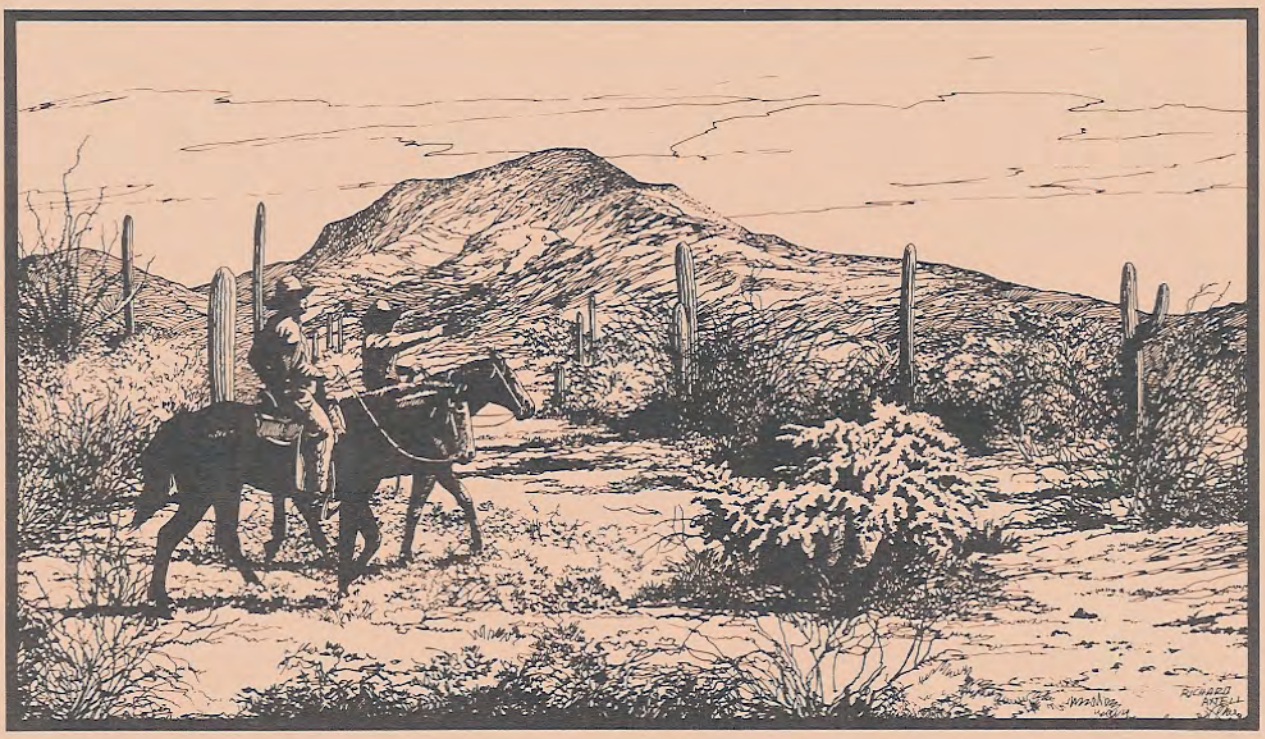
U.S. Department of the Interior
Bureau of Land Management
Arizona State Office

Lower Gila Resource Area — June 1995

Maricopa Complex Wilderness Management Plan, Environmental Assessment and Decision Record



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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
PHOENIX DISTRICT OFFICE
2015 WEST DEER VALLEY ROAD
PHOENIX, ARIZONA 85027

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IN REPLY REFER TO:
AZA 25486
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AZA 25489
AZA 25490
8560 (026)

JUN 15 1995

Dear Reader:

The document accompanying this letter contains the final Maricopa Complex Wilderness Management Plan, Environmental Assessment and Finding of No Significant Impact/Decision Record. This plan will enable the Bureau of Land Management (BLM) to improve its management of the Sierra Estrella, North Maricopa Mountains, South Maricopa Mountains and Table Top wildernesses. The Environmental Assessment analyzes the impacts expected from implementing the plan. Based on this analysis, and as stated in the Finding of No Significant Impact, these impacts are not expected to be significant. The Decision Record documents the BLM's final decision.

The Draft Maricopa Complex Wilderness Management Plan was released on September 13, 1994 for public review and comment. Comments on the draft plan were analyzed and appear with the BLM's responses in Part VIII of the plan, entitled Public Involvement. Changes made to the plan as a result of public comment are documented in these responses. Most notable are: the addition of a management action to disallow the construction of any livestock-watering facilities within the wilderness; the allowance for additional mechanization related to wildlife management activities; and changes to the Naturalness Alternative and associated impact analysis in the Environmental Assessment. Also, mistakes in arithmetic and grammar were corrected and current data added where available.

The Environmental Assessment and Decision Record are subject to appeal in accordance with the procedures in 43 Code of Federal Regulations, Part 4. Implementation of this plan will begin 30 days after the date of this letter.

A special thanks is due to all who participated in this planning process and contributed to the development of the final document.

Sincerely,

John R. Christensen
Area Manager
Lower Gila Resource Area

Maricopa Complex Wilderness Management Plan, Environmental Assessment and Decision Record

Sierra Estrella Wilderness
North Maricopa Mountains Wilderness
South Maricopa Mountains Wilderness
Table Top Wilderness

U.S. Department of the Interior
Bureau of Land Management
Phoenix District
Lower Gila Resource Area

EA AZ-026-94-20

Recommended by: John R. Christensen — 4-27-95
Area Manager, Lower Gila Resource Area — Date

Recommended by: S. S. Chenoweth — 4-27-95
District Manager, Phoenix District — Date

Approved by: [signature] — 4-27-95
State Director, Arizona — Date

Table of Contents

	Page
Summary	1
Scope of Document	1
Main Features of this Wilderness Management Plan	1
Other Alternatives Analyzed	2
Part I -- Introduction	3
Plan Purpose/Background	3
Wilderness Overview	3
Location/Access	3
Wilderness Values and Unique Attributes	5
General Management Situation	6
Existing Developments	6
Inholdings	6
Aircraft Overflights	6
Search and Rescue and Law Enforcement	11
Minerals	11
Approved Motorized/Mechanized Uses	11
Recreation	11
Cultural Resources	12
Soil, Water and Air	12
Vegetation	13
Fire	13
Wildlife	13
Threatened, Endangered and Special Status Species	14
Livestock Grazing	14
Monitoring	15
Part II -- National Wilderness Management Goals	17
Part III -- Issues	19
Activity Plan Issues	19
Issues Solved Through Policy or Administrative Action	20
Issues Beyond the Scope of This Plan	22
Part IV -- Management Strategy	25
Part V -- Wilderness Management	27
Introduction	27
Objective 1	27
Management Actions	27
Monitoring	35
Additional Actions, if Required	36
Objective 2	37
Management Actions	37
Monitoring	40
Additional Actions, if Required	41

Objective 3 41
Management Actions 41
Monitoring 43
Objective 4 45
Management Actions 45
Monitoring 48
Additional Actions, if Required 48

Part VI -- Plan Evaluation 49

Part VII -- Plan Implementation 51
Ongoing Activities 51
Special Projects 51
Existing Vehicle Ways to be Rendered Impassable 51
Vehicle Barriers 51
Designated Trails and Amenities 51
Other Special Projects 55

Part VIII -- Public Involvement 59
Public Comment Letters 60
Responses 75

Part IX -- List of Preparers 81

Part X -- Environmental Assessment 83
Introduction 83
Purpose and Need 83
Conformance with Land Use Plan 83
Relationship to Statutes, Regulations or Other Plans 83
Description of Proposed Action and Alternatives 83
Alternative A -- Proposed Action 84
Alternative B -- Visitor Use and Wildlife Enhancement Alternative 86
Alternative C -- Naturalness Enhancement Alternative 91
Alternative D -- No Action 91
Affected Environment 91
Environmental Impacts 92
Alternative A -- Proposed Action 92
Alternative B -- Visitor Use and Wildlife Enhancement Alternative 95
Alternative C -- Naturalness Enhancement Alternative 97
Alternative D -- No Action 99
Consultation and Coordination 101
Finding of No Significant Impact/Decision Record 109

Part XI -- Appendices 111
A. Wilderness Values and Other Facts about the Maricopa Complex Wildernesses 113
B. Wildlife and Livestock Developments within the Maricopa Complex Wildernesses 117
C. Plant Species Distribution in the Maricopa Complex Wildernesses 119
D. Fire Suppression Procedures for the Maricopa Complex Wildernesses 123
E. Glossary 127
F. Bibliography 131

Tables

1. Planned Rehabilitation of Former Vehicle Ways 28
2. Existing Livestock and Wildlife Developments to be Modified or Abandoned 34
3. Surface and Subsurface Inholdings to be Acquired 36
4. Trails to be Established and Maintained 38
5. Trailhead Amenities 38
6. General Description of Lands Through Which Access Easements May Be Required 40
7. Range Developments Which May Require Mechanized Transport and Access for Periodic Major Maintenance 42
8. Monitoring Sites, Key Species, Standard, Frequency and Target User by Wilderness 44
9. Implementation Schedule of Ongoing Activities 52
10. Implementation Schedule of Special Projects: Former Vehicle Ways to be Rendered Impassable 54
11. Implementation Schedule of Special Projects: Vehicle Barriers 55
12. Implementation Schedule of Special Projects: Trails and Trailheads 56
13. Implementation Schedule of Special Projects: Other Special Projects 57
14. Draft Maricopa Complex Wilderness Management Plan Environmental Assessment -- Summary Comparison of Alternatives 102
15. Draft Maricopa Complex Wilderness Management Plan Environmental Assessment -- Impact Comparison 106

Maps

1. Location Map 4
2. Sierra Estrella Wilderness Present Situation 7
3. North Maricopa Mountains Wilderness Present Situation 8
4. South Maricopa Mountains Wilderness Present Situation 9
5. Table Top Mountains Wilderness Present Situation 10
6. Sierra Estrella Wilderness Future Condition 29
7. North Maricopa Mountains Wilderness Future Condition 30
8. South Maricopa Mountains Wilderness Future Condition 31
9. Table Top Wilderness Future Condition 32
10. Sierra Estrella Wilderness Visitor Use and Wildlife Enhancement Alternative 87
11. North Maricopa Mountains Wilderness Visitor Use and Wildlife Enhancement Alternative 88
12. South Maricopa Mountains Wilderness Visitor Use and Wildlife Enhancement Alternative 89
13. Table Top Wilderness Visitor Use and Wildlife Enhancement Alternative 90

Summary

Scope of Document

This plan covers the management of four wildernesses -- the Sierra Estrella, North Maricopa Mountains, South Maricopa Mountains and Table Top, totaling 172,100 acres, in the Sonoran Desert of southwestern Arizona, southern Maricopa and western Pinal counties. The wildernesses are 12 to 45 miles south of the metropolitan Phoenix area.

This is a 10-year plan, to be implemented from 1995 to 2005.

An environmental assessment of the impacts of the selected alternative and three other alternatives are included in this document. A Finding Of No Significant Impact and a Decision Record are also incorporated.

Main Features of this Wilderness Management Plan

- A total of 642 acres of state of Arizona surface inholding and 5,120 acres of state subsurface inholding identified for acquisition along with other access easement needs.
- A total of 79 miles of former vehicle ways reclaimed, 16 miles converted to pedestrian and/or equestrian trails, 25 vehicle barriers constructed and three "cherrystemmed" access routes may be slightly shortened.
- Four new trails and seven trailheads established and one existing trail and trailhead improved and maintained. Signs, defined parking areas and minimal camping facilities provided at some trailheads; maps and other information provided. Two vehicle safety shoulders may be created along Interstate 8.
- Visitor encounter and environmental standards adopted and monitored so unacceptable changes can be responded to appropriately.
- Commercial recreation outfitters and guides may be permitted.
- Five earthen livestock water tanks abandoned and construction of future livestock watering facilities prohibited in the wildernesses. Thirteen livestock control fences maintained.
- Reduction in low-level civilian aircraft flights encouraged.
- Thirty-three instances of motorized/mechanized use allowed annually over nine years, dropping to 22 per year thereafter to:
  - -- maintain 13 livestock fences and modify six wildlife water catchments,
  - -- maintain and haul water to these catchments and two others,
  - -- replace, pump and maintain one wildlife water well,
  - -- census or track bighorn sheep and mule deer and check wildlife water catchment levels during summer months and
  - -- respond to life-threatening emergencies, rescue sick livestock, pursue felons or major game violators.
- Installation of new wildlife catchments to be evaluated on a case-by-case basis. Bighorn sheep transplants allowed.
- All wildfire suppressed but some firefighting-related activities restricted.
- Coordination with multi-jurisdictional law enforcement and search and rescue agencies and organizations improved.
- Nonmechanized animal damage control activities allowed.
- Restrictions to be initiated and enforced include:
  - -- no campfires, charcoal fires, wood gathering, wood cutting and other surface disturbances,
  - -- dogs prohibited on one trail; horses on one other,
  - -- no camping within 200 feet or sight of the established trails,
  - -- five-day camping stay limit at some trailheads and
  - -- pack stock hitching and feeding activities limited.
- Estimated total cost over the 10-year implementation period would be 284 workmonths and $162,000 in equipment and materials.

Other Alternatives Analyzed

- A visitor use and wildlife enhancement alternative with additional hiking and/or riding trails, trailhead amenities and three new wildlife developments.
- A naturalness enhancement alternative without maintained trails or trailhead development; nonmechanized/nonmotorized maintenance of all livestock and most wildlife developments. Fifteen instances of low-level aircraft use will remain.
- A no action alternative maintaining the status quo.

Part I -- Introduction

Plan Purpose/Background

The Arizona Desert Wilderness Act of 1990 established the Sierra Estrella, North Maricopa Mountains, South Maricopa Mountains and Table Top wildernesses. The Bureau of Land Management (BLM) 8560 Manual requires that management plans be prepared for these areas and recommends that environmental assessment documents be completed as appendices. Due to the similarity of the ecosystems and issues to be addressed, these four above-named wildernesses are covered under this single management plan.

