

LITTLE COLORADO RIVER  
DATA BASE  
ACTIVITIES PROGRESS REPORT  
FOR  
FORTH QUARTER OF FY-93



PREPARED BY:  
NAVAJO NATURAL HERITAGE PROGRAM  
NAVAJO FISH & WILDLIFE DEPARTMENT  
DIVISION OF NATURAL RESOURCES  
THE NAVAJO NATION

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**LCR DATABASE ACTIVITIES FORTH QUARTER FY93  
PROGRESS REPORT**

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**July 1, 1993 thru September 30, 1993**

I reviewed new and modified coverages, then plotted using drawcov-ps.aml to create pages to be added to the system coverage data book.

My major system administrative duties include: Cleaning out temporary directories created from the tiger data, system backup of all the file systems, an Operating System upgrade from SunOS 4.1.1 to SunOS 4.1.3, repartitioning the hard drives, and changing the network domain name. The installation went fairly smoothly except that some of the third party software took some time to restore from backup tapes, or had to re-install. The Imagine software is the last and is still giving me problems. After the upgrade was completed, I installed the latest revision of Arc/Info and Arctools.

A supply of large 11 X 17 size paper was received. I proceeded to modify AML programs to allow for two more options: portrait/ landscape and paper size A/B. These amls included: NNHP-BORDER, NNHP-TITLE-BLOCK, and BORDER-BLOCK. The printer seems not to be very consistent as to where it positions text or graphics files on a page. The Tektronix Phaser III printer went down with a bad memory chip. It was shipped to Honeywell in Albuquerque and was fixed within two weeks.

I wrote source code programs to calculate/generate USGS quad numbers for quadgrid75 & deg1by1 coverages, then wrote an aml to generate a plotfile.

I reviewed the May 30, 1993 color aerial photos and discovered the photos were only from Salt Trail Camp to the Confluence. The photographs were clear, locating physical features was easy, and the trails were very visible. Our field crew would have liked to use this set of photo out in the field to mark features and identify attributes for our GIS/ data base efforts. It may better to use the Oct 10, 1992 aerial photos even though they are black and white. It does cover the entire GCES #15 site. I selected photographs we would like to order from GCES.

I was requested to produce a wordperfect document of the LCR bibliography. I attempted to find and review documents, notes, programs created by the previous Systems Analyst. I backed up the LCR data base from the pc, and

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**LCR DATABASE ACTIVITIES FORTH QUARTER FY93  
PROGRESS REPORT**

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restored it onto the sun. Then I printed out a DBase IV report. Being much more familiar with AWK and C-Shell programming than I was with DBASE or Wordperfect. I developed a program to insert Wordperfect formatting and font codes into an ascii DBase report. Five wordperfect macro were then written to decipher the codes for underlining, font changes, paragraph spacing. The spell checking took along time to get through, because many of the scientific and latin words were not found in an ordinary dictionary. The LCR bibliography data base was printed, bound and distributed.

I traveled to Scottsdale, Arizona to attend the first annual MAGIC '93 GIS conference. This conference was developed for the Arizona GIS community. I attended as many sessions as I could on topics relating to wildlife and wildlife management.

I have been reviewing brochures and reading articles on software programs for the Sun workstation. A program called "Image Alchemy" seems to be very similar to the Photostyler on the pc. This programs can be used to capture and edit scanned images. Before purchasing any software, the scanner must be upgrades or replaced, because it is too slow for the pc and it can not communicate with the Sun IPX.

*BM WHO*

I was requested to create several maps to try and show what coverages were on the Navajo Heritage Sun computer system. Some of the maps required considerably more work than others. The largest plot file is b6 with 4.1 megabytes taking 3 days print. Other plots had codes difficult to interpret, such as the soils, so I used too much time trying to get something worthwhile out of it. Many other helpful amls programs were written to back the original aml program (getcoor, miles, lcr-lakes, nnf-vicinity, etc). I restored the tiger data for Arizona and New Mexico to clip out the hydrography data in the LCR basin. Some coverages looked alright, but the attribute data was not correct or non-existent. The following is a list of the aml names with description:

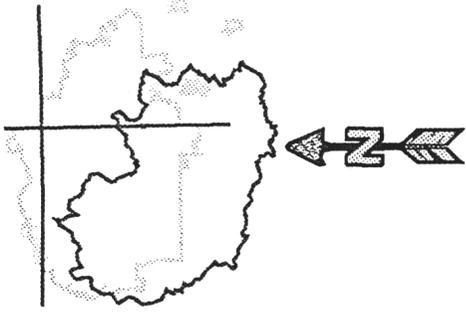
- a1 - Navajo Nation and Little Colorado River Basin
- a2 - Little Colorado River Basin and the States
- a3 - Soils of the Navajo Nation from 1:250,000 scale maps
- a4 - Monuments and/or Tourist attractions in/around the LCR
- a7 - Little Colorado River Basin Surface hydrology & major drainages

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**LCR DATABASE ACTIVITIES FORTH QUARTER FY93  
PROGRESS REPORT**

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- including boundary characteristics
- a8 - New Mexico Geology
- a9 - Mines & Coal seams and communities & cities
- a9a - Mines & coal seams
- b1 - Biotic communities of the Arizona LCR basin
- b1a - Biotic communities in Arizona
- b2 - Erosion of the Navajo Nation from maps by Morrison Maierle, Inc
- b3 - Little Colorado River Basin subwatershed and major drainages
- b4 - Example of USGS quad grid referencing systems
- b5 - Political boundaries along the Little Colorado River & Colorado River confluence, Also GCES site #15
- b6 - Blue Springs quad - Putting together SPOT & DEM
- b7 - 7.5 minute -- Blue Springs quad - Aspect and 50 ft contours from DEM data
- b8 - Navajo Nation Vicinity - Chapters, Agencies, Counties, states
- ph-a5 - C Aquifer in the Arizona portion of the Little Colorado River Basin
- ph-a6 - N Aquifer on the Navajo Nation and LCR basin
- ph-a7a - Little Colorado River Basin surface hydrology (TIGER)
- mv-cactus - Range of the Mesa Verde Cactus
- or-sale - Oak Ridge Timber sale



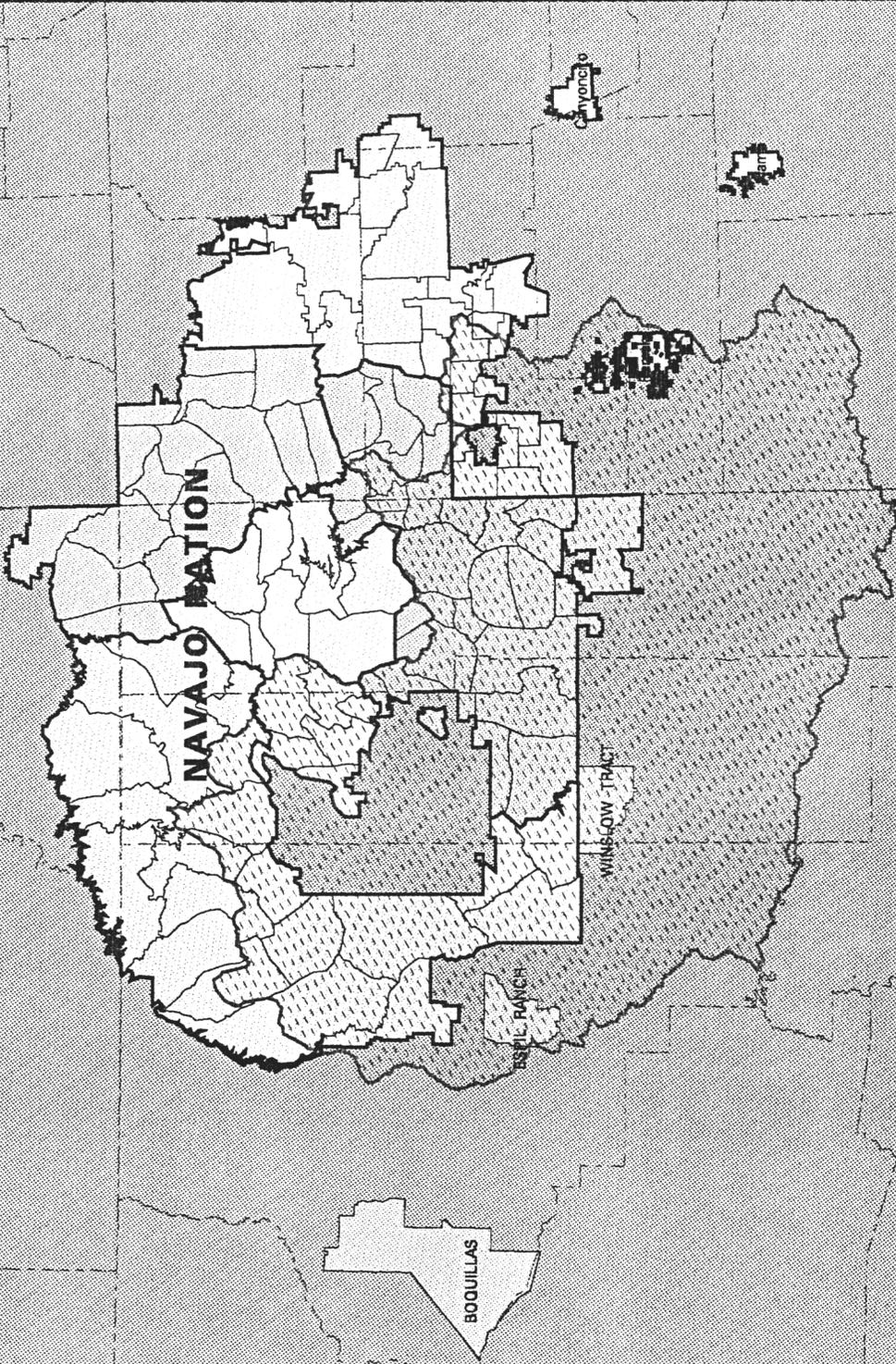
The Little Colorado River Basin covers 17,357,710 million acres, 7,141,888 million acres in Navajo Country. A total of 41 percent it is on Navajo lands. It touches 66 chapters in 4 agencies, including 1 ranch.

