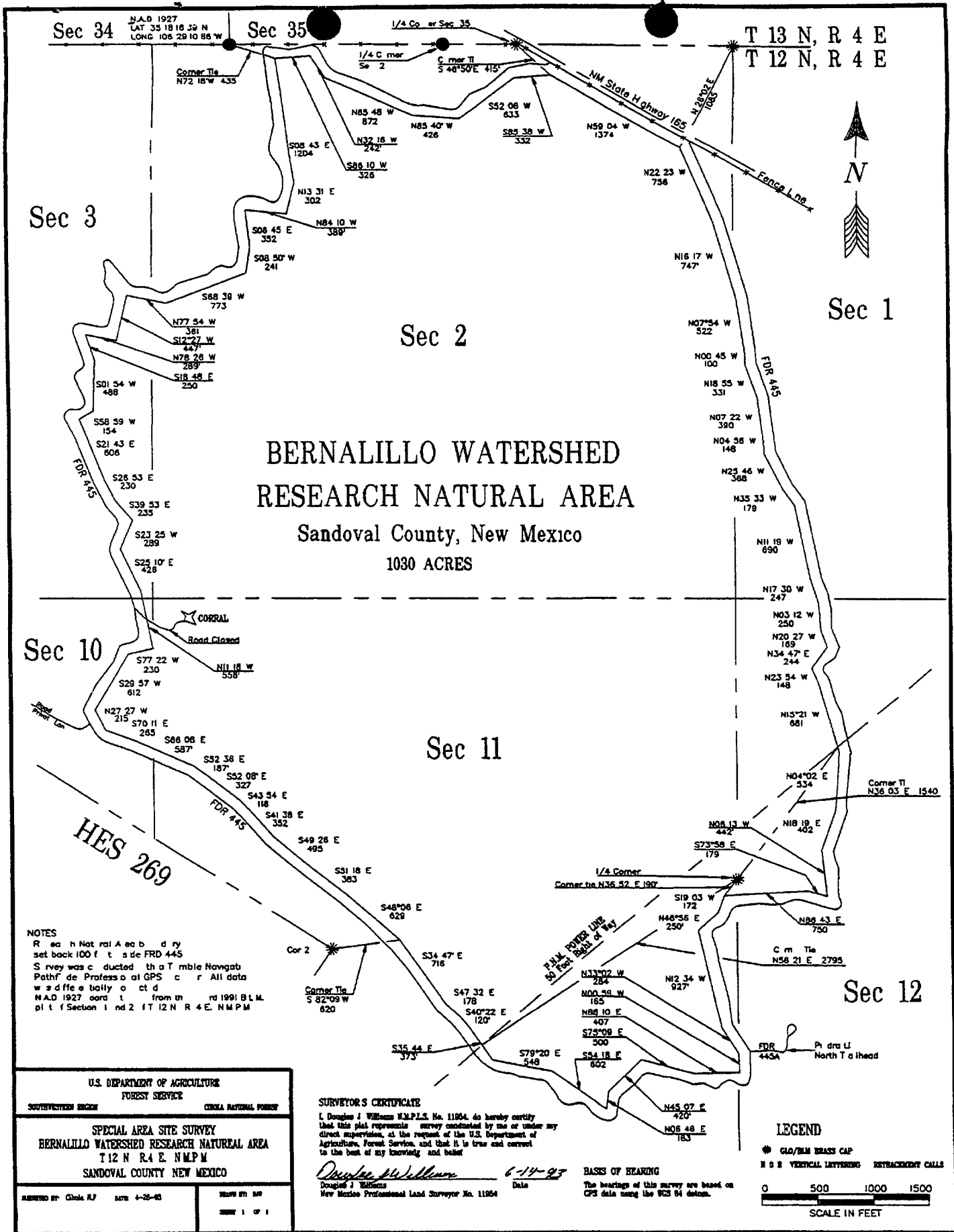
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Map 1 Location of RNA (Central New Mexico)



Map 2 Access Route to Bernalillo Watershed RNA



**BERNALILLO WATERSHED  
RESEARCH NATURAL AREA**  
Sandoval County, New Mexico  
1030 ACRES

**NOTES**  
 Read this Natural Area boundary set back 100 feet from FRD 445. Survey was conducted through Trimble Navigator Pathfinder Professional GPS controller. All data was a field activity on the ground. NAD 1927 coordinates from the 1991 BLM plot of Section 1 and 2 T12N R4E NMPM.

**SURVEYOR'S CERTIFICATE**  
 I, Douglas J. Williams N.M.P.L.S. No. 11864, do hereby certify that this plat represents a survey conducted by me or under my direct supervision, at the request of the U.S. Department of Agriculture, Forest Service, and that it is true and correct to the best of my knowledge and belief.

*Douglas J. Williams* 6-14-05  
 Douglas J. Williams Date  
 New Mexico Professional Land Surveyor No. 11864

**BASES OF HEARING**  
 The bearings of this survey are based on GPS data using the WGS 84 datum.

**LEGEND**  
 \* GLO/BLM BRASS CAP  
 N O S VERTICAL LETTERING: RETRACKED CALLS

0 500 1000 1500  
 SCALE IN FEET

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE		CIBOLA NATIONAL FOREST
SPECIAL AREA SITE SURVEY BERNALILLO WATERSHED RESEARCH NATURAL AREA T 12 N R 4 E NMPM SANDOVAL COUNTY NEW MEXICO		
APPROVED BY: Chole, J.P.	DATE: 4-28-05	SCALE: 1" = 100'