This plan presents management objectives and actions for protecting and enhancing wilderness resources over the next 10 years. It also addresses the level of uses to be allowed as intended by Congress. It provides a schedule for implementing management actions and evaluating their effectiveness and assesses the impacts of these and alternative actions.

The management actions proposed in this plan are consistent with the Lower Gila South Resource Management Plan (U.S. Department of Interior, 1988a). The Phoenix District's Search and Rescue Plan (U.S. Department of Interior, 1992a) is supplemented. The Lower Gila South Habitat Management Plan (U.S. Department of Interior, 1990a) would be amended with the adoption of Alternative C of the environmental assessment (Part XI of this document). The Phoenix District's Interim Guidance for Fire Suppression in Wilderness (U.S. Department of Interior, 1991a), the range improvement maintenance plans for the Sierra Estrella Wilderness (U.S. Department of Interior, 1991b) and the Table Top Wilderness (U.S. Department of Interior, 1992b) and the wildlife operations and maintenance plans for the North and South Maricopa mountains and Sierra Estrella wildernesses (U.S. Department of Interior, 1991c) and the Table Top Wilderness (U.S. Department of Interior, 1994a) are superseded by this plan.

Management actions 1.2, 3.2 and 4.2 of this proposed wilderness management plan and similar actions presented under Alternative B of the environmental assessment (Part XI) affect nonwilderness corridors (cherrystem roads) and areas adjacent to the wilderness boundaries. These proposed actions are a logical part of managing the affected wildernesses and, therefore, are appropriately addressed in this plan.

Wilderness Overview

The Maricopa Complex Wilderness Management Plan covers about 172,000 acres (Geographic Information System data) within four separate wildernesses (see Map 1). Appendix A includes total acreage of public, state surface and state subsurface ownership as well as information regarding the wilderness values and other attributes of each.

Location/Access

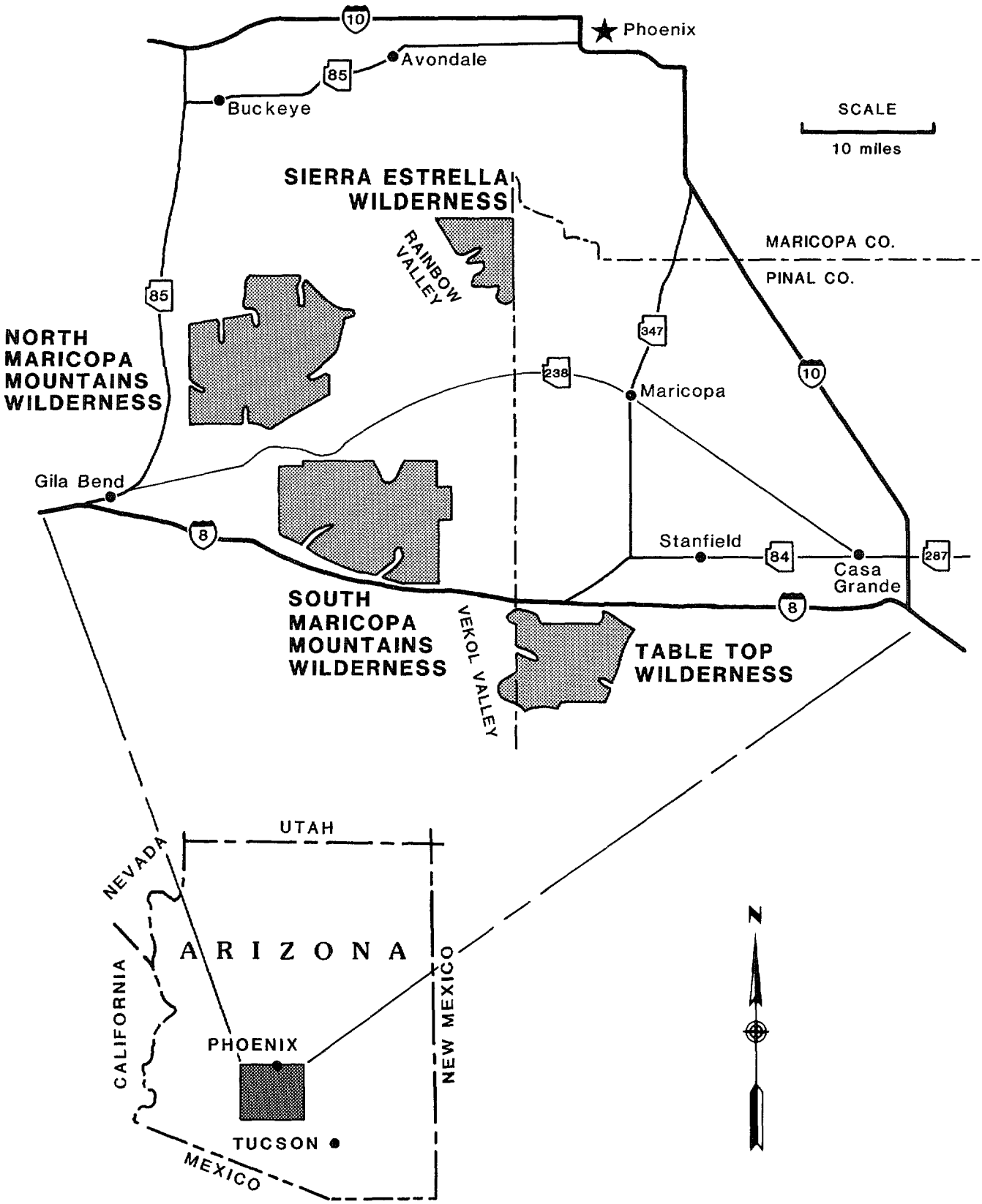
The four wildernesses are in the Sonoran Desert of southwestern Arizona in southern Maricopa and western Pinal counties. They are within two hours driving distance of the metropolitan Phoenix area, which has a population of 2.1 million (Maricopa Association of Governments, 1993). Specific locations, boundaries and access are described by area below.

Sierra Estrella

The 14,400-acre Sierra Estrella Wilderness, which includes roughly one-fourth of the Sierra Estrella Mountains, is 15 miles south of metropolitan Phoenix and east of Rainbow Valley, Arizona. It is bounded on the north and east by the Gila River Indian Reservation; in the latter case, the Reservation boundary is also the Maricopa-Pinal county line. The western boundary is a combination of a powerline right-of-way and jeep trails. The southern boundary is a wash at the toe of a steep ridge.

Although distinguished as one of the wildernesses closest to metropolitan Phoenix, four-wheel-drive vehicles are required to approach the wilderness boundary. Primitive dirt roads near the wilderness boundary are extremely sandy or silty and wash crossings are rugged and deep. Only the western boundary of the wilderness is accessible to the public. However, due to landownership patterns, legal access is not assured. Visitors can reach the wilderness via Interstate 10 to exit 121 and south on Jackrabbit Road to the Rainbow Valley Road. Unmaintained dirt

MARICOPA COMPLEX
WILDERNESS LOCATION MAP



roads crossing some state and private lands extend eastward to the wilderness boundary from that point.

North Maricopa Mountains

The 63,200-acre North Maricopa Mountains Wilderness, approximately 12 miles northeast of Gila Bend, Arizona, includes roughly the northern one-third of the Maricopa Mountains. It is east of State Highway 85, south and west of the El Paso Natural Gas Pipeline and north of Route 238 (Mobile-Gila Bend Road) and the Southern Pacific Railroad. The northern boundary is a combination of a jeep trail, a wash, a grazing allotment division fence, a legal land description and a prominent ridge. The west is bounded by a legal land subdivision description paralleling a 250-kV powerline right-of-way. The southern boundary is a combination of a legal land description, jeep trails and the historic Butterfield-Overland Stage Route. The eastern boundary is a jeep trail. This wilderness is a two-hour drive from metropolitan Phoenix. High-clearance and four-wheel-drive vehicles are required. The wilderness can be reached from the south using dirt roads extending northward from Route 238. Access from the north is via dirt roads extending south from the gas pipeline maintenance road. The eastern and western boundaries can be reached by extremely rough jeep trails. All major access is across public lands.

South Maricopa Mountains

The 60,100-acre wilderness includes roughly the southern one-third of the mountain range. It is approximately eight miles east of Gila Bend, Arizona, six miles west of the Maricopa-Pinal county line, between Interstate 8 to the south and Route 238 (Mobile-Gila Bend Road) and the Southern Pacific Railroad to the north. The northern boundary is a legal land description and jeep trail. The eastern and western boundaries are legal land descriptions. The southern boundary is a combination of a 500-foot offset paralleling the northern right-of-way fence of Interstate 8, a wash and a jeep trail.

This wilderness is a two-hour drive from metropolitan Phoenix, but access is difficult, requiring high clearance and four-wheel-drive vehicles. Interstate 8 parallels the south boundary of the wilderness, but offers no safe access to the wilderness. The north boundary can be accessed from primitive dirt roads south of Route 238, but active railroad tracks and rights-of-way restrict public crossings. No roads lead to the western boundary of the wilderness; however, primitive roads access the eastern boundary. Due to landownership patterns, legal access is not assured.

Table Top

This 34,400-acre wilderness, 45 miles south of Phoenix and 20 miles west of Casa Grande, Arizona, is almost entirely within Pinal County. It includes the majority of the Table Top Mountains south of Interstate 8, north and west of the Tohono O'odham Indian Reservation and primarily east of the Maricopa-Pinal county line. Its northern boundary is jeep trails, a wash, legal land descriptions and a powerline right-of-way. The western boundary consists of a jeep trail and a legal land description. The southern boundary is a jeep trail and the border of the Reservation. Jeep trails form the eastern boundary of the wilderness.

This wilderness is a two-hour drive from metropolitan Phoenix. Road conditions require high clearance and four-wheel-drive vehicles. The wilderness can be accessed via Interstate 8 north of the wilderness, then south through the private highway service facilities at exit 151 (the junction of Interstate 8 and State Route 84) or exit 144 (Vekol Road). Vekol Road is maintained, but can be rough or washed out. Access along this road also crosses privately owned lands.

Wilderness Values and Unique Attributes

These four wildernesses currently provide a standard of solitude and naturalness that ranges from good to outstanding. They contain little to no evidence of surface disturbance other than former vehicle ways, the majority of which appear in the North and South Maricopa mountains wildernesses.

The Sierra Estrella Wilderness is comparatively small, but particularly inaccessible due to its extremely rugged and deeply dissected topography. The striking Sierra Estrella mountain range rises 2,750 feet from the lower slopes within the wilderness. Topography, vegetative screening and the size of the North and South Maricopa mountains and Table Top wildernesses provide visitors with an excellent opportunity to experience solitude. Unobstructed vistas and outstanding natural values add to the character of the Table Top Wilderness.

The rugged and diverse terrain of all four wildernesses in the Maricopa Complex generally provides good to outstanding opportunities for

primitive recreation including hunting, rock climbing, rockhounding, hiking, camping, horseback riding, sightseeing and backpacking.

The Sonoran Desert ecosystems in these four wildernesses may also be found in significant portions of 22 other areas of the National Wilderness Preservation System. These vary in size from the 803,000-acre Cabeza Prieta Refuge Wilderness administered by the U.S. Fish and Wildlife Service to the 5,800-acre White Canyon Wilderness overseen by the BLM. Combined, these areas preserve a significant portion of Southwestern desert biodiversity.

General Management Situation

Existing Developments

There are approximately 95 miles of former vehicle ways within the Maricopa Complex. Boundary violations by vehicles continue along these tracks (see maps 2 through 5), occasionally creating new routes. There is a lack of ground cover in these areas and cross-country travel results in new trails which may be detected for as long as 20 years. The potential for this activity may increase over the next 10 years due to population growth in the metropolitan Phoenix area.

The wildernesses have been posted at all points where these vehicle tracks cross or emanate from the boundaries. Also, much of the periphery of all the areas has been posted. Several routes have been barricaded in each wilderness. Sign vandalism is a common occurrence. Efforts to maintain signs and barricades will continue. Patrols are conducted weekly by BLM employees to assess boundary compliance and identify new surface disturbance.

Access into the wilderness by mechanized ground transport along some of these vehicle ways is authorized under certain conditions (see "Approved Motorized/Mechanized Uses").

There are 27 wildlife and livestock developments within the Maricopa Complex (see maps 2 through 5 and Appendix B).

Nine water developments are exclusively for wildlife. Eight are rainwater catchments and one is a well. The latter development, Butterfield Well, has been an important deer water source in the North Maricopa Mountains since February 1985; it was vandalized in 1991 and is currently nonfunctional. NOTE: There are six catchments cherrystemmed or adjacent to the North Maricopa Mountains Wilderness and two cherrystemmed out of the Table Top Wilderness which serve wildlife ranging in the wildernesses (see maps 3 and 5).

Portions of 10 grazing allotment boundary fences totalling 11¾ miles are within the Maricopa Complex. Another seven miles of boundary fencing make up the actual wilderness boundary of the North Maricopa Mountains and Table Top wildernesses. Cattle permitted to graze public lands are confined to their respective grazing allotments by these fences. Another three gap fences within these wildernesses totalling 3¼ miles control livestock movement within the grazing allotments. Of the 13 interior wilderness fences, eight are fully functional at present. However, all fences are relatively old -- 10 to 50 years -- and therefore need periodic repairs due to wear and vandalism.

In addition to the fences, five earthen stock tanks within the wildernesses have not been maintained for many years and are not functional. Three dikes within the wildernesses which divert water into functional earthen stock tanks adjacent to and outside the wildernesses will need to be maintained periodically, however (refer to "Issues Solved Through Policy or Administrative Action" in Part III of this document).