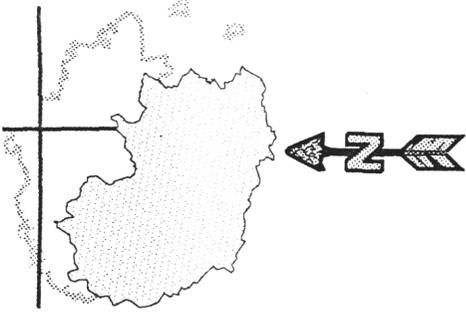


NAVAJO NATURAL HERITAGE PROGRAM  
DIVISION OF NATURAL RESOURCES  
BOX 1410 WINDSOR, ARIZONA 86512

PRODUCED BY: Carol Yazzie DATE: 22 Oct 93

Navajo Nation  
and  
Little Colorado River Basin



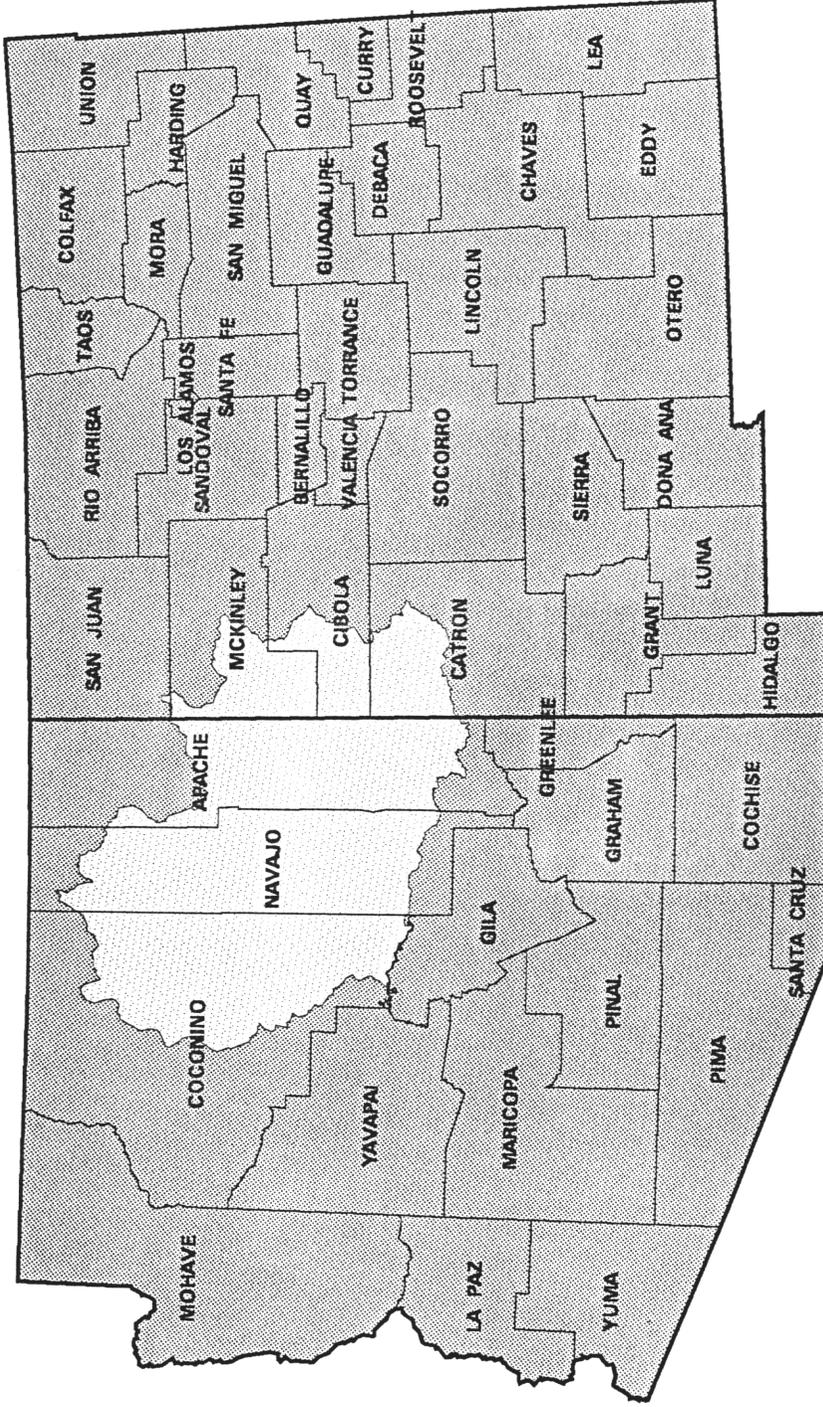


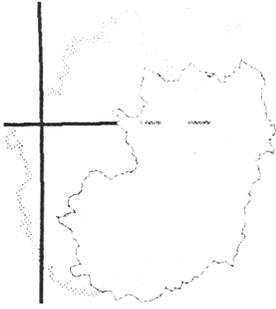
Little Colorado River Basin straddles two states. In Arizona 3 of the 16 counties. In New Mexico 4 of the 34 counties.



NAVAJO NATURAL HERITAGE PROGRAM  
DIVISION OF NATURAL RESOURCES  
BOX 1480 WINDOW ROCK, ARIZONA 86513  
PRODUCED BY: Carol Yazzie DATE: 14 Oct 93

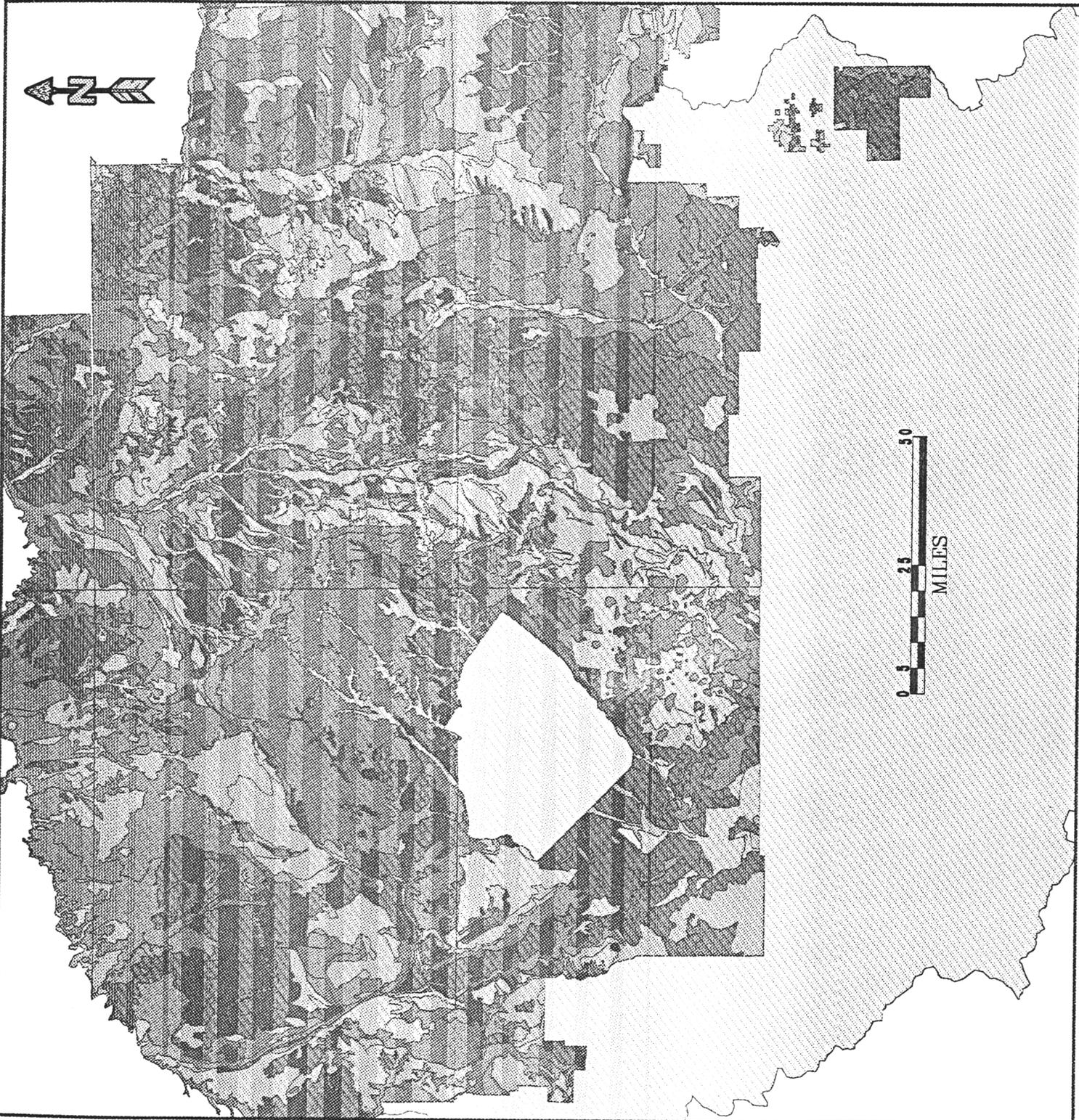
Little Colorado River Basin  
and  
The States



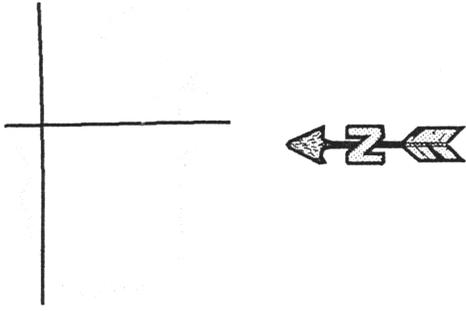


# LEGEND

- Acid igneous rock
- Basic igneous roc
- Colluvial Landslide debris
- Shale
- Interbedded sandstone
- Limestone
- Gravel or cobble with soil
- Lime cemented gravels & cobbles
- Caliche
- Sandstone
- Gravel cobbles
- Aeolian sands
- Old terraces
- Alluvial material (outwash)
- Floodplain alluvium
- Mixed Alluvium (recent fans)



NAVAJO NATURAL HERITAGE PROGRAM  
 DIVISION OF NATURAL RESOURCES  
 P.O. BOX 1410 WILSON, COLORADO 81413  
 PRODUCED BY: Carol Yazzie DATE: 22 Oct 93  
 Soils of the Navajo Nation  
 from 1:250,000 scale maps

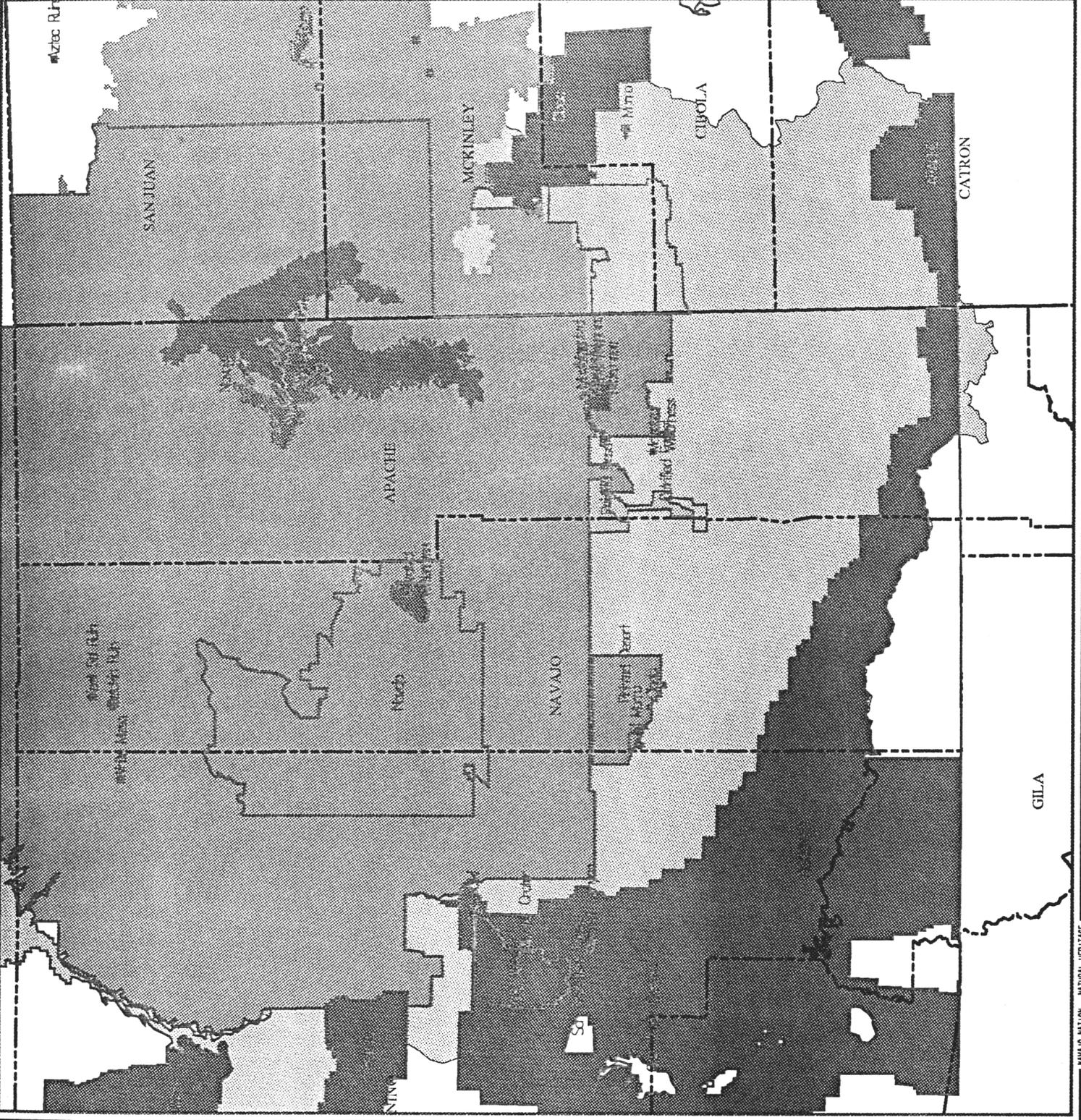


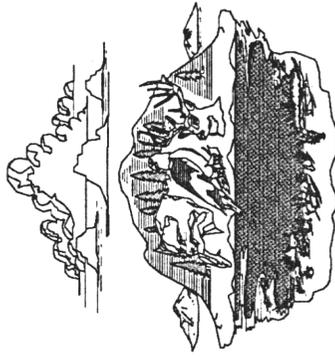
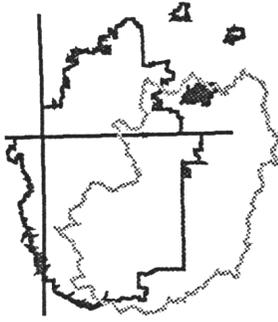
The Little Colorado River Basin has many natural attractions.