Inholdings

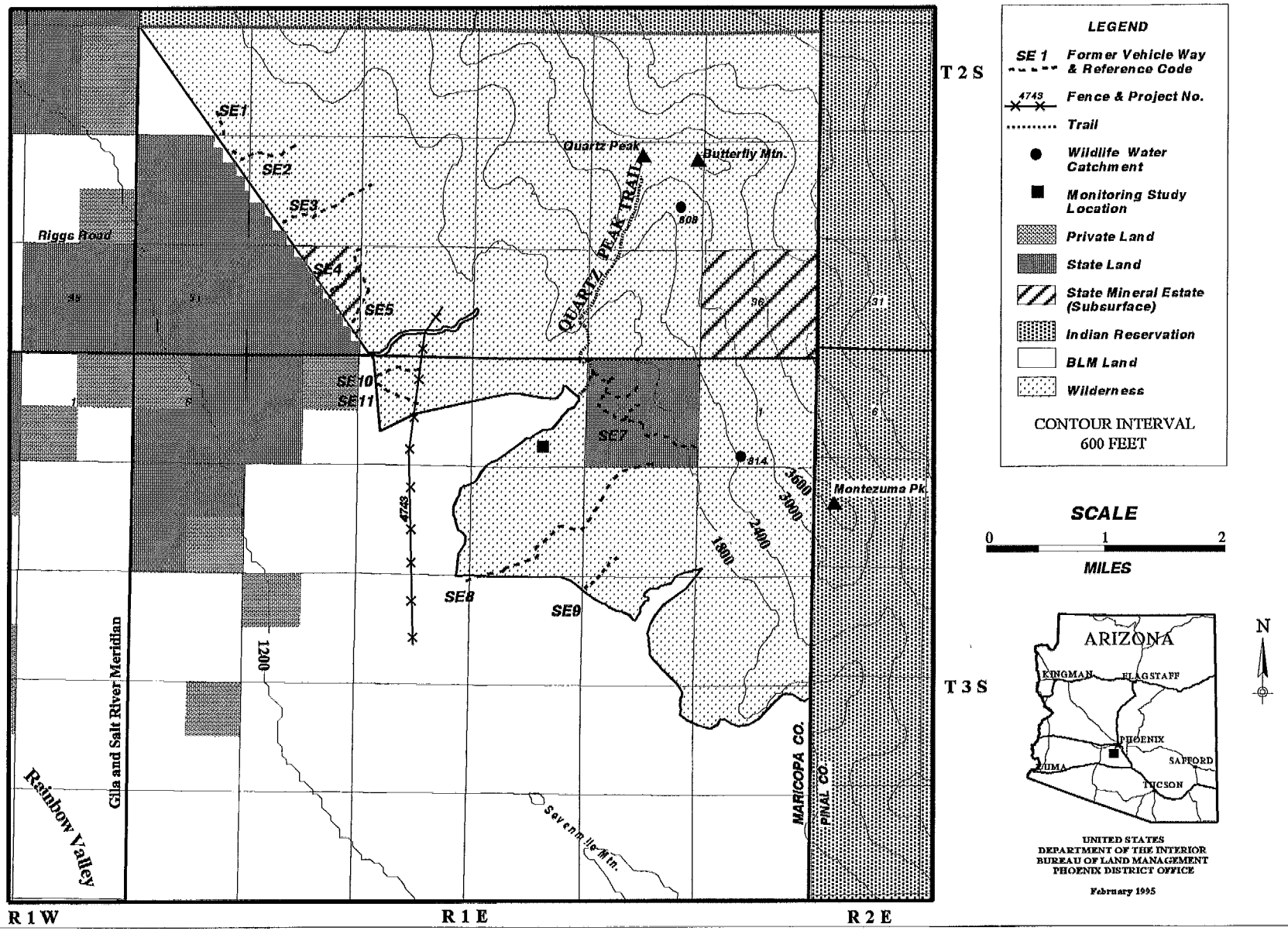
The state of Arizona owns 642 acres of land within the Sierra Estrella Wilderness and 5,120 acres of subsurface mineral rights within the North Maricopa Mountains and Sierra Estrella wildernesses (see maps 2 and 3 and Table 3).

Aircraft Overflights

Annual low-level fixed wing and helicopter inventories of deer and javelina populations in herd areas which include these wildernesses are conducted by the Arizona Game and Fish Department. A desert bighorn sheep census is also made twice a year by the agency using a helicopter.

The North and South Maricopa mountains and Table Top wildernesses are within established military training corridors. These corridors facilitate training exercises for aircraft traveling from several Air Force and National Guard bases to the Barry M. Goldwater Air Force Range. Ground-hovering attack helicopters and various jet fighters flying at high speeds and low elevations are commonly encountered by visitors. BLM estimates of the number of sorties per day vary from six over the North and South

Map 2: Sierra Estrella Wilderness
Present Situation



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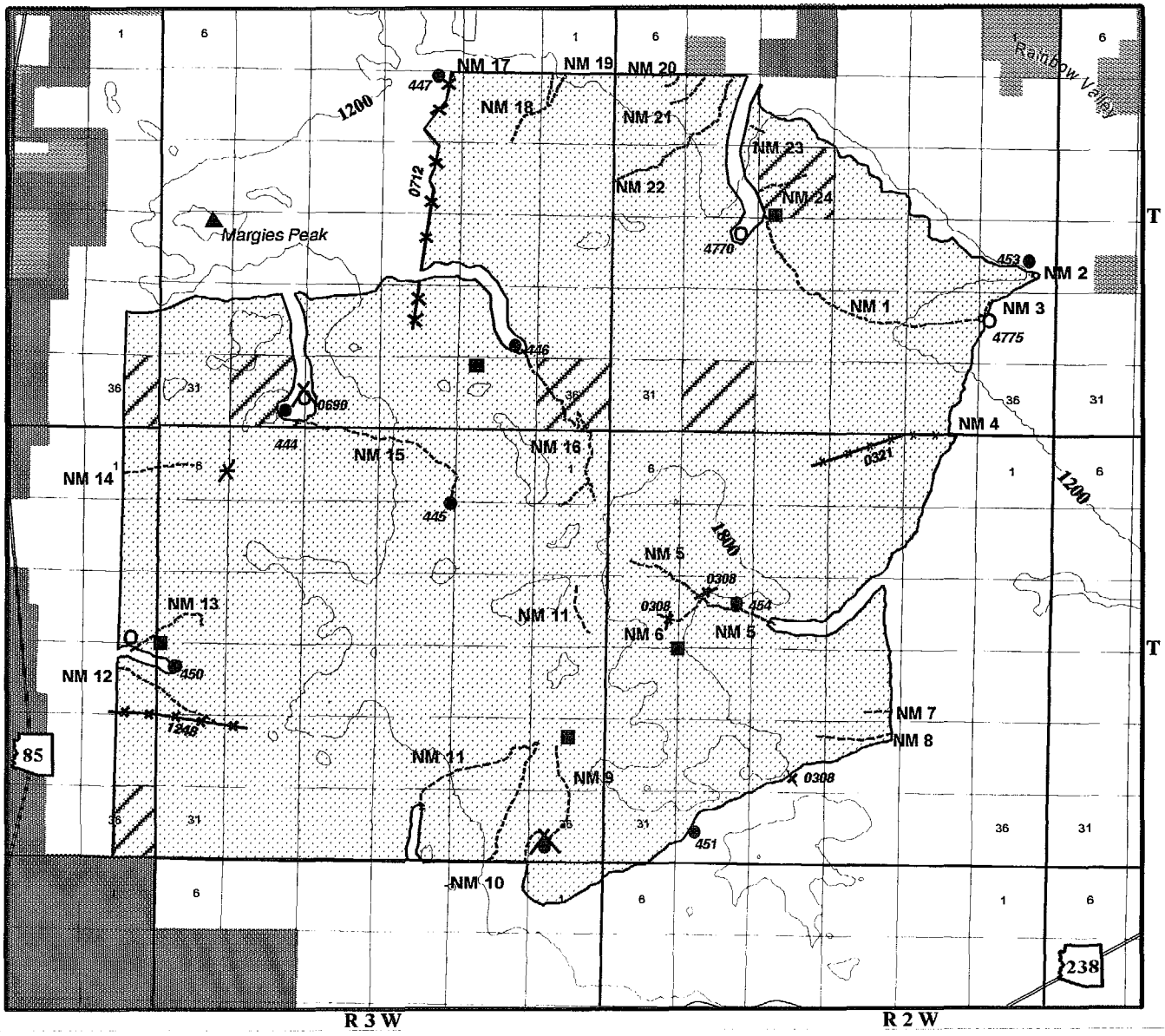
PHOENIX DISTRICT OFFICE

February 1995

Map 3: North Maricopa Mountains Wilderness
Present Situation



LEGEND

- NM 1 — *Former Vehicle Way & Reference Code*
- 4749 — *Fence & Project No.*
- *Earthen Stock Tank*
- *Livestock Well*
- *Wildlife Water Catchment*
- *Wildlife Well*
- *Monitoring Study Location*
- *Private Land*
- *State Land*
- *State Mineral Estate (Subsurface)*
- *BLM Land*
- *Wilderness*

CONTOUR INTERVAL
600 FEET

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MILES

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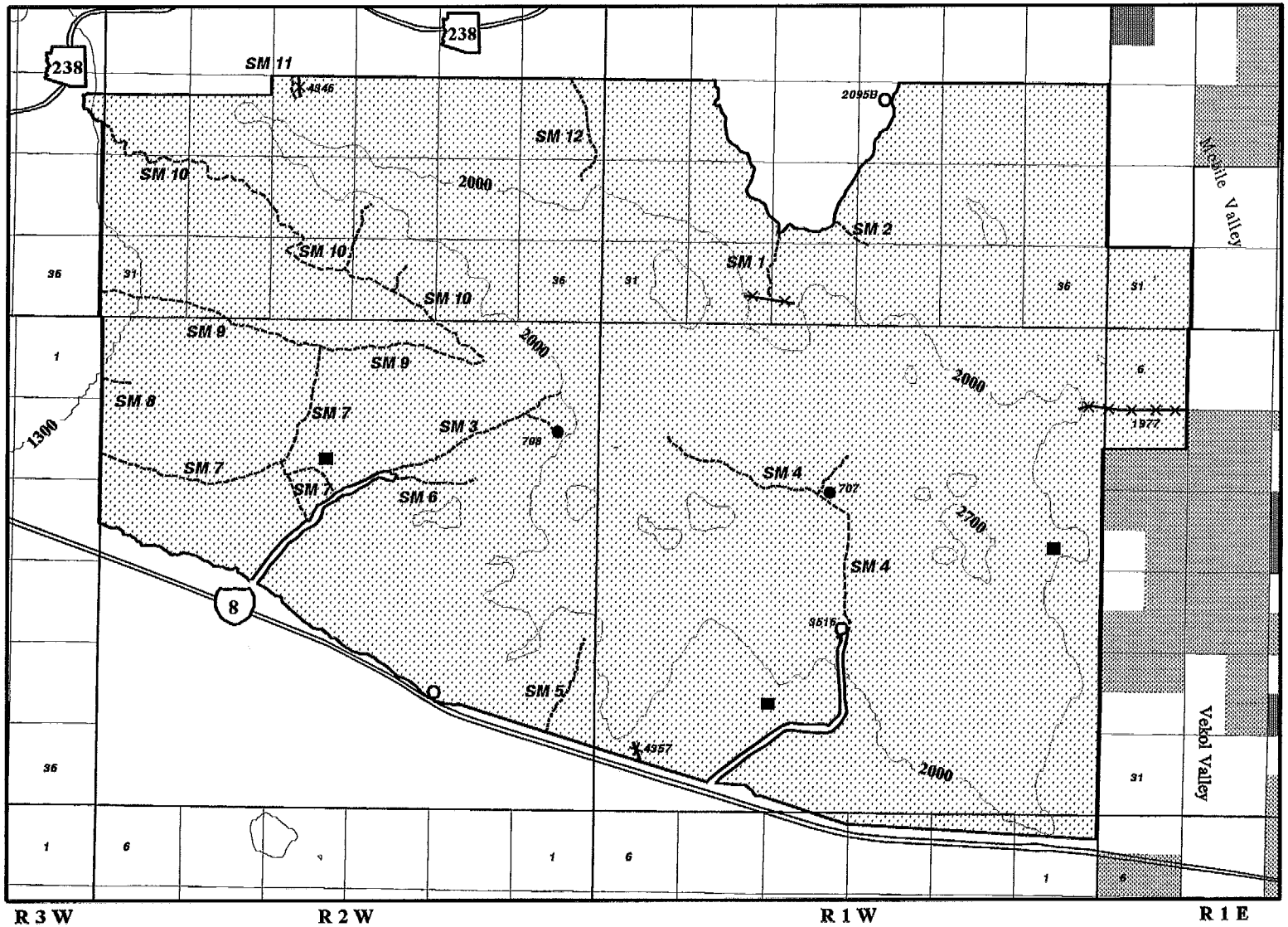
Map 4: South Maricopa Mountains Wilderness
Present Situation



LEGEND

- SM 1 — Former Vehicle Way & Reference Code
- 4743 — Fence & Project No.
- Earthen Stock Tank
- Wildlife Water Catchment
- Monitoring Study Location
- Private Land
- State Land
- BLM Land
- Wilderness