NAVAJO NATURAL HERITAGE PROGRAM  
DIVISION OF NATURAL RESOURCES  
BOX 11440 WINDOW ROCK, ARIZONA 86513

PRODUCED BY: Carol Yazzie DATE: 07 Oct 93  
Monuments and/or Tourist attractions in/around the LCR

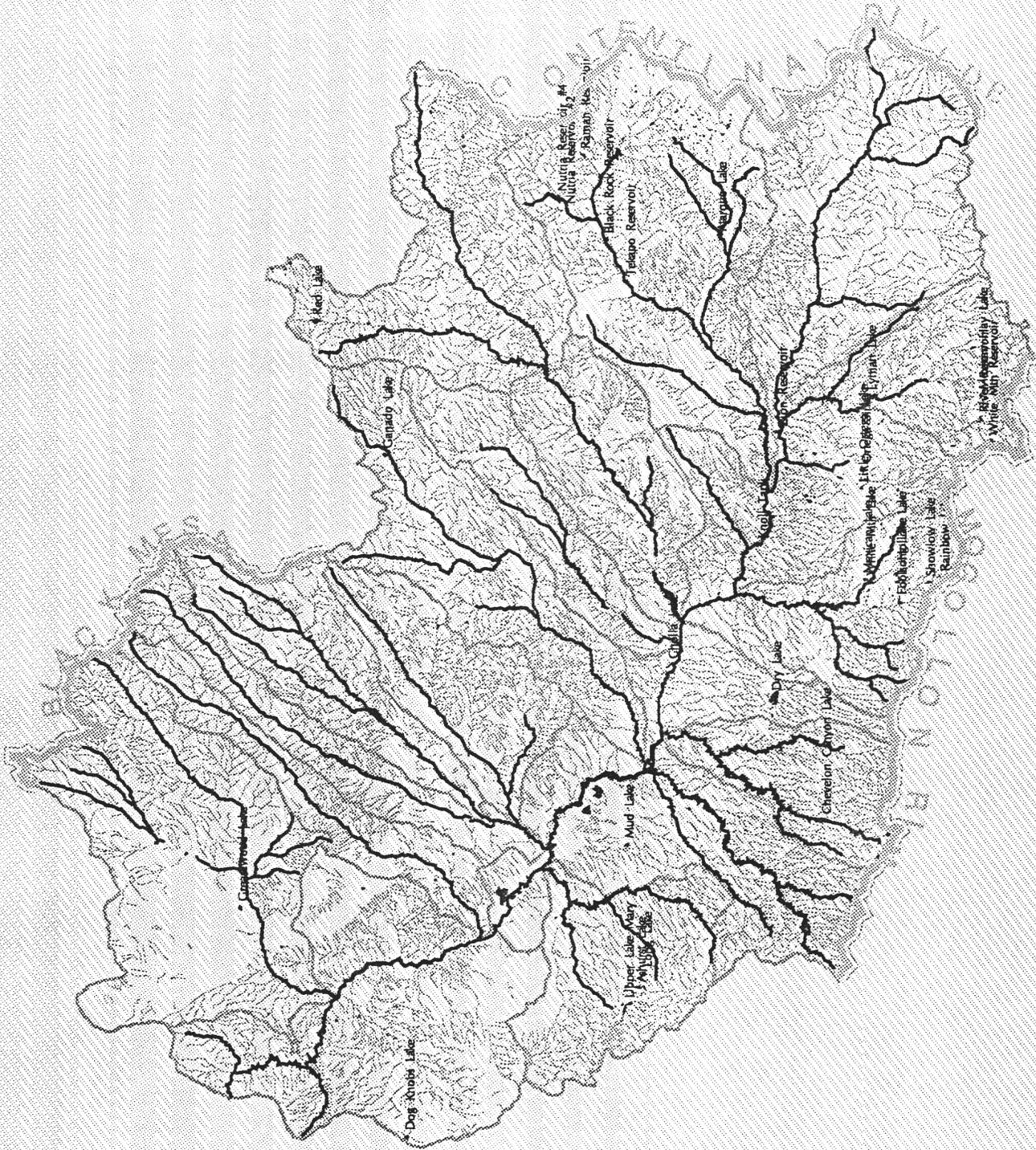




NAVAJO NATURAL HERITAGE PROGRAM  
 DIVISION OF NATURAL RESOURCES  
 P.O. BOX 1140 WINDSOR ROCK, ARIZONA 86313

PRODUCED BY: Carol Yazzie DATE: 21 Oct 93

Little Colorado River Basin  
 Surface Hydrography & Major Drainages  
 including boundary characteristics





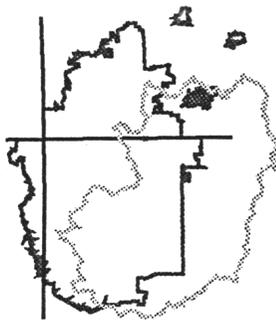
SCALE 1:3541254



MILES

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Py	Pt	Pyp	Py	Pya	Pyr	Qtb	Qig	Qip	Qir	Qis	Qitf	Qab	Qal	Qb	Qds	Qg	Qi	Qm	Qr	Qs	Qv	Qvr	SOC	Tka	Tki	Tkm	Tkoa	Tkr	TR	TRc	TRgc	TRa
Kpl	Kpm	Kv	Kvt	Kw	M	MC	MD	P	PP	Pa	Pal	Pat	Pau	Pb	Pbc	Pc	Pca	Pcc	Pco	Pcp	Pd	Pg	Pgr	Pgs	Ph	Php	Pq	Pr	Psa	Psg	Pal	Pir
Dp	IP	IPM	IPMD	IPm	IPms	IPa	J	Jm	Jar	Jar1	Jz	K	Kc	Kcc	Kch	Kd	Kdm	Kg	Kgg	Kgh	Kgr	Kkf	Kkt	Kl	Km	Kmf	Kmm	Kms	Kmv	Knf	Kpc	

NAVAJO NATURAL HERITAGE PROGRAM  
 DIVISION OF NATURAL RESOURCES  
 BOX 11440 WINDHOPE, ARIZONA 86313  
 PRODUCED BY: Carol Yazzie DATE: 13 Oct 93  
 New Mexico Geology

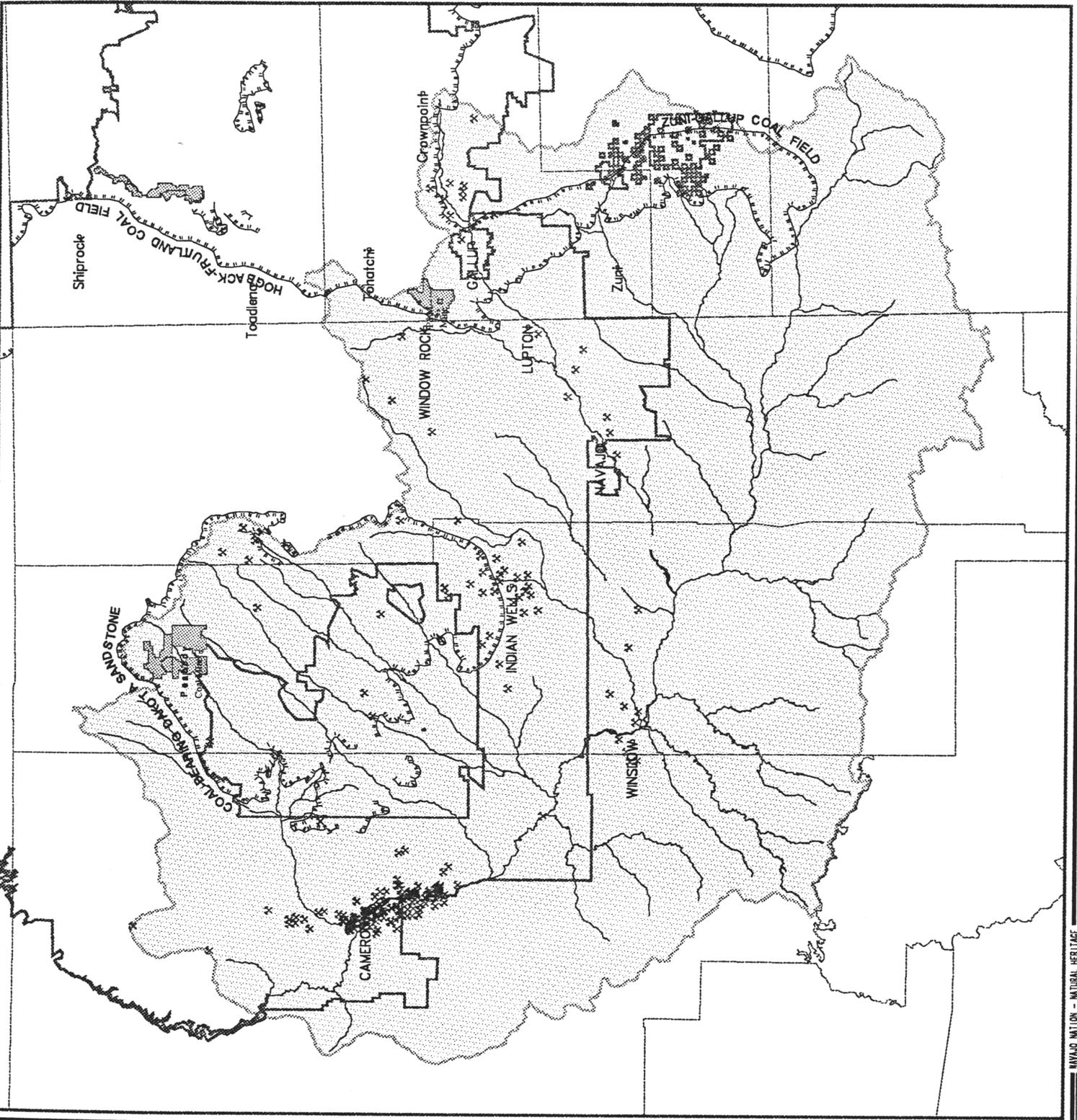


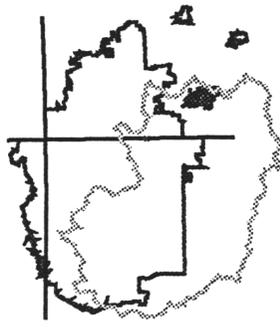
- Uranium
- Coal
- Copper & Lead
- All Others