CONTOUR INTERVAL
700 FEET

SCALE

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MILES

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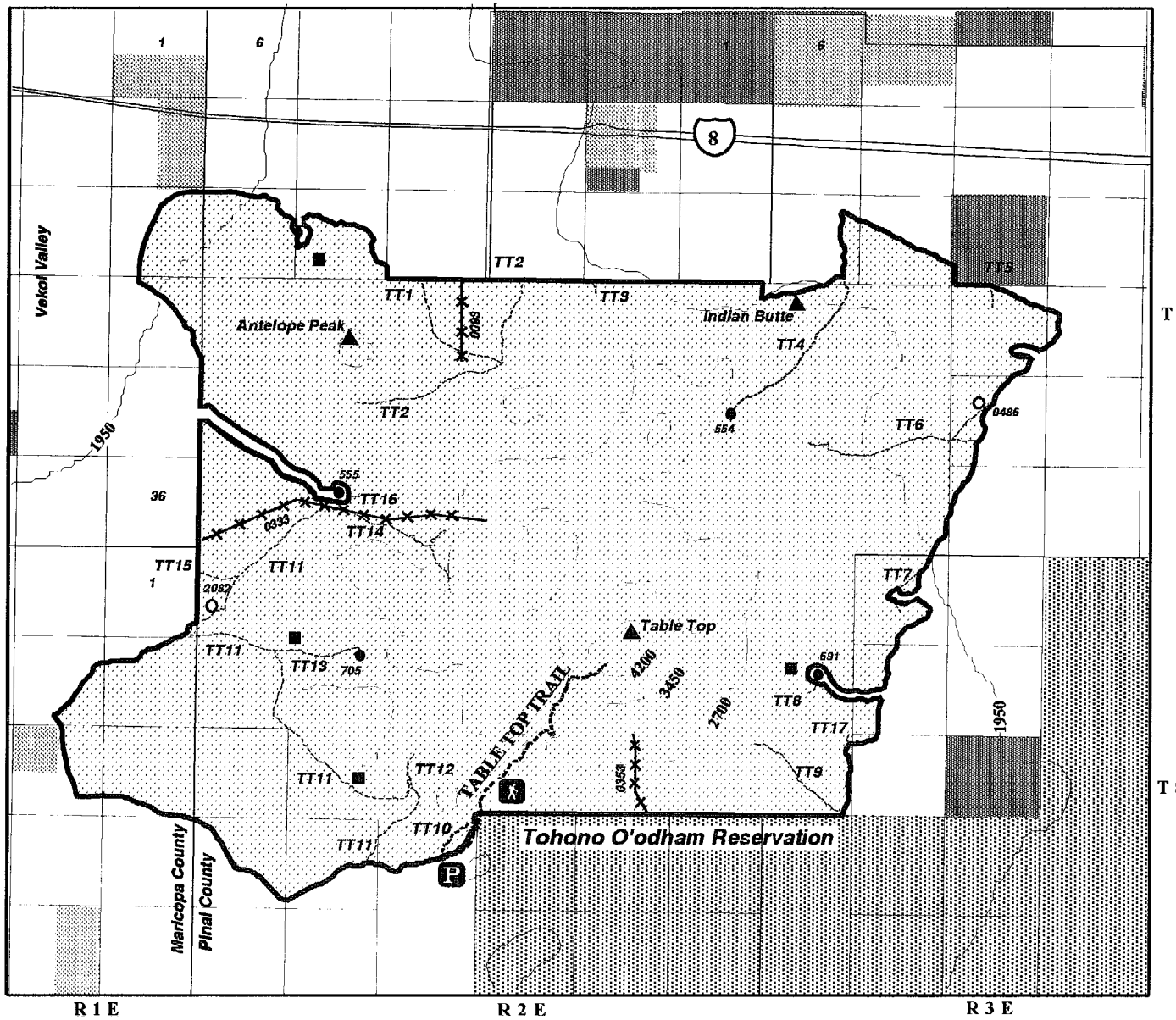
Map 5: Table Top Wilderness
Present Situation



LEGEND

- TT 1 — Former Vehicle Way & Reference Code
- 4743 — Fence & Project No.
- Earthen Stock Tank
- Wildlife Water Catchment
- Monitoring Study Location
- Private Land
- State Land
- Indian Reservation
- BLM Land
- Wilderness
- Trailhead
- Parking
- Trail

750 FEET
CONTOUR INTERVAL

SCALE

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MILES

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February 1995

Maricopa mountains wildernesses to 35 or more over the Table Top Wilderness. The helicopter activity in the latter wilderness will increase dramatically if the proposed Western Army National Guard Aviation Training Site (WAATS) is located southeast of the wilderness in Marana, Arizona. Although impacts to the wilderness visitor from these activities are usually of short duration, they create a lasting impression. Several complaints from the public have been received. See also "Issues Beyond the Scope of this Plan" in Part III of this document.

Currently, incidents of low-level flights by sailplanes occur over the Sierra Estrella Wilderness. In addition, low-level overflights associated with private commercial training activities occur over the North and South Maricopa mountains wildernesses. Other occurrences of wilderness overflights include incidental commercial and private aircraft either enroute to or originating from numerous airports including private airstrips as well as outlying Phoenix metropolitan airports. These activities interfere with opportunities for solitude in these areas, as evidenced by complaints received from wilderness users.

All aircraft are requested through a federal aviation advisory to maintain an altitude of 2,000 feet above ground level or higher over the surface of federal wildernesses. Surface is defined as the highest terrain within 2,000 feet laterally of the route of flight, or the uppermost rim of a canyon or valley. This altitude limitation advisory does not apply to military aircraft operating within an established military training corridor.

Search and Rescue and Law Enforcement

Emergency response and law enforcement activities are pursued by a variety of agencies and volunteer organizations; at present, there is no established coordination among these activities to minimize impacts to the wildernesses. See also "Approved Motorized/Mechanized Uses" under this part and "Issues Solved Through Policy or Administration Action" under Part III, Issues.

Minerals

There is no active mining in these wildernesses, nor are there any mining claims, mineral leases or permits to remove mineral materials (U.S. Department of Interior, 1994b). The Arizona Desert Wilderness Act of 1990 prohibits the filing of new claims within these designated wildernesses.

Approved Motorized/Mechanized Uses

Certain motorized/mechanized uses are authorized within the wildernesses. Emergency response, some law enforcement activities and other accepted uses are provided for in the Arizona Desert Wilderness Act of 1990 and interim operation plans for wildlife and livestock grazing activities.

Nine livestock permittees operating within the Maricopa Complex may use motorized access for emergency rescue of sick animals.

Under current approved interim operation plans, 11 of the 27 wildlife and livestock structures may be periodically maintained using motorized/mechanized transport and equipment. Ground transport associated with this maintenance is limited to former vehicle ways.

The eight wildlife rainwater catchments described under "Existing Developments" are checked periodically by air or ground by the Arizona Game and Fish Department. When an inspection reveals a level below 16 percent of water storage capacity or it is anticipated to last less than four weeks, water is added to the low-elevation catchments by tanker truck. Water is added to the two high-elevation catchments in the Sierra Estrella Wilderness by helicopter.

Presently, U.S. Department of Agriculture personnel may conduct predator control activities within the wildernesses when so requested by livestock permittees. Approval of requested motorized/mechanized predator control activities is currently handled on a case-by-case basis. The Phoenix District BLM has drafted an Animal Damage Control Annual Plan of Work in conjunction with the Department of Agriculture's Animal and Plant Health Inspection Service, Animal Damage Control to standardize these activities within the Phoenix District. This plan of work does not allow mechanized/motorized activities within wilderness for these purposes.

Recreation

The four wildernesses currently receive relatively low levels of dispersed recreational day use. More visitors travel by foot than by horse. High use periods are from October through May. Overnight stays are primarily associated with hunting; however, hunting camps are usually outside the wilderness boundaries. There is virtually no surface evidence of camping within these wildernesses, including no visual evidence of wood gathering or fire rings.

Overall use is largely dispersed. Previous wilderness environmental impact statements (U.S. Department of Interior, 1987a and 1989) estimated that these areas received a combined total of 1,350 visitor use days annually. However, more recent visitor register data indicate an average of 730 visitor use days annually along the Table Top Trail alone. NOTE: This figure is probably less than what is actually occurring, because not all visitors sign the register.

The Butterfield-Overland Stage Route, along the southern boundary of the North Maricopa Mountains Wilderness, is probably the most popular area for vehicle touring and visitation and the use of this wilderness is associated with this touring. However, specific wilderness visitor data are unavailable.

Based on regional population growth estimates, use levels for all four wildernesses could increase 25 percent over the next 10 years. Even with the increase in visitation, day use is expected to remain the primary type of activity in these areas.

Two trails exist within the areas (see maps 2 and 5). The Table Top Trail, incorporated into the Arizona State Trail System, is in the Table Top Wilderness. The Quartz Peak Trail in the Sierra Estrella Wilderness has been used by the public for perhaps more than 40 years. Limited parking areas exist at both trailheads. The Table Top Trail has additional facilities, including a visitor register, restroom, picnic table and metal fire pit.

The Quartz Peak Trail is a steep, bouldery, narrow path that is unsuitable for equestrian travel. The massive granite boulders and shallow soil depths do not allow it to be engineered for this use. While the solitude value is good, it is anticipated that visitor-to-visitor encounters on the Quartz Peak Trail, the most easily traversed route in the Sierra Estrella Wilderness, will become more frequent as public use increases.

Visitor-to-visitor encounter information is not available, but is believed to be very infrequent in all four wildernesses. It is assumed that urban growth in the metropolitan Phoenix area will continue and tourism will increase. Because of accessibility, the greatest increases will probably occur in the North Maricopa Mountains Wilderness and, with improved access, the Sierra Estrella Wilderness.

Access and therefore encounters are not expected to change in the South Maricopa Mountains and Table Top wildernesses.

The availability of firewood on a sustained basis is limited due to the slow growth rate and decadence of species (e.g., mesquite, ironwood, paloverde, saguaro and cholla).

Other than guided hunts, there is no commercial equestrian or pedestrian recreational use of the Maricopa Complex. Demand for these activities is expected to emerge over the next 10 years, however. Occasional noncommercial group equestrian use has occurred in the North Maricopa Mountains Wilderness. Guided hunting for game species is permitted and occurs in the Maricopa Complex under Arizona Game and Fish Department and BLM regulations.

Cultural Resources

The Maricopa Complex mountain ranges contain several identified archaeological sites and probably countless others that are presently unidentified. A very small percentage of the land has been systematically surveyed for cultural resources. Prehistoric and historic aboriginal groups generally used desert mountains such as these for wild food procurement, i.e., legume and cactus fruit harvesting and hunting of large and small animals. Prehistoric and historic travel corridors such as footpaths and wagon trails have been documented in the Maricopa Complex. Portions of the Mormon Battalion/ Butterfield-Overland Stage Route along the southern boundary of the North Maricopa Mountains Wilderness are being used today as jeep trails; portions in disuse can still be recognized in places.

Soil, Water and Air

The wilderness landscapes are typical of the Sonoran Desert section of the Basin and Range physiographic province described by Fennemen (1928). In the Sierra Estrella and North and South Maricopa mountains wildernesses, soils of recent alluvium, at the base of the mountains, are deep and gravelly or cobbly. Those of the gentle-sloping alluvial fan terraces are gravelly loams. Soils of steep terraces, hills and mountains are shallow to deep gravelly loams (U.S. Department of Agriculture, 1977a and 1977b). Soils within the Table Top Wilderness are similar to the three units to the north with the exception of those found in the hills and mountains, which are shallow (U.S. Department of Agriculture, 1991). All soils within the four areas are excessively or well-drained and dissected. Rock outcrops are common throughout.

There are no known springs or other permanent natural water sources within the wildernesses.

However, the eight wildlife water catchments and one well described under "Existing Developments" of this part were present prior to passage of the Arizona Desert Wilderness Act of 1990.

Under current Clean Air Act regulations, these wildernesses are classified as Class II air quality areas. This means that the air should be of a quality normally experienced with moderate, well-controlled human development. These regulations identify unacceptable increases of certain air pollutants. The northern half of the Sierra Estrella Wilderness is also included in an area which does not currently meet the national air quality standards for particulate matter and, therefore, is subject to stricter standards than those identified for Class II areas. On-site air quality measurements are not available.

Vegetation

Two plant communities of the Sonoran Desertscrub biome as described by Brown (1982) are found in the Maricopa Complex -- the creosotebush-white bursage series of the Lower Colorado River Valley association and the paloverde-cacti-mixed scrub series of the Arizona Upland association. Though the latter is predominant (perhaps 80 percent of the wildernesses), both occur in the Sierra Estrella and North Maricopa Mountains wildernesses. Vegetation of the Table Top and South Maricopa Mountains wildernesses is primarily of the paloverde-cacti-mixed scrub series. The predominant plants found in each of these types and their general locations in the Maricopa Complex landscape are presented in Appendix C.

Two small, but unique, areas of desertscrub and grassland occur atop the Sierra Estrella and Table Top mountains within the wildernesses (U.S. Department of Interior, 1988b).

Soil and vegetation inventories conducted by the BLM in 1979 indicate that plant composition within the Maricopa Complex approaches the natural ecological potential for these areas. Furthermore, monitoring studies conducted by the BLM in 1981 and 1993 indicate relatively low -- zero to 30 percent -- grazing use of key forage species. This suggests that plant succession has been relatively unaffected by livestock and wildlife in these wildernesses in the last 10 years.

Fire

Natural wildfires do not appear to have had an influence on the ecosystems within these four areas. None of the plant species has evolved with or is dependent on fires for survival, nor are any plant species increasing within the wildernesses due to lack of fire. It appears that the recent human-caused fires during extremely exceptional fuel years, i.e., 1992 and 1993, damaged the dominant succulents and trees (U.S. Department of Interior, 1993). Historic records of fire occurrence have been kept since 1980. There is no record of natural fire within these wildernesses. Five human-caused fires which occurred were suppressed.

Current procedures allow for certain mechanized/motorized uses under very specific conditions when authorized by the Area Manager. To date, there has been no surface damage from firefighting activities.

Wildlife

Many species of wildlife inhabit the four wildernesses. Past and present management actions have primarily focused on desert bighorn sheep *(Ovis canadensis mexicana)*, mule deer *(Odocoileus hemionus crookii)* and desert tortoise *(Gopherus agassazii)*.

Tortoise are discussed further in the following section, "Threatened and Endangered and Special Status Species." In addition to desert bighorn sheep and mule deer, common game species within the wildernesses include javelina *(Dicotyles tajacu)*, Gambel's quail *(Lophortyx gambelii)*, white-winged dove *(Zenaida asaitica)*, mourning dove *(Z. macroura)* and cottontail rabbit *(Sylvilagus auduboni)*. Mountain lion *(Felis concolor)* also inhabit the areas. Important non-game species present are discussed in the "Threatened, Endangered and Special Status Species" section.

The Sierra Estrella Mountains contain an estimated population of 26 to 40 desert bighorn sheep. The North and South Maricopa mountains are considered one habitat area for this species by the BLM and the Arizona Game and Fish Department, supporting a population currently estimated to be 200 animals (Arizona Game and Fish Department, 1994). Thirty-eight desert bighorn sheep were counted at Table Top in April 1993; the current population is estimated at 51 (Arizona Game and Fish Department, 1993). Populations dynamics are complex, however, and numbers may fluctuate from year to year.

Mule deer are widely distributed throughout the Maricopa Complex, having benefited greatly by

construction of the rainwater catchments in and around these wildernesses.

A number of proposals were identified in the Lower Gila South Habitat Management Plan (U.S. Department of Interior, 1990a), which was prepared prior to passage of the Arizona Desert Wilderness Act. These included improving the water storage and collection capacity of six rainwater catchments exclusive of those within the Sierra Estrella Wilderness. Also proposed by the Arizona Game and Fish Department and the Arizona Desert Bighorn Sheep Society are new desert bighorn sheep water developments for the North and South Maricopa mountains and Table Top wildernesses.

Approved motorized/mechanized activities related to wildlife population censusing and water catchment maintenance are detailed under "Approved Motorized/ Mechanized Use" presented earlier in this section.

Threatened, Endangered and Special Status Species

No listed threatened or endangered plant species are known to occur in the Maricopa Complex. Acuna cactus *(Echinomastus erectocentrus* var. *acunensis)* and Hohokam agave *(Agave murpheyi)*, two species which are candidates for listing, may occur but have not yet been found there.

No proposed or listed threatened or endangered animals are known to occur in these wildernesses, but three candidate reptiles -- the desert tortoise *(Gopherus agassizii)*, the chuckwalla *(Sauromalus obesus)* and the canyon spotted whiptail *(Cnemidophorus burti)* -- and one bird, the loggerhead shrike *(Lanis ludovicianus)*, inhabit the Maricopa Complex. The whiptail lizard is associated with the Sierra Estrella and Table Top mountain summit habitat. The shrike is considered a candidate due to its rareness in the northern part of its distribution. It is a common inhabitant of this part of the Sonoran Desert, however.

All four wildernesses are categorized as desert tortoise habitat. The majority of the North and South Maricopa mountains wildernesses are considered Category 1, i.e., good to excellent habitat essential to population maintenance. The Table Top and Sierra Estrella wildernesses are considered Category 2 habitat, i.e., those which may be essential to population maintenance (U.S. Department of Interior, 1994c). Monitoring studies contracted by the BLM and the Arizona Game and Fish Department indicate that the population in the North Maricopa Mountains Wilderness has declined. The decline has been associated with four years of relatively poor moisture conditions from 1988 to 1992. Status of the tortoise is closely monitored.

The presence of the lesser long-nosed bat *(Leptonycteris curasoae yerbabuenae)*, listed as endangered, has not been confirmed within these four wildernesses, although they contain extensive potential foraging habitat. Future research on species distribution may occur to gather more information.

The ferruginous cactus pygmy owl *(Glaucidium brasilianum cactorum)* is a Category 1 candidate and is likely to become federally listed. As little is known about this species, area surveys may be in order to delineate species distribution.

Livestock Grazing

Although all of the wildernesses include portions of BLM grazing allotments (see Appendix A), vegetation within the wildernesses has not been physiologically impacted by grazing. All eight of these allotments are classified as perennial/ephemeral (see Glossary). Yearlong livestock grazing has occurred in no more than 10 percent of the total wilderness acreage, while only 30 percent has experienced ephemeral grazing by livestock three years out of 10. This is due to herding practices and the use of gap fencing which has discouraged grazing within the core of the wildernesses.

Also, steep topography restricts cattle movement in most areas and with few exceptions, no permanent livestock waters exist within several miles of the wilderness boundaries. For more detailed information regarding these allotments, refer to the Lower Gila South Resource Management Plan (U.S. Department of Interior, 1988a).

This low level of grazing use is expected to continue over the life of this plan as current land use plans and BLM policy limit the construction of new livestock water sources within two miles of high quality desert tortoise habitat (see also "Issues Solved Through Policy or Administration Action"). The entire Maricopa Complex falls into this category (U.S. Department of Interior, 1994c). Also, the use of most key vegetation species by wild ungulates remains low.

Although plant succession has not been impacted, there is visual evidence of grazing within the mountain pasture of the Beloat Allotment upslope from Gap Fence in the Sierra Estrella Wilderness and near Tucker and Don's tanks in the Beloat Allotment

in the North Maricopa Mountains Wilderness. It is also evident in the west-central part of the Table Top Wilderness from cattle ranging around Red Tank, 1¾ miles west of the wilderness boundary, in the South Vekol Allotment. Visual impacts include:

- the occasional lack of lower limbs (five feet above ground level) on paloverde and ironwood trees as a result of cattle shading under the trees,
- light use of galleta grass in the spring and summer in the mountain pasture within the Sierra Estrella Wilderness,
- periodic high use of shrubs by rodents and
- the presence of cow dung and some trailing.

The visual presence and odor of cattle and fecal matter increase during periodic seasonal increases in stocking, which occurs three years out of 10, on the Beloat, Hazen, Conley, Vekol, Lower Vekol, South Vekol and Table Top allotments. The additional animals are usually authorized for no more than 90 days. Most fecal remains disintegrate within three years.

Grazing permittees are responsible for maintaining all livestock grazing developments in the wildernesses. Activities which involve the use of motorized/mechanized transport and/or equipment for these purposes are detailed under the previous heading "Approved Motorized/Mechanized Uses."

Monitoring

Current resource monitoring focuses on wildlife and livestock use of forage plant species and censusing desert tortoise and big game populations. Efforts to collect visitor use information have been limited to a trail register at the Table Top trailhead. Ranger patrols on weekends and during hunting season indirectly provide visitor use information. The studies of wildlife and livestock sign and vegetation conditions in these areas were established as part of a big game inventory of the southern portion of the BLM's Lower Gila Resource Area in 1982.

Fecal sign and some vegetation composition data, as well as grazing use of certain shrubs and grasses, were recorded and photographs were taken. Thirteen of these permanently located studies fall within the Maricopa Complex (see maps 2 through 5). The sample size, type and frequency of measurements need to be updated, on a limited basis, to provide a better assessment of vegetation use and condition in the Maricopa Complex.

A permanent one-square-mile study plot was established in 1988 to census desert tortoise populations in the North Maricopa Mountains Wilderness. Within the connecting quarters of secs. 17 through 20, T. 4 S., R. 2 W., the study consists of identifying, measuring and marking all tortoises seen within the plot during each visit. This plot is read every three years, utilizing nonmotorized means. A mortality study is currently underway on the plot. Intensive radio telemetry survival studies are also being conducted near the study site, outside of the wilderness. These studies may be pursued on the plot only when other avenues have been exhausted. In the future, the interval between plot readings may be lengthened.

In addition to a planned full-scale rereading of the plot, a one-fourth-mile transect for sign will be undertaken on the plot annually in "off years" to determine if unusual activity, mortality or other factors are present that warrant unscheduled rereading of the plot. A review team set up as part of the Arizona strategy for desert tortoise management (U.S. Department of Interior, 1990b) was, and will continue to be, consulted on plot design, location and study methods to assure consistency and efficiency and help avoid duplication of effort and undue disturbance of tortoises.

Censusing of big game populations conducted by the Arizona Game and Fish Department is discussed previously under Approved Motorized/Mechanized Uses in this section.

Part II -- National Wilderness Management Goals

The following goals direct the objectives, policy, management strategies and actions developed in this plan.

1. To provide for the long-term protection and preservation of the area's wilderness character under a principle of nondegradation. The area's natural condition, opportunities for solitude, opportunities for primitive and unconfined types of recreation and any ecological, geological or other features of scientific, educational, scenic or historical value present will be managed so that they will remain unimpaired.

2. To manage the wilderness area for the use and enjoyment of visitors in a manner that will leave the area unimpaired for future use and enjoyment as wilderness. The wilderness resource will be dominant in all management decisions where a choice must be made between preservation of wilderness character and visitor use.

3. To manage the area using the minimum tool, equipment or structure necessary to successfully, safely and economically accomplish the objective. The chosen tool, equipment or structure should be the one that least degrades wilderness values temporarily or permanently. Management will seek to preserve spontaneity of use and as much freedom from regulation as possible.

4. To manage nonconforming but accepted uses permitted by the Wilderness Act and subsequent laws in a manner that will prevent unnecessary or undue degradation of the area's wilderness character. Nonconforming uses are the exception rather than the rule; therefore, emphasis is placed on maintaining wilderness character.

Part III -- Issues

Issues were identified by BLM specialists, other agencies and the public during five scoping meetings from July 9 through August 27, 1992 and from written comments received from August through October 1992. Additional concerns were added during preparation of the plan. Those addressed in this plan are listed under Activity Plan Issues.

Those issues which can be resolved through existing regulations or BLM Manual guidance, i.e., routine administrative actions, are listed under Issues Solved Through Policy or Administrative Action. Those beyond the scope of this plan, such as matters of federal or state law or those not applicable to the Sonoran Desert ecosystem, appear under Issues Beyond the Scope of this Plan. A discussion of how these issues will be addressed or why they are not addressed in this plan is also provided.

Activity Plan Issues

1. **Protecting and enhancing the natural character of the wilderness.** Questions to be addressed are:
   - What characteristics of the wildernesses (i.e., naturalness, solitude, etc.) are desirable?
   - How will unauthorized off-road vehicle use be discouraged?
   - Will existing closed vehicle routes and new routes created by emergency and unauthorized mechanized transport be rehabilitated?
   - How will inholdings affect naturalness?
   - How will changes to present conditions be monitored?

2. **Providing opportunities for solitude and primitive recreation.** Questions to be addressed are:
   - Will expected increases in visitor use require recreation facilities to ensure the quality of these experiences? What facilities should be provided?
   - Should a network of hiking trails be established and maintained?
   - How should equestrian use be managed?
   - What use standards and other regulations should be established for recreational activities, e.g., group size, encounter or season-of-use limits? What techniques will be used to measure these standards?
   - If allowed, how will commercial outfitting and guide use be managed?
   - Should current access be maintained? Should legal access be acquired?
   - What level of public awareness should be promoted through interpretation and education?
   - How should sailplane and flight training activities impacting solitude in the Sierra Estrella and North Maricopa wildernesses be addressed?

3. **Managing other land uses and activities provided for by the Wilderness Act.** Questions to be addressed are:
   - What uses of motorized equipment and mechanized transport are acceptable to:
     - -- maintain existing livestock grazing developments?
     - -- retrieve sick or injured livestock?
     - -- maintain or upgrade existing wildlife water sources?
     - -- conduct game surveys?
     - -- respond to wildlife emergencies?
     - -- retrieve transmitters and carcasses?
     - -- suppress wildfires?
     - -- conduct BLM administrative activities?
   - How will law enforcement and search-and-rescue activities involving other federal, state or county agencies or agents be coordinated? What BLM activities of this nature will be allowed?
   - What future inventory or research is needed, e.g., regarding raptors and other wildlife, ecosystem management, cultural sites? What mechanized equipment, if any, will be allowed for these activities?

4. **Managing Wildlife.** Questions to be addressed are:
   - What actions to maintain wildlife populations will be allowed? Species reintroduction or supplementation? New water development?
   - What actions should be taken to minimize

trampling of tortoise by livestock?
- Will increases in visitor use cause disturbances to desert bighorn sheep and desert tortoises?
- Do wire fences surrounding existing wildlife catchments need to be modified to promote desert bighorn sheep use and facilitate wildlife management?

5. **Managing Vegetation.** Questions to be addressed are:
   - What actions will be taken to maintain or improve vegetative conditions?
   - What fire regime should be maintained?
   - How will forage competition between livestock and desert tortoise be minimized?
   - What monitoring standards and techniques will be used to measure changes in vegetative condition?

Issues Solved Through Policy or Administrative Action

1. **Mining activities**

   There is no active mining in these wildernesses, nor are there any mining claims, mineral leases or permits to remove mineral materials (U.S. Department of Interior, 1994b). The Arizona Desert Wilderness Act of 1990 prohibits the filing of any new claims. Therefore, allowances for certain valid existing rights under 43 CFR 8560.4-6 no longer apply to these four wildernesses.

2. **Law enforcement and search-and-rescue activities conducted by other federal, state or county agencies or agents**

   Using motorized equipment to meet temporary law enforcement emergencies involving criminal law violations and the pursuit of fugitives is approved per 43 CFR 8560.3 and BLM Manual 8560.39C(11). These activities include, but are not limited to, the use of motorized equipment, mechanized transport or aircraft and the construction of temporary structures, helispots and camps.

   Mechanized or motorized equipment may also be used for Arizona Game and Fish Department law enforcement activities per Section 101(e) of the Arizona Desert Wilderness Act of 1990, where major wildlife violations (e.g., illegal taking of multiple animals or sensitive, threatened or endangered species) have occurred. These uses include, but are not limited to, land vehicles or aircraft and the construction of temporary structures, helispots and camps. Land vehicles used for these purposes will be subject to the prescriptions of Management Action 1.6.

   Search-and-rescue responsibilities are delegated from the Governor of Arizona to county boards of supervisors and the respective sheriffs. Activities in response to human health and safety emergencies conducted by these entities are hereby approved per 43 CFR 8560.3 and BLM Manual 8560.39C(4). These activities include, but are not limited to, the use of motorized equipment, mechanized transport or aircraft and construction of temporary structures, helispots and camps. As soon as possible, these law enforcement and search-and-rescue activities will be coordinated per Management Action 1.5.

3. **Enforcement of wilderness regulations and detection of violators**

   All regulations will be enforced by BLM law enforcement agents and rangers. Violators will be detected through periodic patrol and investigative follow-up to reports by the public, BLM and other agency employees. Any prohibited acts defined at 43 CFR 8560.1-2, outside of those authorized in this plan, are subject to the penalties provided for at 43 CFR 8560.5.

4. **Removal of existing deer water catchments in the North Maricopa Mountains Wilderness to locations outside the wilderness**

   As the benefits of maintaining existing catchments in the North Maricopa Mountains Wilderness appear to outweigh the need for removal, no catchment is proposed for removal in this plan. Removing an existing wildlife water development will require a joint decision of the BLM and the Arizona Game and Fish Department as per Appendix B of the Arizona Desert Wilderness Act of 1990.