**NAVAJO NATURAL HERITAGE PROGRAM**  
 DIVISION OF NATURAL RESOURCES  
 BOX 1160 WINDOW ROCK, ARIZONA 86513

PRODUCED BY: Carol Yazzie DATE: 26 Oct 93  
 Mines & Coal Seams



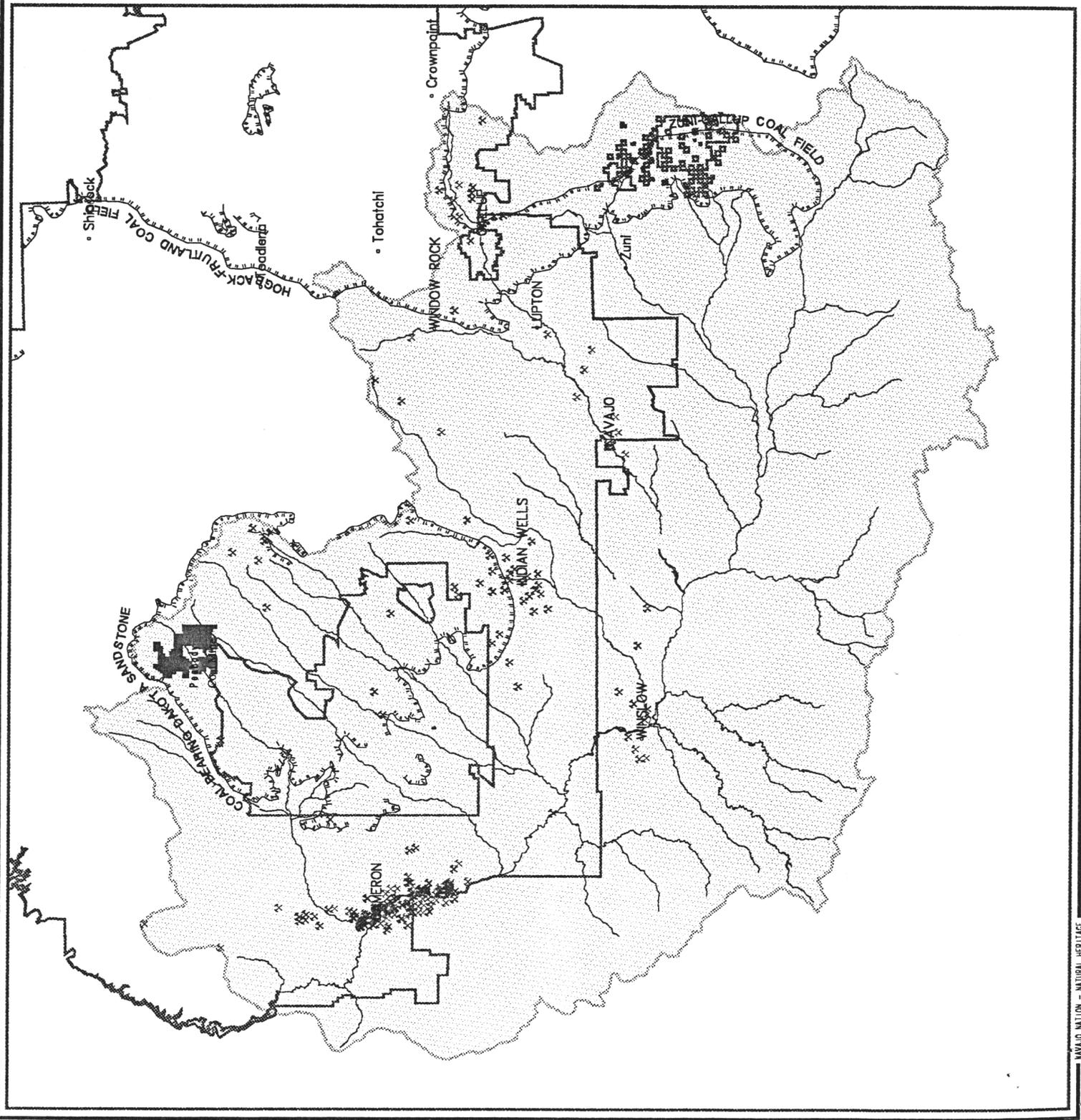


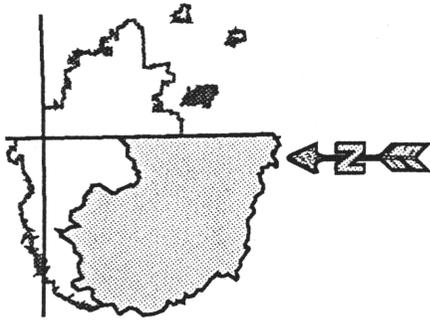
- Uranium
- Coal
- Copper & Lead
- All Others



**NAVAJO NATURAL HERITAGE PROGRAM**  
 DIVISION OF NATURAL RESOURCES  
 BOX 1480 WINDOW ROCK, ARIZONA 86313

PRODUCED BY: Carol Yazzie DATE: 05 Jan 94  
 Mines & Coal Seams  
 and  
 Communities & Cities





# LEGEND

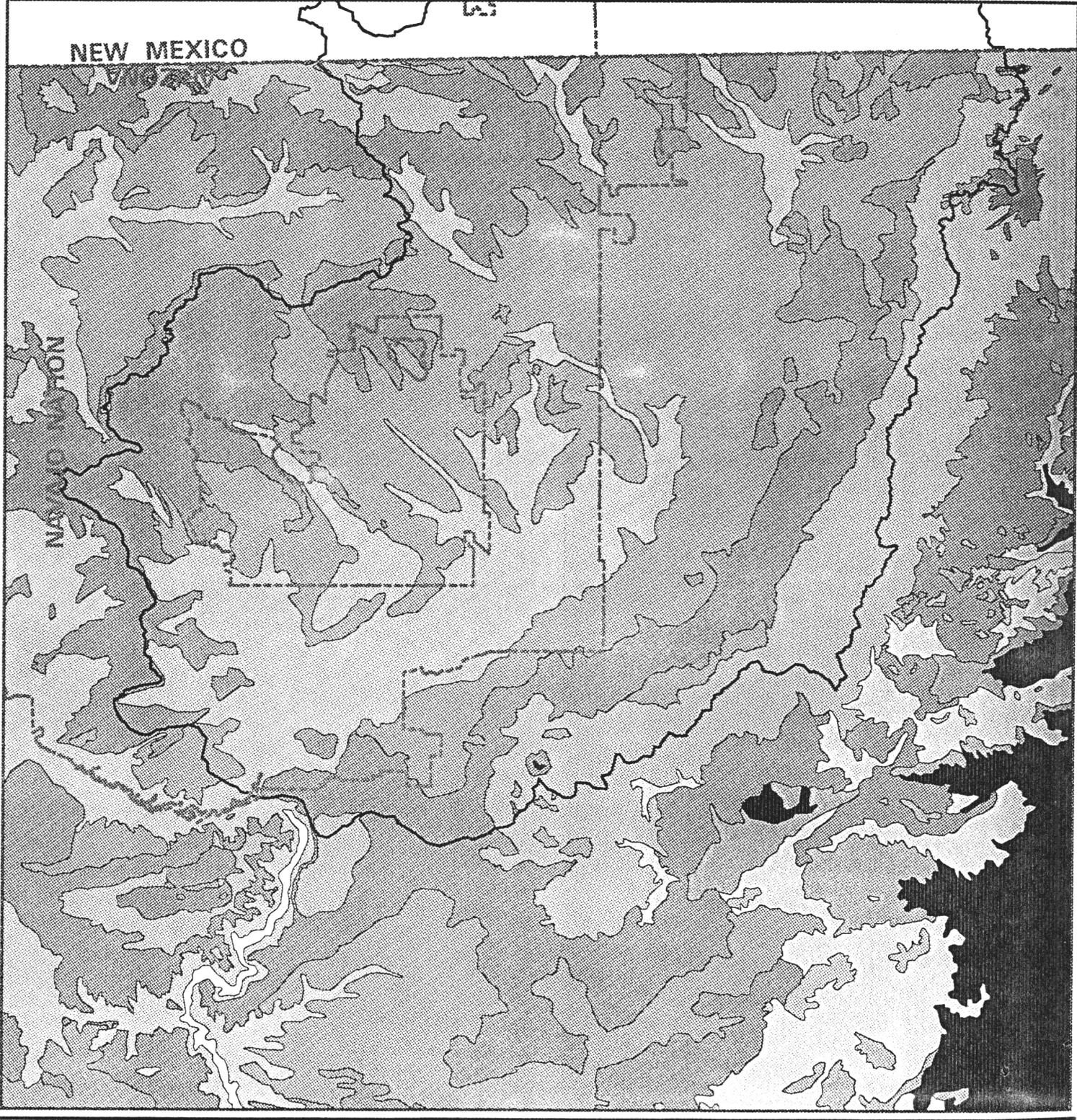
- Alpine Tundra
- Petran Subalpine Forest
- Petran Montane Conifer Forest
- Great Basin Conifer Woodland
- Interior Chaparral
- Subalpine Grassland
- Plains & Great Basin Grasslands
- Semi-desert Grasslands
- Great Basin Desertscrub
- Mohave Desertscrub
- Arizona Upland Division

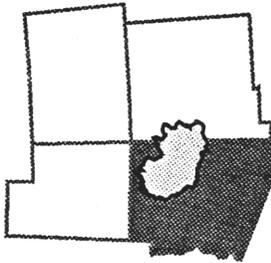


NAVAJO NATURAL HERITAGE PROGRAM  
DIVISION OF NATURAL RESOURCES  
PHOENIX WINDY ROCK, ARIZONA 85013

PRODUCED BY: Carol Yezic DATE: 18 Oct 93

Biotic Communities  
of the  
Arizona LCR Basin





# LEGEND

- Alpine Tundra
- Petrin Subalpine Forest
- Petrin Montane Conifer Forest
- Great Basin Conifer Woodland
- Interior Chaparral
- Subalpine Grassland
- Plains & Great Basin Grasslands
- Semi-desert Grasslands
- Great Basin Desertscrub
- Mohave Desertscrub
- Arizona Upland Division