5. **Water rights**

   Federal reserved water rights were created for each wilderness by the Arizona Desert Wilderness Act of 1990. The priority date of these rights is the date of the enactment. Water

sources within each wilderness will be inventoried, quantified and notification submitted to the Arizona Department of Water Resources.

6. **Hunting outfitters and guides**

   Hunting guides will be permitted under the regulations for issuing special recreation permits (43 CFR 8372) consistent with wilderness management regulations (43 CFR 8560). The use of pack animals associated with guided hunting will be allowed.

7. **Developed trailhead activities**

   Rules of conduct at the developed trailheads will be enforced in accordance with 43 CFR 8365.

8. **Possible disease transmission and other problems from strayed pack animals, i.e., burros, llamas, goats, etc.**

   These animals are not currently used for commercial activities in these wildernesses, nor is it anticipated that their use will occur. Impacts to naturalness from such animals is addressed by management actions 1.8 and 1.9. Commercial use involving such animals be regulated through the terms of a use permit authorized under 43 CFR 8372. If problems with stray animals occur, these will be addressed by state of Arizona estray laws. If disease is a factor, animal damage control could be implemented (see number 11 below).

9. **Refuse and debris clean-up, especially abandoned autos and downed aircraft**

   There is no significant debris in these wildernesses. The debris which is associated with the old mine site in sec. 32, T. 5 S., R. 1 W. in the South Maricopa Mountains Wilderness, which is not of historical significance, will be cleaned up in conjunction with construction of the vehicle control barrier on former vehicle way SM1. General litter can be cleaned up by BLM employees. New debris constituting a major impact to naturalness will be cleaned up and removed using the minimal acceptable tool necessary.

10. **Management of cultural resources**

    Significant historic and prehistoric resources will be protected by appropriate means, including surveillance and stabilization. Stabilization plans will be dealt with on a case-by-case basis, ensuring protection of wilderness values, utilizing the minimum tool.

    The appropriate use (allocation) of cultural resources will be evaluated as sites are identified. Those of scientific value will be managed for scientific use and made available to individuals and institutions with legitimate research interests. Research plans will specify utilization of the minimum tool to protect wilderness values.

11. **Predator inventory and animal damage control**

    Predators are not currently inventoried, nor are there plans to initiate such surveys. Animal damage control activities are conducted by the U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Animal Damage Control.

    Such activities include the control of predators, rodents and other wildlife species which cause damage or pose threats to human health, native wildlife and livestock. These activities will conform with BLM Manual 8560 and 6830 and the BLM Phoenix District's Animal Damage Control Annual Plan of Work.

    Briefly stated, these activities in wilderness will be approved by the Area Manager on a case-by-case basis using nonmotorized, nonmechanized methods. Aircraft will not be used. Prohibitions associated with Management Action 4.8 do not apply to dogs used for animal damage control activities.

12. **Insect infestation**

    If infestations occur, control measures will be guided by BLM Manual 8560. Problems neither exist nor are expected to occur.

13. **Competition for ephemeral forage between livestock and desert tortoise**

    Grazing use policies have been initiated by the Phoenix District BLM to minimize this competition (U.S. Department of Interior, 1990c). The policy requires that a range management specialist and a wildlife biologist jointly evaluate whether permitting livestock use of ephemeral forage within categories 1 and 2 desert tortoise habitat, during that animal's active period, would be detrimental to the species. If permits are allowed, they can only be issued in 15- to 30-day increments and are subject to additional joint evaluation for any subsequent renewal. Potential competition for perennial forage is mitigated by Management Action 3.1 of this plan.

14. **New livestock watering sources near the wilderness**

All four wildernesses comprise categories 1 and 2 desert tortoise habitat (U.S. Department of Interior, 1994c). Any new water source proposals within two miles of this habitat are subject to scrutiny. Guidance in this matter appears in the Lower Gila South Resource Management Plan (1988a), the Strategy for Desert Tortoise Management on Public Lands in Arizona (1990b) and the Lower Gila South Habitat Management Plan (1990a).

Briefly, these documents instruct that a water source may be constructed within two miles of categories 1 and 2 habitat only if impacts to the tortoise can be mitigated to a positive or neutral level. The Arizona Game and Fish Department must be consulted in the determination of impacts.

15. **Mechanized maintenance of diversion dikes which extend into the wildernesses from livestock water reservoirs (earthen tanks) outside of the wilderness boundaries**

Three dirt tanks constructed and maintained prior to wilderness designation are adjacent to the wilderness boundaries. When the boundaries were drawn by Congress in 1990, it was their intent to exclude these structures from the wildernesses. Due to their shape and length, however, it is difficult to exclude some of the diversion dikes associated with the dirt tanks from the wildernesses without creating visitor use and unauthorized vehicle management problems.

To avoid these future management problems while adhering to congressional intent, the use of mechanized equipment to maintain the water diversion dikes will be allowed within the wildernesses. This maintenance will entail the use of a bulldozer or backhoe to repair breaches in these dikes. Work will occur on an as-needed basis and will not be subject to any further requirements other than those provided for in the permits and agreements for maintaining these developments.

Specifically, these structures are (see maps 3 and 4):

- the dike extending 2,910 feet southwest from Don's Tank (project 4775) in T. 3 S., R. 2 W., sec. 26, NE¼NE¼ into the North Maricopa Mountains Wilderness,
- the dike extending 500 feet southwest from Tucker Tank (project 4770) in T. 3 S., R. 2 W., sec. 20, NE¼NE¼ in the North Maricopa Mountains Wilderness and
- the dike extending 200 feet east from the Southwest Dirt Tank (project 2095B) in T. 5 S., R. 1 W., sec. 22, NE¼SW¼ in the South Maricopa Mountains Wilderness.

16. **Adjustments in livestock numbers**

Adjustments to livestock numbers and/or seasons on a grazing allotment-wide basis will be determined in accordance with livestock grazing regulations (43 CFR 4100). Livestock grazing use within the Maricopa Complex will be evaluated using monitoring standards established by this plan and changed when needed as per Management Action 3.1.

17. **Additional monitoring workloads to assess plan objectives**

Proposed monitoring in the plan has been limited to modifying existing studies where possible. Also, proposed actions have been tempered with realistic funding estimates. An adequate budget is assumed.

18. **Scientific research**

Scientific research proposals will be dealt with on a case-by-case basis. Any authorized project will be conducted using the minimum tool so as to not degrade wilderness values.

Issues Beyond the Scope of This Plan

1. **Definition of "motorized equipment"**

"Motorized equipment, mechanical transport and motor vehicle" are defined at 43 CFR 8560 and also appear in the Glossary of this plan. These definitions cannot be changed by a wilderness plan.

2. **Impacts to naturalness and solitude from low-flying military aircraft**

Title I, Section 101(i) of the Arizona Desert Wilderness Act of 1990 excludes any restriction of low-level military flights in applicable designated wilderness.

Currently, the BLM forwards reports of all encounters or reports of unusual or unsafe military aircraft operations to the appropriate

command. These reports are encouraged by Barry M. Goldwater Air Force Range personnel.

3. **Access to places used for traditional Native American religious purposes**

   Although some individuals from several Native American tribes may use the Sierra Estrella and Table Top wildernesses for religious or traditional purposes (see Part VIII, "Public Involvement"), none of the seven Tribal Councils or Nations contacted voiced a need to use mechanized transport for conducting these activities. If such need arises, mechanized access may be accommodated to avoid unnecessary interference with religious practices. If such use is allowed, it will be carried out in such a manner as to minimize impacts to wilderness values.

4. **Impacts to historical values along the Butterfield-Overland Stage Route from an expected increase in vehicle use**

   A Butterfield-Overland Stage Route Recreation Management Plan, which will be prepared in the near future to manage use along this historic trail, will address this issue.

5. **Facilities for the physically challenged**

   The Americans with Disabilities Act of 1990 (U.S. Congress, 1990c) assures that wheelchairs are allowed within wilderness. Many of the proposed and existing trails can be negotiated by wheelchairs. Special facilities or land modifications to accommodate wilderness use by the physically challenged are not required under the Disabilities Act. Trail establishment and rehabilitation proposed in this plan will not be specifically modified for these purposes.

6. **Litter increases at popular recreation sites adjacent to wildernesses**

   The area addressed by this plan was limited to the designated wildernesses. This problem may be reduced by the trailhead facilities proposed in this plan. Dumping and littering are illegal under 43 CFR 2920.1 and 8365.1.

7. **Impacts to wilderness from outside activities (see Appendix A under Other Facts)**

   Management of activities outside of the wildernesses is not within the scope of this plan. However, these issues were considered in developing planning strategy. Proposed air pollution monitoring actions provided in the plan were also a result of these concerns.

8. **Noxious weed control measures and introduction of non-native (exotic) plant species**

   The high temperature and low rainfall within this region of the Sonoran Desert have eliminated the establishment of most exotics. Except for a few saltcedar *(Tamarix pentandra)* at two nonfunctioning earthen stock tanks, all biotic communities in these wildernesses are free from exotic perennials.

   Non-native winter annual species introduced from the Mediterranean region, probably in the 16th and 17th centuries, are short-lived, proliferating only when winter rains and other environmental conditions are favorable. Requiring native feed for recreational livestock would neither reduce nor enhance non-native plants. Restrictions for handling recreational livestock for other reasons, however, are addressed in the plan (see Management Action 1.9).

Part IV -- Management Strategy

The strategy of the Maricopa Complex Wilderness Management Plan is to maintain or improve the natural character of each of the four wildernesses by protecting many of the near-pristine conditions while rehabilitating existing human impacts. The strategy recognizes that as metropolitan Phoenix and the surrounding rural communities expand their borders and populations over the next 10 years, the wildernesses will be subject to dramatic increases in visitor use and its associated consequences.

To identify actions necessary to protect and enhance current conditions, assumptions were made regarding this future visitor demand. Though documented information about current visitor use levels was limited, these data, along with an evaluation of physical and legal access and relative proximity to population centers, were used to assess future demands.

Since four wildernesses were considered, comparisons of each area's characteristics were made. Determination of what measures should be applied was based on each area's potential future demand. For example, the North Maricopa Mountains Wilderness is more accessible to visitors than the South Maricopa Mountains Wilderness; therefore, a trail system is identified for the former, but not the latter. By directing increased visitation along a trail system in the North Maricopa Mountains Wilderness, impacts to naturalness will be confined. On the other hand, the relative obscurity of the South Maricopa Mountains Wilderness does not necessitate trails to maintain naturalness for future generations.

Measurement standards of acceptable change are adopted for trail conditions, visitor-to-visitor trail encounters, vegetation foraging by native and domestic animals and approved mechanized transport. However, other surface-disturbing activities which have historically resulted in the most detrimental impacts to naturalness, based on experiences in other wilderness and primitive areas, are prohibited.

Part V -- Wilderness Management

Introduction

This section provides the means for resolving the Activity Plan Issues identified, given the National Wilderness Management Goals and strategy presented above.

Objective 1

Maintain or enhance the natural character of the four Maricopa Complex wildernesses by:

- reducing the evidence of 95 miles of former vehicle ways by 2004,
- eliminating unauthorized vehicle use along 20 former vehicle ways by 1997,
- reducing the need for approximately six instances of authorized mechanized transport per year by 2001 by modifying six wildlife catchments,
- coordinating multiagency emergency and law enforcement response,
- limiting motorized/mechanized firefighting activities,
- maintaining acceptable trail standards,
- managing certain packstock activities,
- assuring the continued absence of fire rings, damaged trees, established campsites, spur trails and other surface disturbances,
- rehabilitating unplanned or unauthorized impacts within one year of occurrence,
- eliminating possible impacts to naturalness from the potential development of state surface and mineral inholdings by 2004 and
- prohibiting the construction of new livestock water developments within the wildernesses.

Rationale: This objective addresses activity plan issues 1 and 3 and all four National Wilderness Management Goals.

Management Actions

1.1 Rehabilitate five former vehicle ways (16 miles) to trail standards by 2005, actively rehabilitate 18 former vehicle ways (19 miles) to a natural condition by 1997 and allow 41 additional ways (60 miles) to rehabilitate naturally, providing vehicle barriers as needed (see Table 1).

The preferred method of this rehabilitation work will employ volunteer labor using hand tools, wheelbarrows or wheeled carts. However, where appropriate preplanning has been completed, some former vehicle ways leading to wildlife catchments (see Management Action 1.4) may be altered with the use of motorized/ mechanized equipment. This would be done if it will aid in preventing unauthorized vehicle travel or accelerate revegetation. It may be accomplished concurrently with planned catchment work or at some later date. This alteration of wildlife catchment access routes, rendering them impassable, will be determined jointly by the BLM and the Arizona Game and Fish Department. Planting native species may also be employed on a small scale over all routes.

With the exception of access routes NM 5 and NM 6 (see Map 7) to the Butterfield Gap fences (project 0308), the use of certain routes for periodic major livestock fence maintenance will be subject to the conditions provided in Management Action 3.3. Butterfield Gap Fence access will be subject to these same conditions until wildlife water catchment 454 is adequately modified as per Management Action 1.4. Then, further maintenance of these gap fences will be by nonmotorized/nonmechanized means.