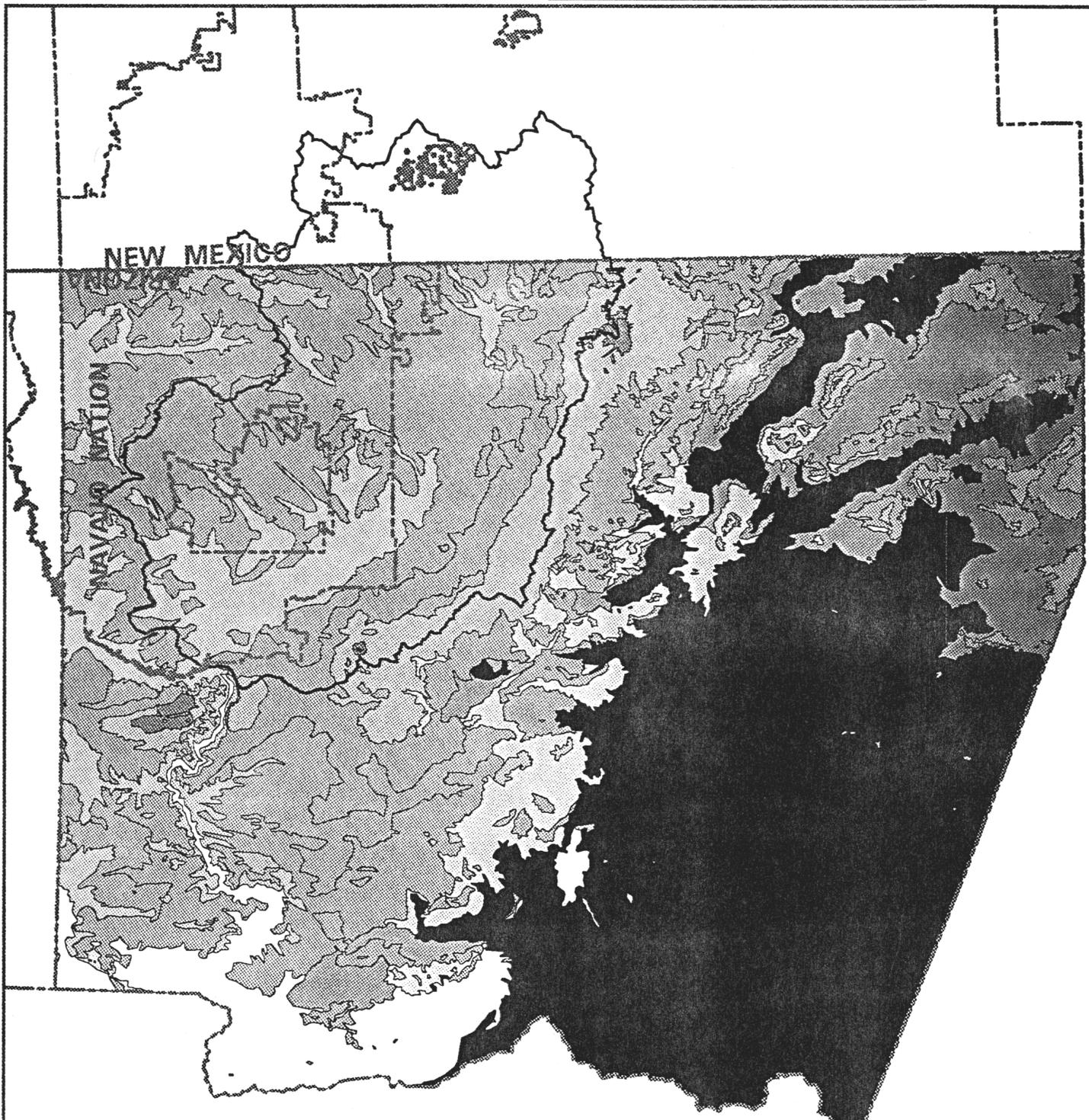


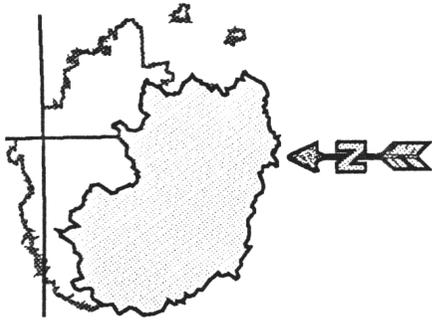
MILES

NAVAJO NATURAL HERITAGE PROGRAM  
DIVISION OF NATURAL RESOURCES  
BOX 1440 WINDYFOCK, ARIZONA 86313

PRODUCED BY: Carol Yazzie DATE: 04 Jan 94

Biotic Communities  
in  
Arizona





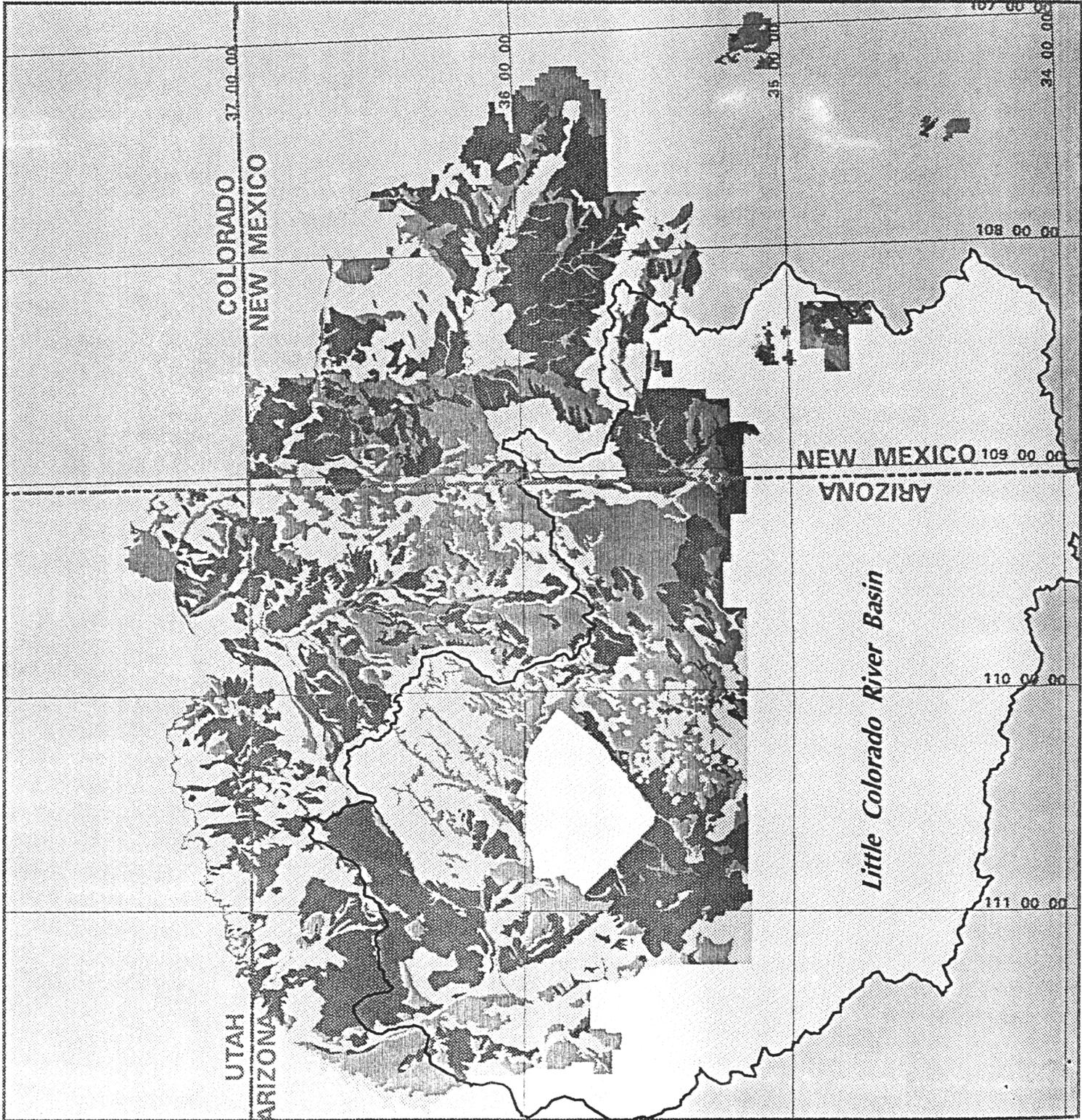
### LEGEND (erosion classes)

- Slight
- Moderate
- Severe
- Gullied
- Severely Gullied
- Slips & Landslides
- Undifferentiated
- Wind Removal
- Wind Accumulation

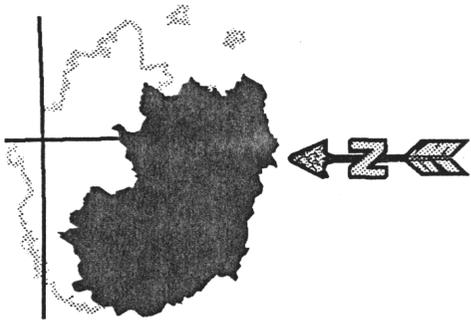


NAVAJO NATURAL HERITAGE PROGRAM  
DIVISION OF NATURAL RESOURCES  
PO BOX 1480 WINDOW ROCK, ARIZONA, 86313

PRODUCED BY: Carol Yazzie DATE: 19 Oct 93  
Erosion of the Navajo Nation  
from maps by  
Morrison Mierle, Inc







**USGS Quad Grid Reference System**

Number of Quads pass through the LCR basin

**No. Name & description**

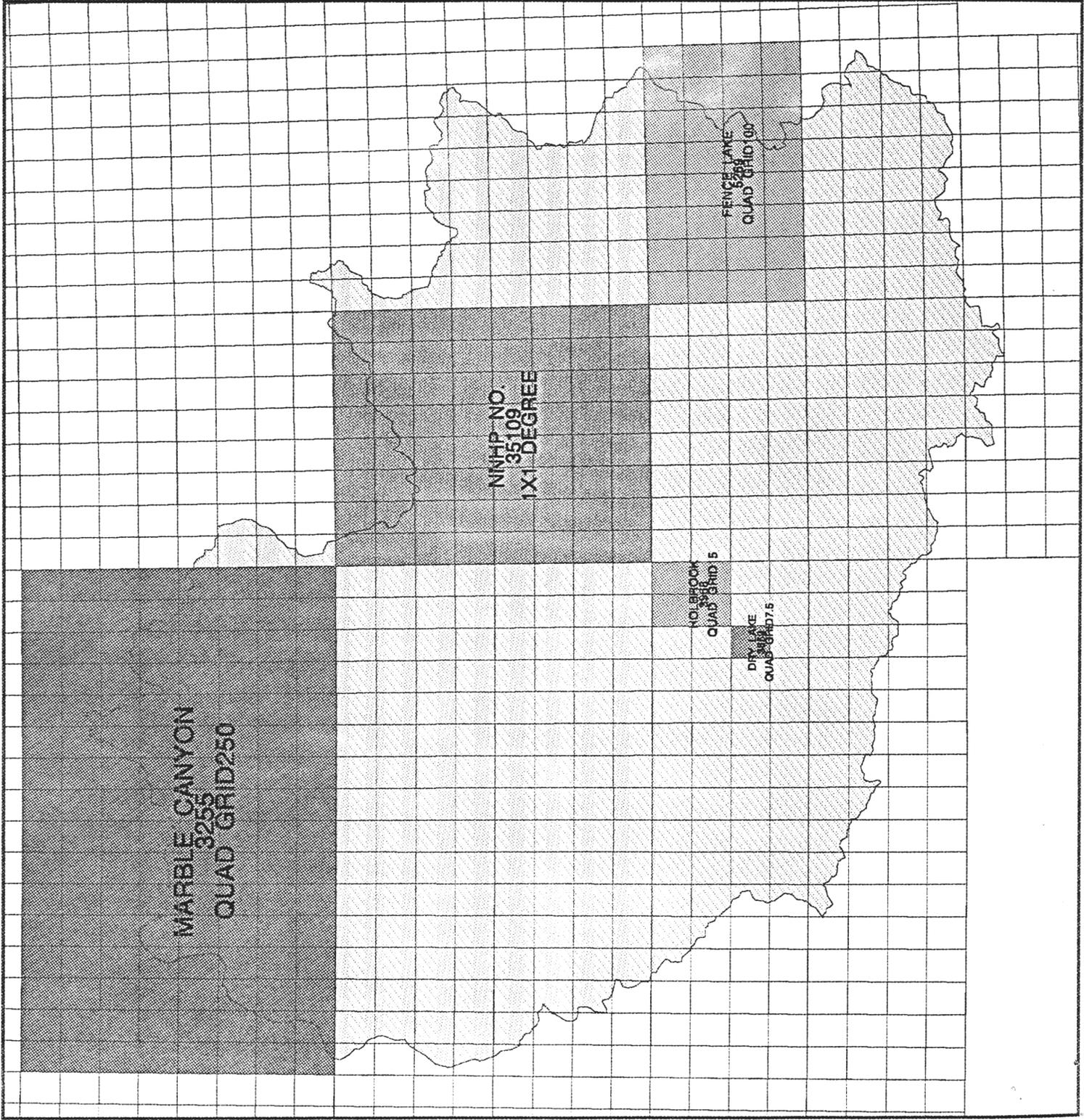
- 7 - 1:250,000 quads (1 degree Latitude by 2 degree long.)
- 14 - 1 degree by 1 degree quads
- 24 - 1:100,000 quads (30 minutes latitude by 1 degree long.)
- 115 - 15 minutes latitude by 15 minutes long.)
- 517 - 7 1/2 minute quads (7.5 minutes latitude by 7.5 minutes long.)

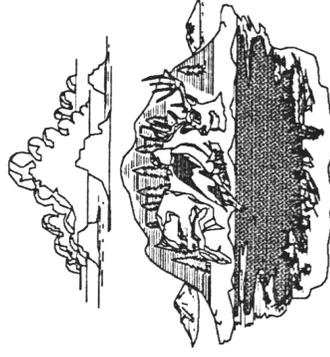
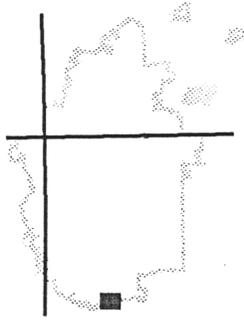


NAVAJO NATURAL HERITAGE PROGRAM  
DIVISION OF NATURAL RESOURCES  
PO BOX 11410 WINDHOPE, ARIZONA 84313

PRODUCED BY: Carol Yezic DATE: 08 Oct 99

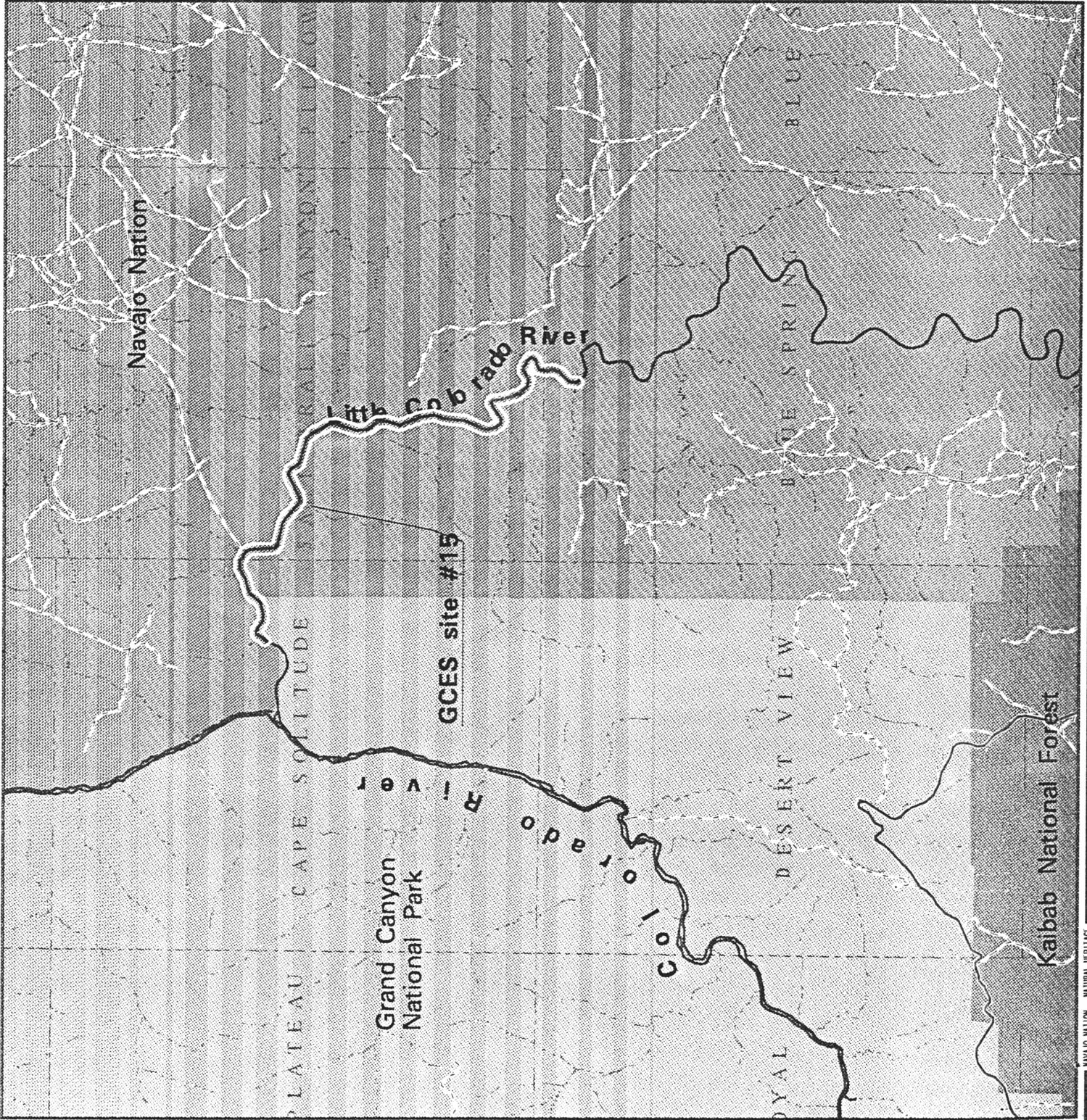
Example of USGS Quad Grid referencing systems

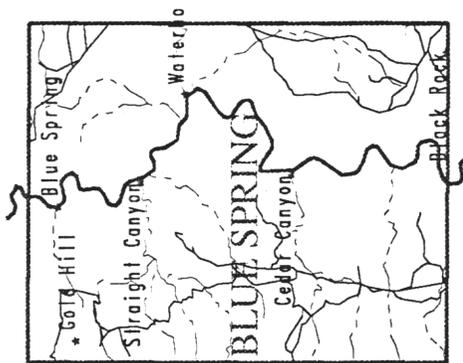
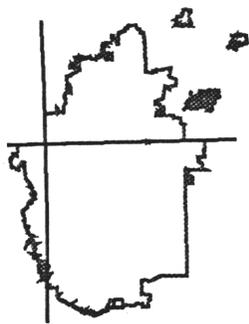




NAVAJO NATURAL HERITAGE PROGRAM  
 DIVISION OF NATURAL RESOURCES  
 TULSA, OKLAHOMA

PRODUCED BY: Carol Yazzie DATE: 30 Nov 93  
 Political Boundaries along the  
 Little Colorado River & Colorado River  
 Confluence, Also GCHS site #15



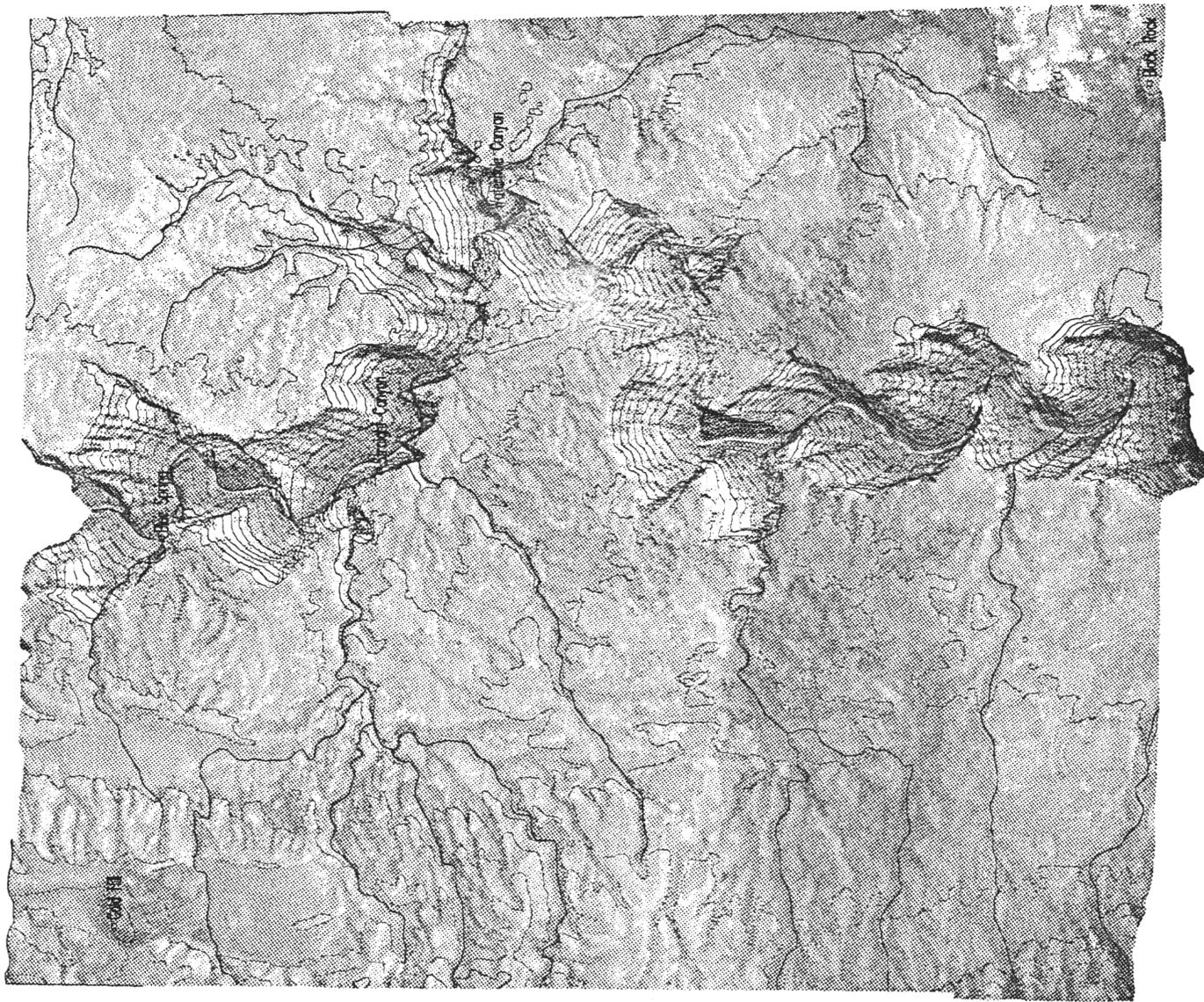


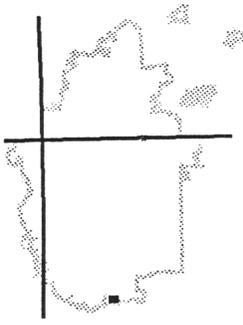
MILES

NAVAJO NATURAL HERITAGE PROGRAM  
DIVISION OF NATURAL RESOURCES  
PO BOX 10000 TUCSON, ARIZONA 85724

PRODUCED BY: Carol Yazzie DATE: 18 Oct 93

Blue Springs Quad  
Putting together  
SPOT & DEM





### LEGEND

Aspect (in degrees)

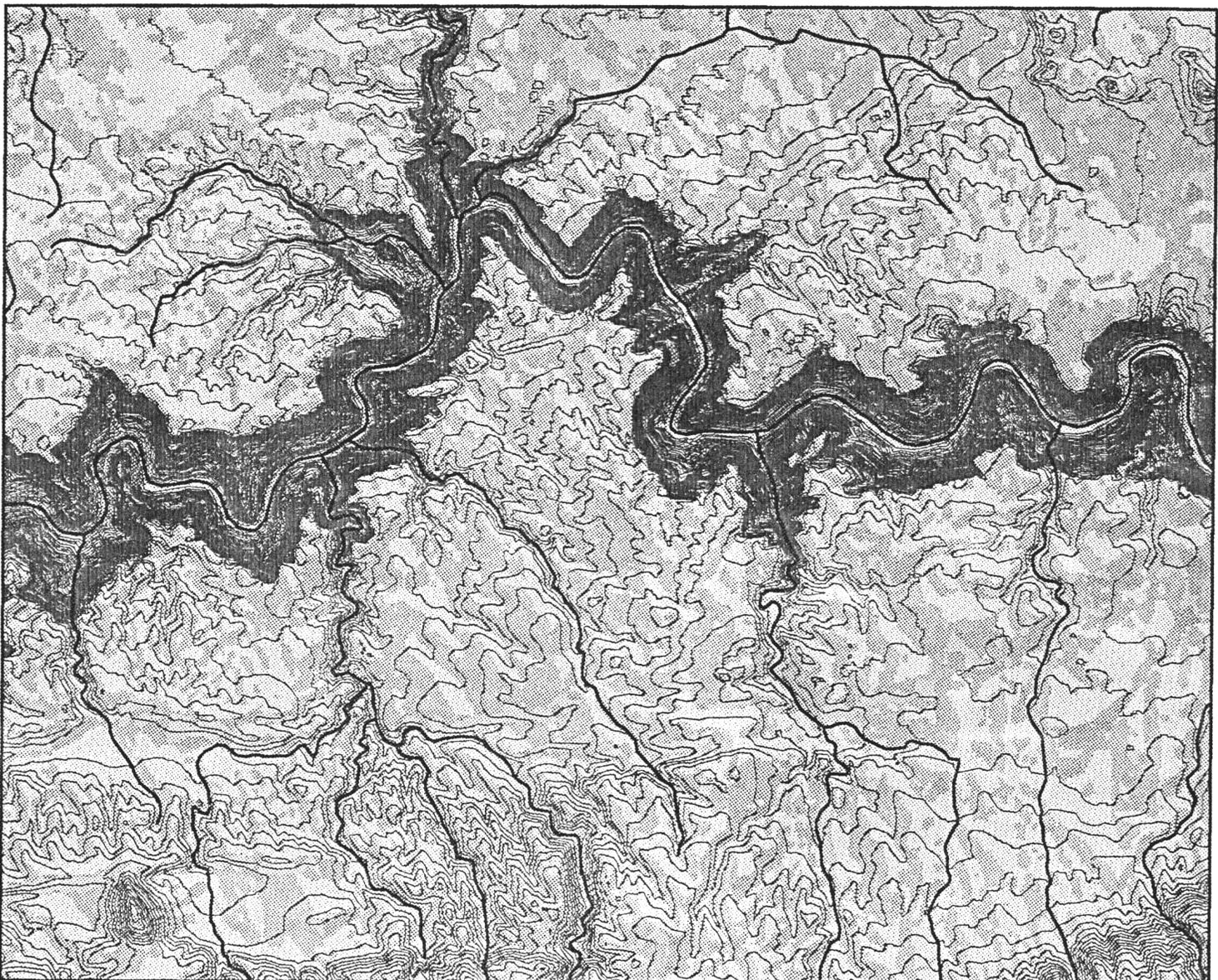
0 TO 22.5
22.6 TO 67.5
67.6 TO 112.5
112.6 TO 157.5
157.6 TO 202.5
202.6 TO 247.5
247.6 TO 292.5
292.6 TO 337.5
337.6 TO 360