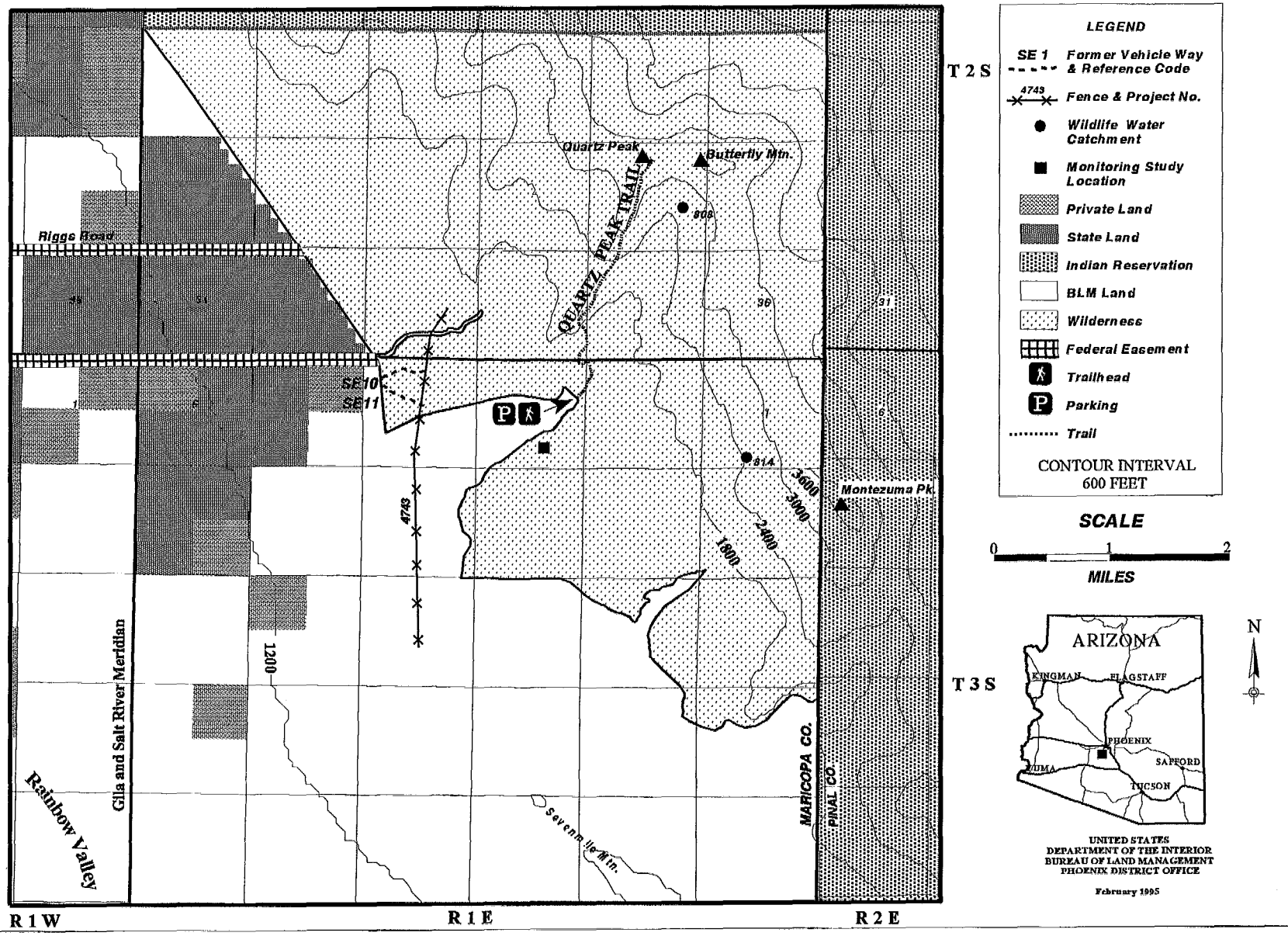
Rationale: Rehabilitating former vehicle ways and installing vehicle barriers will deter unauthorized vehicle travel, allowing them to be naturally reclaimed. Maintaining some of these tracks as hiking and riding trails is consistent with Objective 2 of this plan.

1.2 When needed to control unauthorized use or manage visitor use more effectively, allow for the closure of cherrystem roads at the Margie's Cove East, Margie's Cove West and Brittlebush trailheads (see map 7).

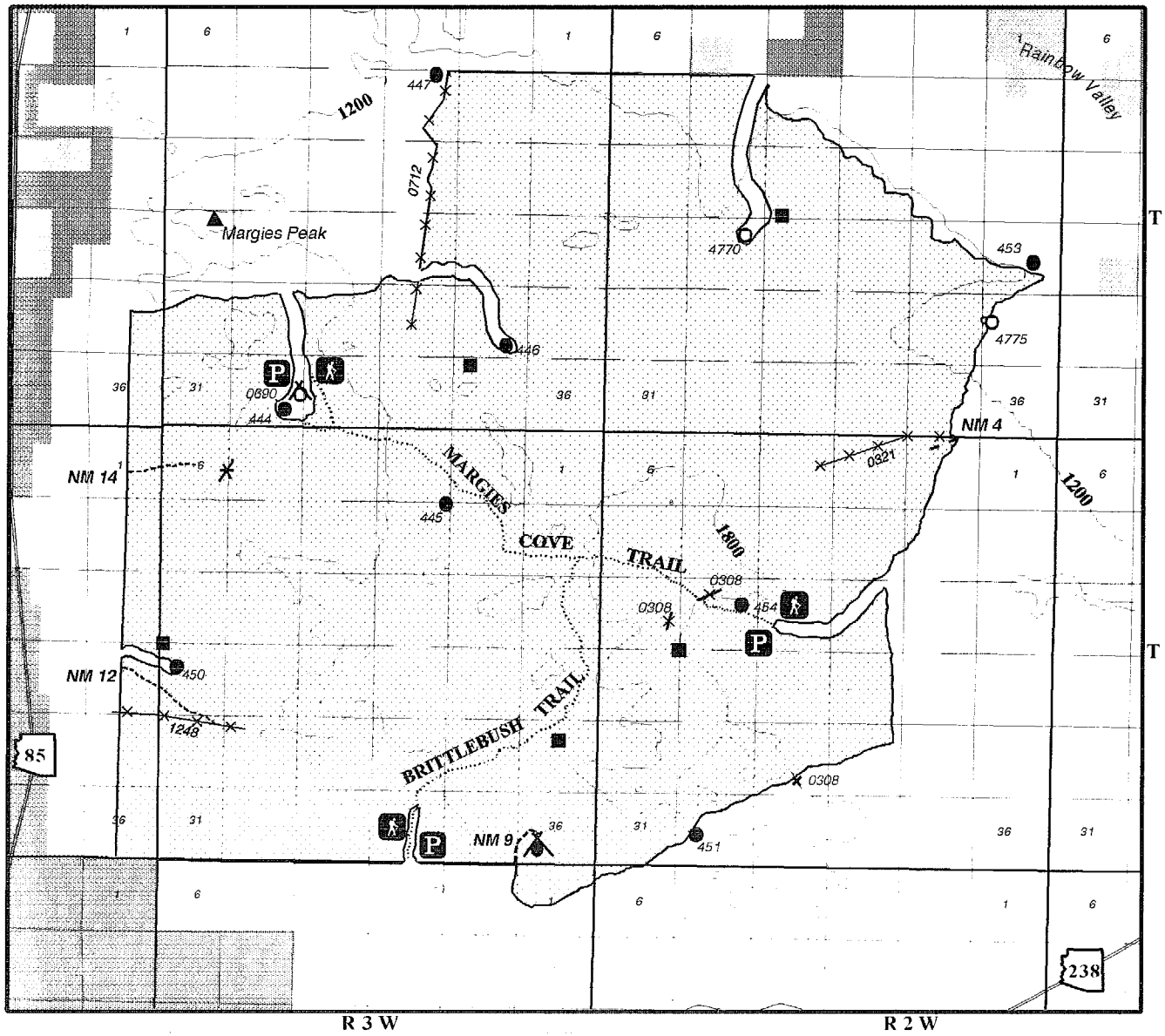
Rationale: Shortening cherrystems at these trailhead sites will provide a natural transition from the parking areas to the trail. It will also eliminate the evidence of any vehicle tracks arising from repeated unauthorized vehicle use beyond the trailheads. This will maintain the natural quality of the trailheads for the visitor.

Table 1 -- Planned Rehabilitation of Former Vehicle Ways (Alpha-numeric codes refer to maps 2 through 13)		
Rehabilitate to trail standard	*Actively rehabilitate to a more natural condition*	*Natural rehabilitation*
Sierra Estrella Wilderness		
SE 6	SE 7 (upon acquisition from state of Arizona)	SE 1 through 5 SE 8 through 11 (SE 10 and 11 for range improvement)
North Maricopa Mountains Wilderness		
NM 5 (to Catchment 454) NM 11 NM 15 (to Catchment 445)	NM 2 NM 8 NM 23 and 24	NM 1 NM 3 NM 4 (range improvement) NM 6 (eliminate gates in drift fences) NM 7 NM 9 (Butterfield well) NM 10 NM 12 (range improvement) NM 13 NM 14 (range improvement) NM 16 through 22
South Maricopa Mountains Wilderness		
	SM 3 through 6 (SM 3 and 4 for catchments 708 and 707)	SM 1 (range improvement) SM 2 SM 7 through 10 SM 11 (range improvement) SM 12
Table Top Wilderness		
TT 11	TT 3 through 5 (TT 4 for Catchment 554) TT 7 and 8 TT 10 TT 14 through 16	TT 1 TT 2 (range improvement) TT 6 TT 9 TT 12 TT 13 (Catchment 705) TT 17

Map 6: Sierra Estrella Wilderness
Future Condition



Map 7: North Maricopa Mountains Wilderness
Future Condition



LEGEND

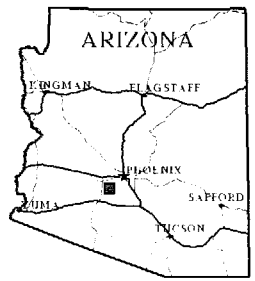
- NM 1 — Former Vehicle Way & Reference Code
- 4743 — Fence & Project No.
- Earthen Stock Tank
- Livestock Well
- Wildlife Water Catchment
- Wildlife Well
- Monitoring Study Location
- Private Land
- State Land
- BLM Land
- Wilderness
- Trailhead
- Parking
- Trail

CONTOUR INTERVAL
600 FEET

SCALE

0 1 2 3

MILES



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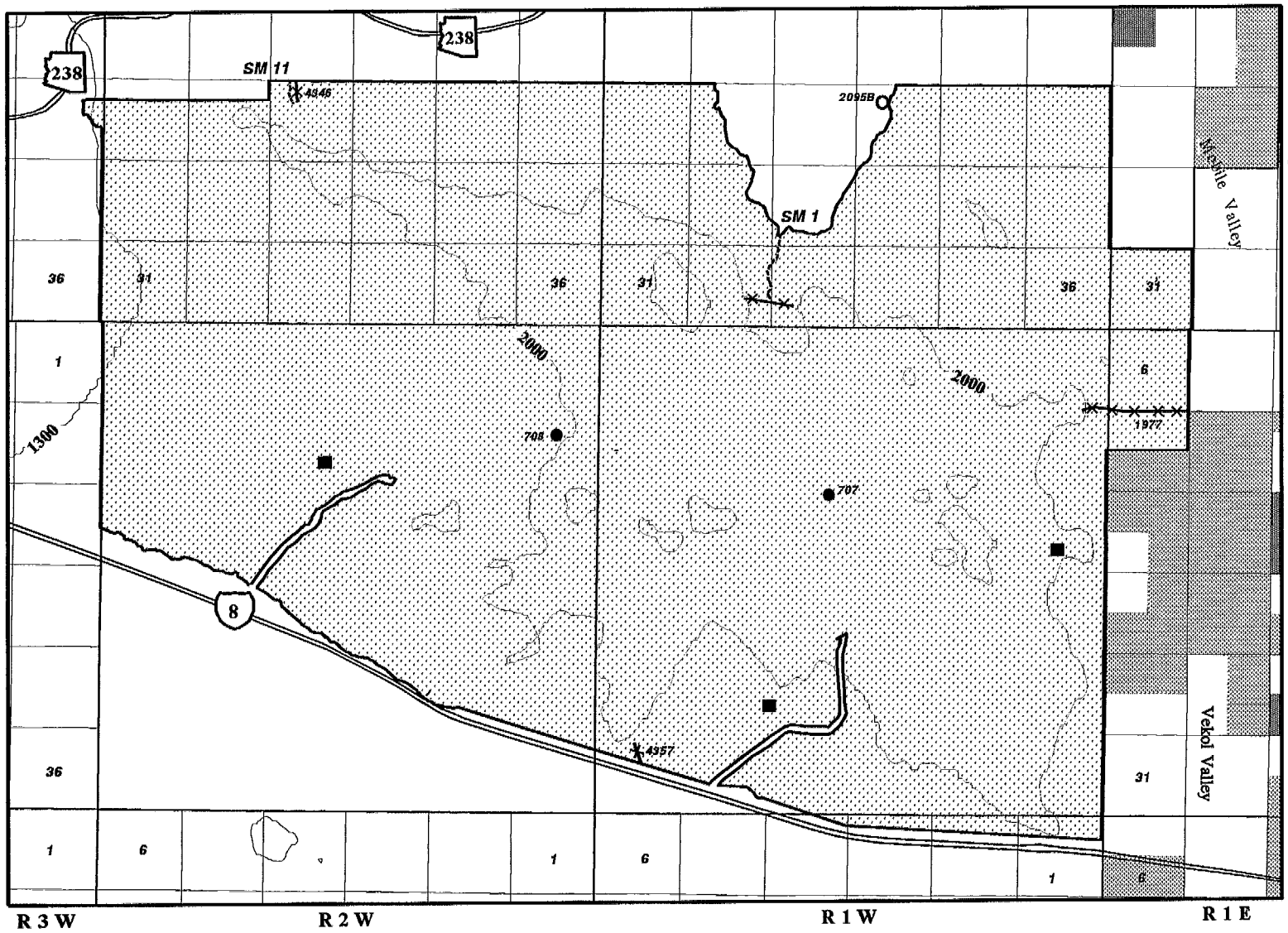
Map 8: South Maricopa Mountains Wilderness
Future Condition



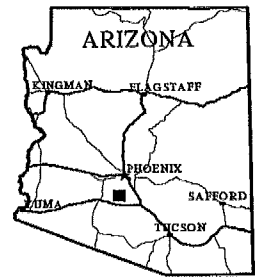
LEGEND

- SM 1 — Former Vehicle Way & Reference Code
- 4743 — Fence & Project No.
- Earthen Stock Tank
- Wildlife Water Catchment
- Monitoring Study Location
- Private Land
- State Land
- BLM Land
- Wilderness