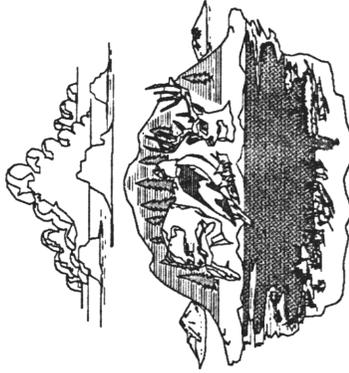


NAVAJO NATURAL HERITAGE PROGRAM  
DIVISION OF NATURAL RESOURCES  
BOX 1480 WINDROCK, ARIZONA 86313

PRODUCED BY: Carol Yezzi DATE: 18 Oct 99

7.5 Minute - Blue Spring Quad  
Aspect and 50 ft contours  
Digital Elevation Model (DEM)

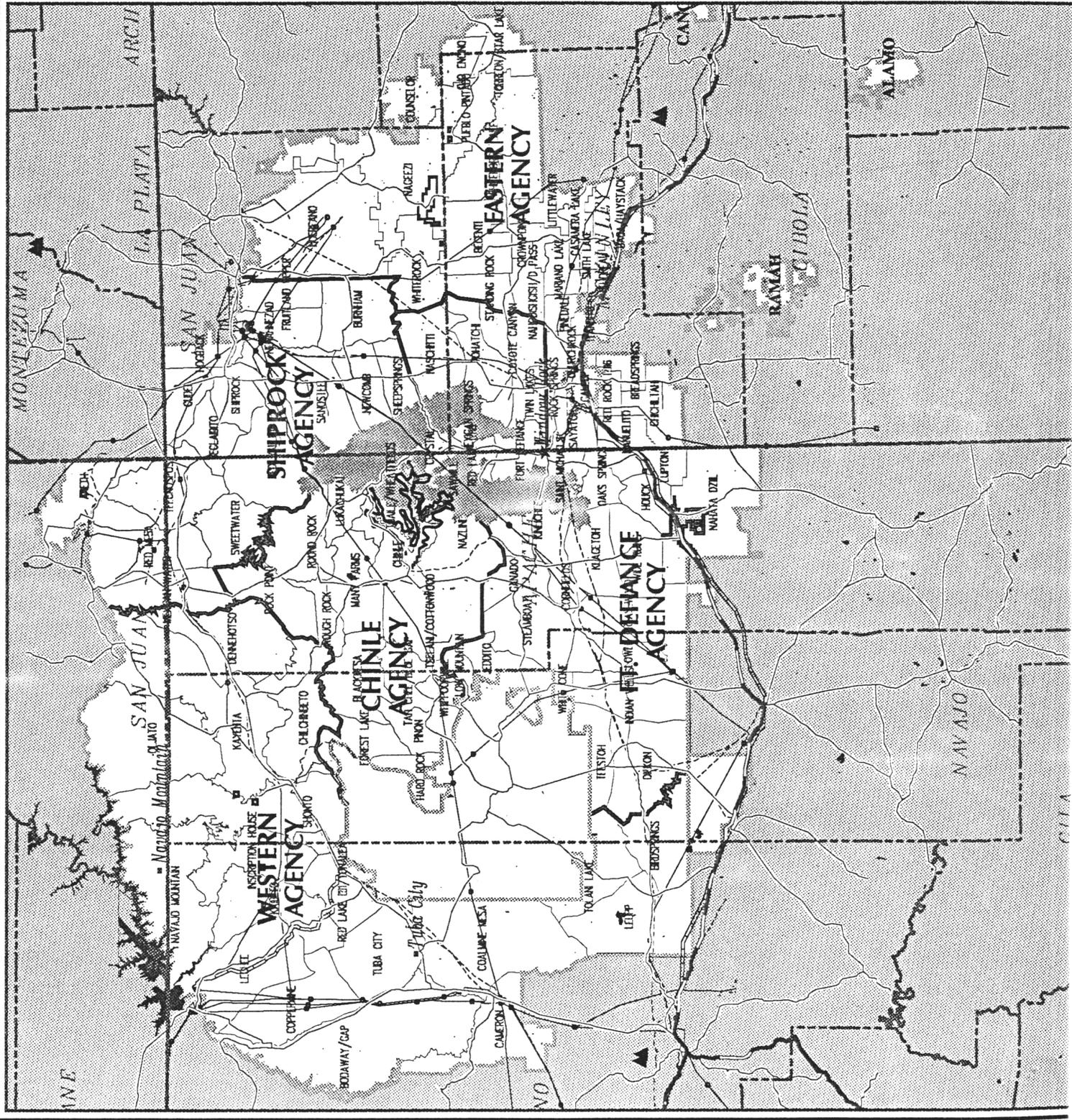


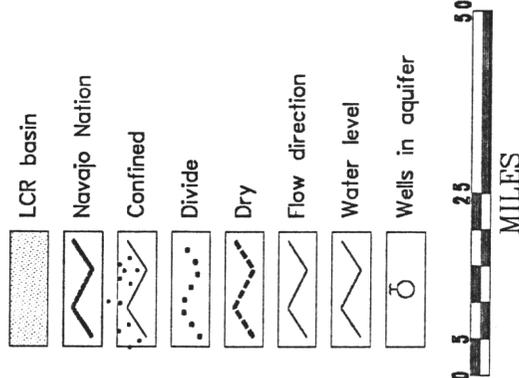
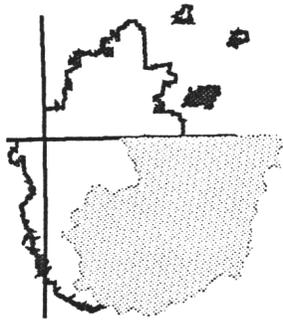


0 20 40 60  
MILES

NAVAJO NATURAL HERITAGE PROGRAM  
DIVISION OF NATURAL RESOURCES  
P.O. BOX 14, WINDOW ROCK, ARIZONA 86515  
PRODUCED BY: Carol Yezic DATE: 20 Oct 93

NAVAJO NATION  
chapters, agencies, counties, states,  
roads, railroad, transmission & pipe lines

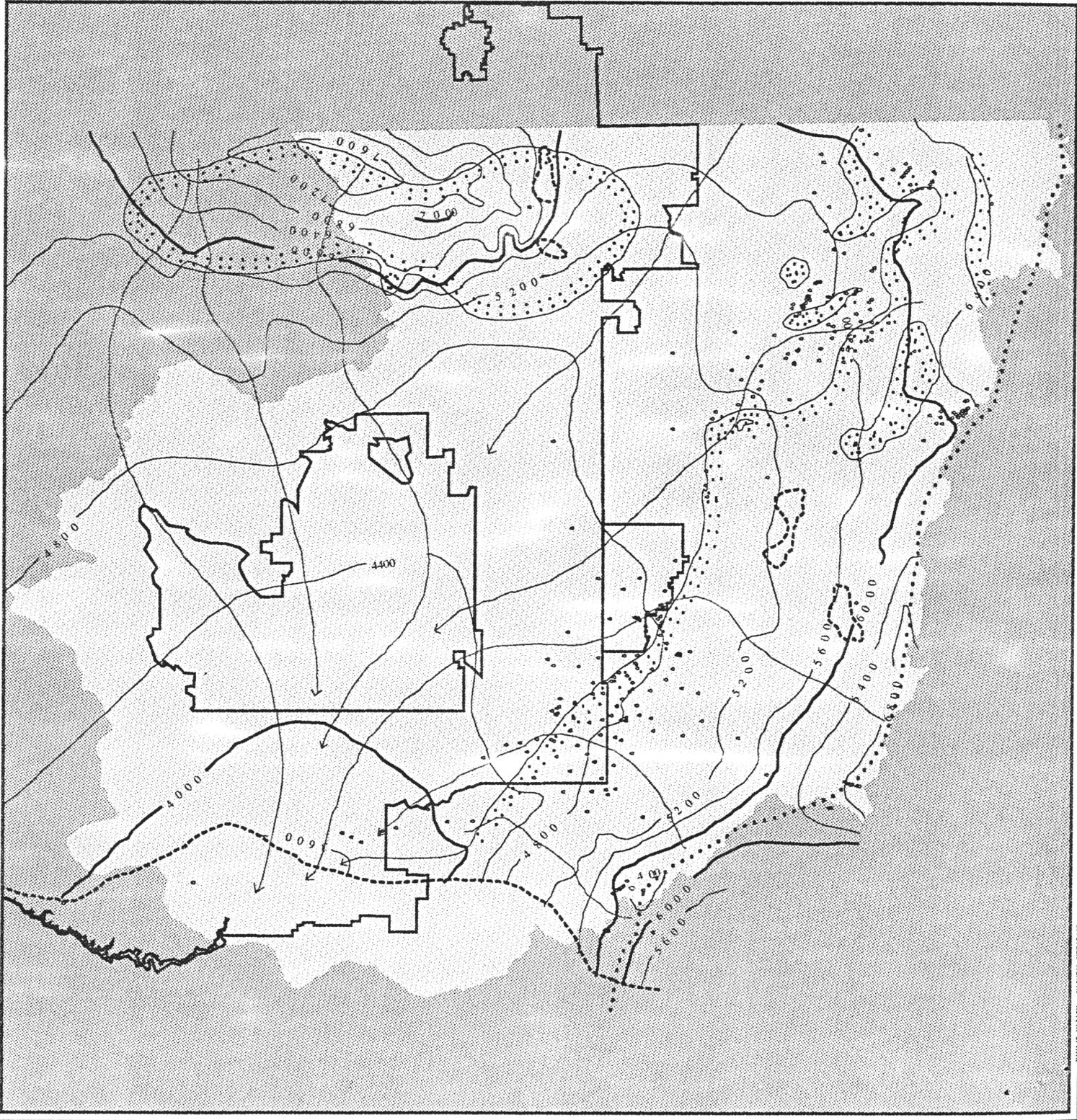


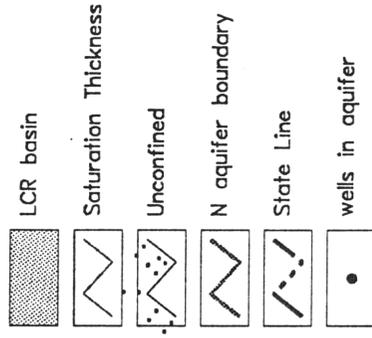
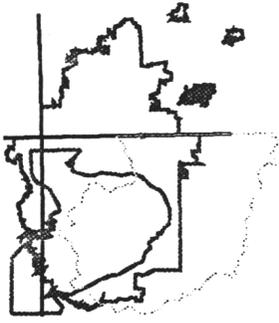


NAVAJO NATURAL HERITAGE PROGRAM  
 DIVISION OF NATURAL RESOURCES  
 BOX 1410 WINDSOR ROCK, ARIZONA 86312

PRODUCED BY: Carol Yazzie DATE: 20 Oct 93

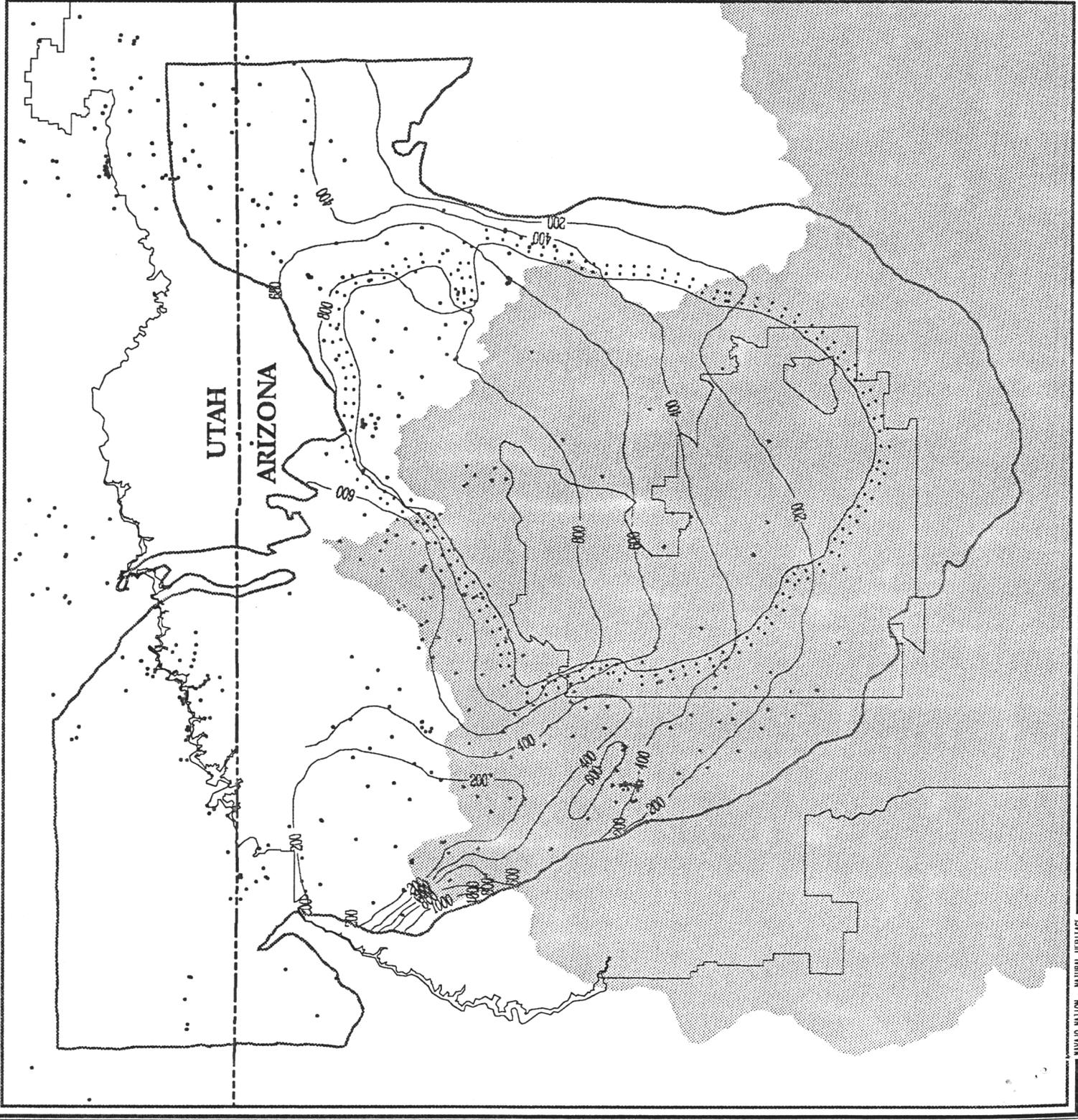
C Aquifer in the  
 Arizona Portion of the  
 Little Colorado River Basin





NAVAJO NATURAL HERITAGE PROGRAM  
 DIVISION OF NATURAL RESOURCES  
 P.O. BOX 11410 WINDHOPE, ARIZONA 84311  
 PRODUCED BY: Carol Yazzie DATE: 20 Oct 93

N Aquifer  
 on the Navajo Nation  
 and LCR basin





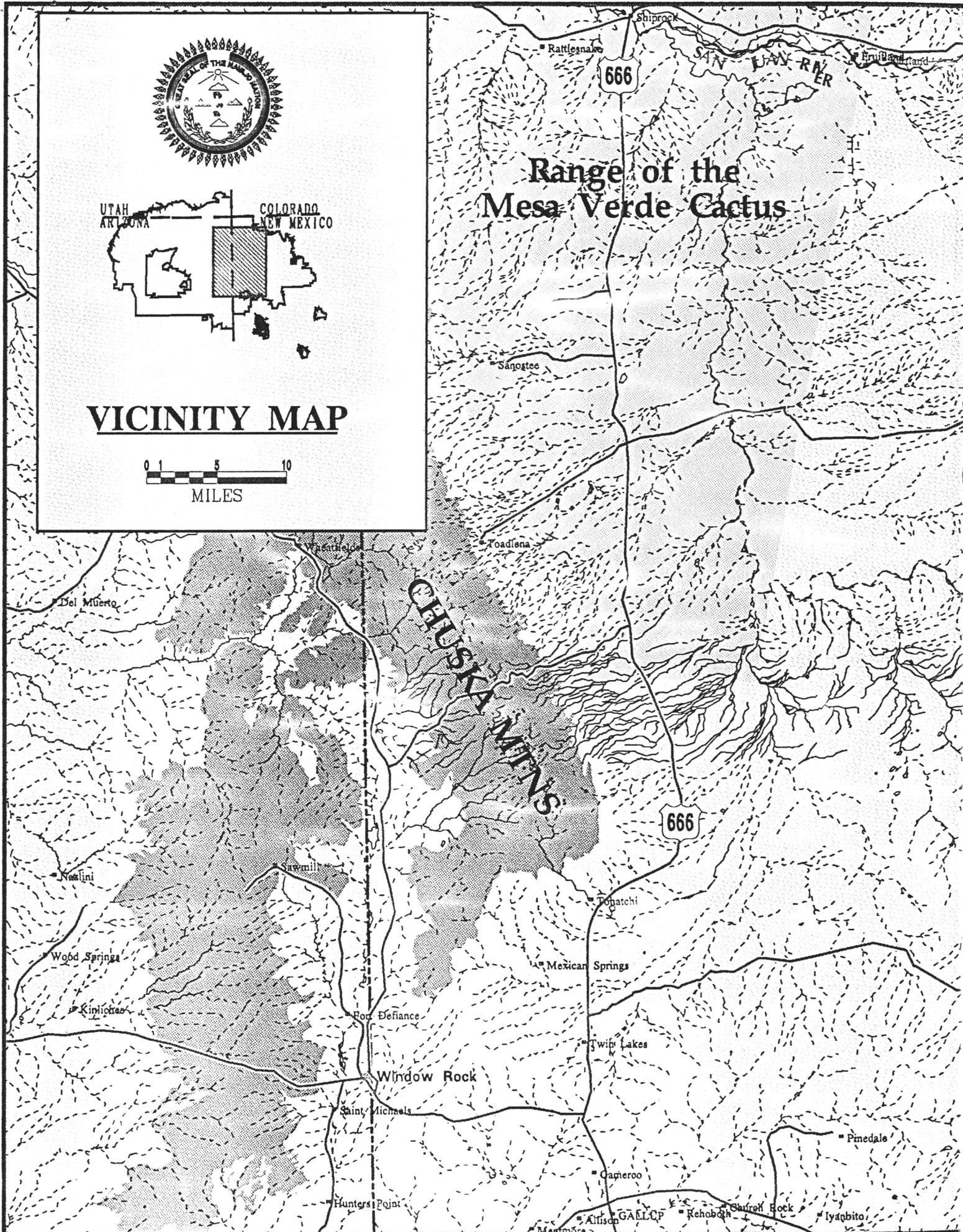


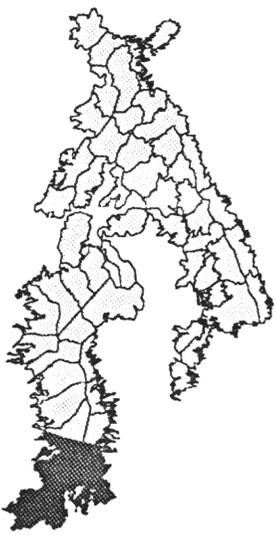
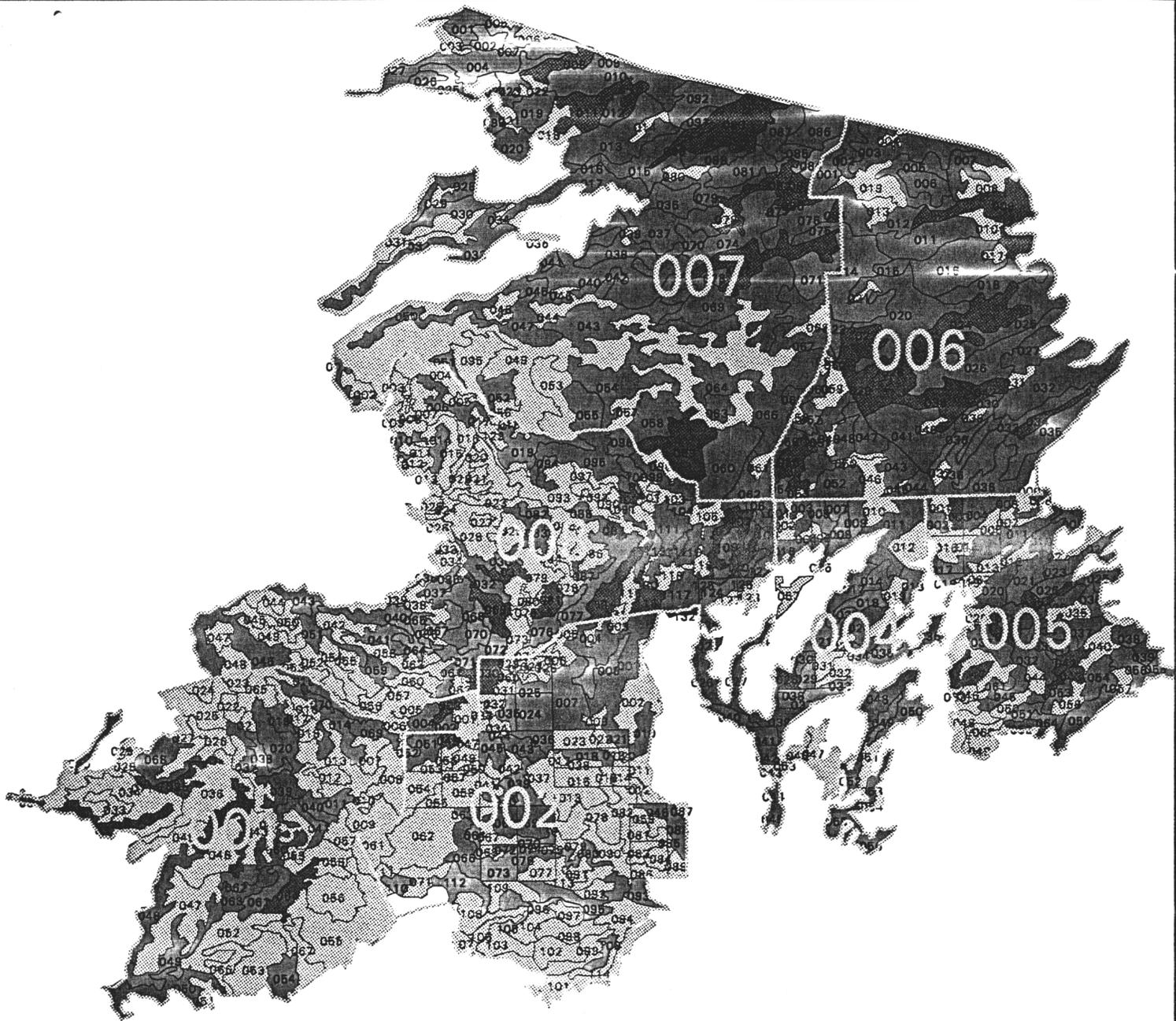
UTAH ARIZONA COLORADO NEW MEXICO

### VICINITY MAP



# Range of the Mesa Verde Cactus





### LEGEND

-  Basal Area < or = 10
-  Basal Area > 10 and <= 20
-  Basal Area > 20 and <= 35
-  Basal Area > 35 and <= 50
-  Basal Area > 50 and <= 70
-  Basal Area > 70 and <= 90
-  Basal Area > 90



**NAVAJO NATURAL HERITAGE PROGRAM**  
 DIVISION OF NATURAL RESOURCES  
 BOX 1440 WINDOW ROCK, ARIZONA 86513  
 PRODUCED BY: Carol Yazzie    DATE: 25 Oct 93  
 OAK RIDGE Timber Sale  
 On The  
 Navajo Nation Commercial Forest