CONTOUR INTERVAL
700 FEET

SCALE
0 1 2 3
MILES

N



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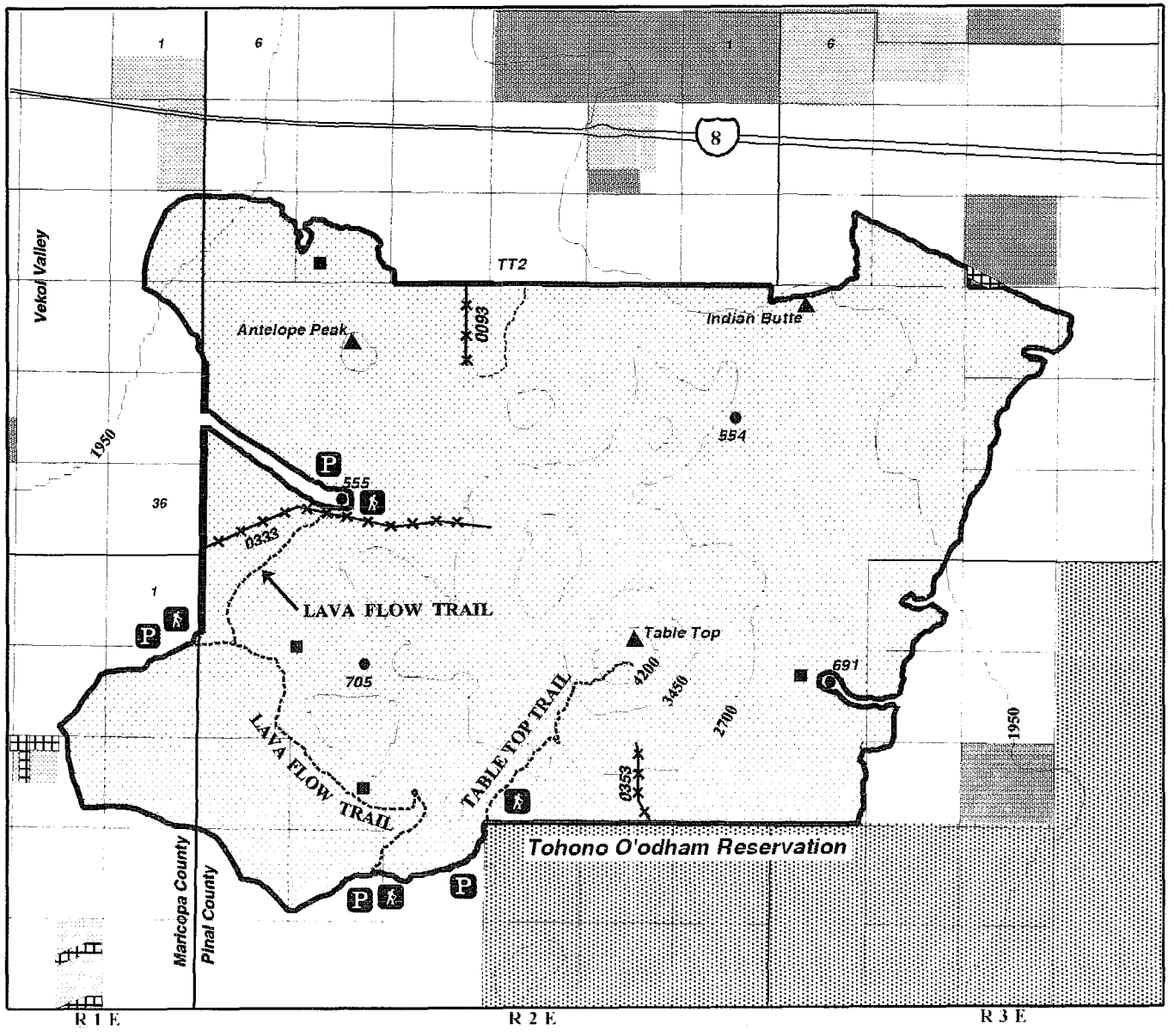
Map 9: Table Top Wilderness
Future Condition



LEGEND

- TT 1 — Former Vehicle Way & Reference Code
- 4743 — Fence & Project No.
- Earthen Stock Tank
- Wildlife Water Catchment
- Monitoring Study Location
- Private Land
- State Land
- Indian Reservation
- BLM Land
- Wilderness
- Federal Easement
- Trailhead
- Parking
- Trail

750 FEET
CONTOUR INTERVAL

SCALE

0 1 2 3

MILES

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February 1995

1.3 Eliminate two vehicle access gates in the two northern segments of the Butterfield Gap fences (project 0308) on the east side of the North Maricopa Mountains Wilderness and one where former vehicle way SM 5 crosses the Interstate 8 right-of-way fence and construct hiker pass-throughs at these locations.

Rationale: These gates no longer serve a function as vehicle access is prohibited and the routes are not needed to access any accepted developments. Eliminating the gates will reduce the potential for unauthorized vehicle use. Installing hiker pass-throughs will allow hikers to circumvent the fence conveniently.

1.4 Redesign or modify six existing wildlife water catchments and abandon five earthen tanks to eliminate or lessen their impacts on wilderness values and reduce the need for at least six instances of associated mechanized transport per year by 2001 (see Table 2).

Rationale: Increased storage and collection capacity of the wildlife developments will reduce the need for a truck to periodically haul water to these catchments. This will reduce authorized and discourage unauthorized travel along the routes of access to these facilities and eventually eliminate the need for motorized ground transport altogether. This, in turn, would ultimately facilitate reclamation of these routes to a more natural state. This action also addresses Objective 4 by reducing the dependency on water hauls. Once catchments are filled naturally or supplemented by hauled water, the need for additional fillings, which depend on agency funding, is decreased. See "Monitoring" section under this objective for further discussion.

1.5 Improve coordination, develop protocol and foster understanding with state, county and municipal agencies and volunteer organizations for search-and-rescue response and law enforcement activities. Provide a wilderness advisor to facilitate these activities.

Rationale: Improved coordination and the presence of a BLM wilderness specialist during these activities will reduce the potential for impacts to naturalness primarily from the proliferation of vehicle tracks resulting from these activities.

1.6 Confine mechanized land transport to "passable routes" within the wildernesses under emergency situations when:

- the BLM serves as the lead search-and-rescue agency when authorized by the local Sheriff's Office and the Arizona State Director or BLM State Search-and-Rescue Coordinator,
- BLM or Arizona Game and Fish Department employees pursue escaped felons and suspects of assault or serious game violations or
- livestock permittees retrieve sick or injured livestock.

Land routes considered "passable" are defined as those former vehicle ways and washes which can be traversed with a four-wheel-drive vehicle, ATV or motorcycle with minimal hand tool maintenance.

1.7 Limit the use of motorized/mechanized firefighting equipment and vehicles within the four wildernesses to those specified in Appendix D, "Fire Suppression Procedures for the Maricopa Complex Wildernesses."

Rationale: Reducing cross-country travel and minimizing the use of motorized ground transport and equipment will limit the creation of vehicle routes and damage to vegetation.

1.8 Maintain the following physical resource standards for all four wildernesses.

Off Trail

- No detectable evidence of new surface disturbance, including trails or campsites

On Trail (see management actions 2.1 and 2.2)

- A maintained tread width and depth to be determined at the time the associated former vehicle route is rehabilitated to trail standards
- No more than one occurrence of pack stock manure per 250 feet of linear distance of trail

Rationale: Maintaining these standards will assure that present off-trail conditions do no deteriorate and that trails converted from former vehicle ways (see Management Action 1.1) will continue in their maintained trail condition.

1.9 Adopt the following recreational livestock (riding and pack stock) policies.

- Feed will be supplied and packed into the wilderness. The use of hay is prohibited.
- Animals will be hobbled or restrained during lengthy rest stops and overnight stays in places which are not susceptible to overt

Table 2 -- Existing Livestock and Wildlife Developments to be Modified or Abandoned					
Development	*Number*	*Location*	*Existing access*	*Type*	*Wilderness*
Maricopa Mountains No. 3	445	T.4S., R.3W., sec. 3, SE¼SE¼	NM 15	Cement apron wildlife rain catchment	North Maricopa Mountains
Maricopa Mountains No. 12	454	T.4S., R.2W., sec. 17, SE¼NE¼	NM 5	Cement apron wildlife rain catchment	North Maricopa Mountains
Butterfield Well	--	T.4S., R.3W., sec. 36, NW¼SW¼	NM 9	Well, trough, pipeline, storage for wildlife	North Maricopa Mountains
Maricopa Mountains No. 13	707	T.6S., R.1W., sec. 16, NE¼NE¼	SM 4	Cement apron wildlife rain catchment	South Maricopa Mountains
Maricopa Mountains No. 14	708	T.6S., R.2W., sec. 12, SW¼NE¼	SM 3	Cement apron wildlife rain catchment	South Maricopa Mountains
Bighorn Reservoir *	3516	T.6S., R.1W., sec. 21, NE¼SE¼	N/A	Earthen tank, dike for livestock	South Maricopa Mountains
Unnamed Tank *	--	T.4S., R.4W., sec. 24, NE¼NW¼	N/A	Earthen tank for livestock	North Maricopa Mountains
Unnamed Tank *	--	T.6S.,R.2W., sec. 23	N/A	Earthen tank for livestock	South Maricopa Mountains
Table Top Mountains No. 1	554	T.7S., R.3E., sec. 30, NW¼NW¼	TT 4	Cement apron wildlife rain catchment	Table Top
Table Top Mountains No. 4	705	T.8S., R.2E., sec. 8, NE¼NE¼	TT 13	Cement apron wildlife rain catchment	Table Top
Jake Tank *	2082	T.8S., R.2E., sec. 6, NW¼SW¼	N/A	Earthen tank for livestock	Table Top
Malpi Tank *	0486	T.7S., R.3E., sec. 28, SE¼NW¼	N/A	Earthen tank for livestock	Table Top

* Abandon

surface disturbances (e.g., gravel wash bottoms, bedrock surfaces, etc.) and in such a manner that vegetation will not be girdled, eaten or otherwise damaged by the animals or their restraints.

Rationale: These measures will assure that excessive soil compaction, defoliation and the accumulation of hay residue will not occur. These measures also meet the remaining three objectives for management of these wildernesses.

1.10 Prohibit campfires, charcoal fires, wood gathering, woodcutting and the displacement or disturbance of rocks (other than casual surface collection) within the wildernesses. Allow the use of campstoves and casual surface collection of rocks. Management prescriptions for trailheads and areas outside of wilderness boundaries will be established as necessary as per the rules for conduct on public lands addressed at 43 CFR 8365.

Rationale: These prohibitions will assure the absence of fire rings, charcoal remains, damaged trees, rock alignments and other surface disturbances. They will also assure that dead plant material will remain on the ground for nutrient cycling and ground cover. Finally, they may also reduce the chances for human-caused fires.

1.11 Respond to the following unwanted surface disturbances in the manner described.

- Obliterate all fire rings, rock alignments and shelters, etc., not of prehistoric or historic value as they are detected.
- Close spur trails which deviate from established trails and areas around unacceptable campsites or other surface disturbances as soon as possible and according to public land closure regulations addressed at 43 CFR 8560.1-1. The size, configuration and period of the closure will be adequate to promote rehabilitation of the site and prevent the proliferation of more surface disturbance.
- Rehabilitate these surface disturbances and those arising from unauthorized vehicular transport and emergency activities (i.e., search and rescue, law enforcement and fire suppression) within one year of occurrence.

Rationale: Quick rehabilitation of these disturbances will promote natural reclamation and reduce the continued unwanted use of the trails, routes and sites.

1.12 By the year 2005, acquire the inholdings listed in Table 3.

Rationale: Inholdings increase the potential for incompatible activities to take place within these wildernesses. Federal control of these lands will eliminate this potential problem.

1.13 Prohibit the construction of any new water developments for livestock within the wildernesses. New livestock control structures, such as gap fences, may be constructed by nonmechanized means if their purpose is to protect the wilderness and wildlife resources. Site-specific National Environmental Policy Act compliance will be required prior to constructing these developments.

Rationale: New livestock water developments will impact the natural character of the wilderness by increasing the evidence of human development and livestock. This action is also supportive of objectives 3 and 4.

Monitoring

All routes which are barricaded and/or rehabilitated will be visited on the ground at least twice a year, once soon after work has been completed and later to determine the success of the project. This will also be done in conjunction with the annual fall high-elevation overflights to assess hunter compliance. If unauthorized vehicle use continues, modifications will be planned and implemented on a schedule determined by the significance of the problem and funding. Progress toward natural reclamation of these routes will be evaluated in 2000.

Success in meeting trail tread width and depth and pack stock manure standards and in rehabilitating surface disturbances such as spur trails, campsites, fire rings, etc., will be evaluated at least once a year.

Occurrences of pack stock manure on the trails will be averaged for a representative segment, several segments or for the entire trail, whichever is determined to be the most feasible and accurate measure of impact at the time of the study.

Progress in maintaining trail width and depth standards will be documented using any number of methods determined at the time the vehicle way is converted to a trail. Common methods are described in Cole (1983). Success or progress in rehabilitating unwarranted surface disturbances will be determined

Table 3 -- Surface and Subsurface Inholdings to be Acquired		
Legal Description		*Acres*
North Maricopa Mountains		
T. 3 S., R. 2 W.	sec. 16, all sec. 32, all	640.00 640.00
T. 3 S., R. 3 W.	sec. 32, all sec. 36, all	640.00 640.00
T. 3 S., R. 4 W.	sec. 36, all	640.00
T. 4 S., R. 4 W.	sec. 36, all	640.00
Sierra Estrella		
T. 3 S., R. 1 E.	sec. 2, lots 1 through 4, S½N½, S½	641.92 *
T. 2 S., R. 1 E.	sec. 32, all sec. 36, all	640.00 640.00
* Surface ownership to be acquired; all others are subsurface mineral ownership.		

qualitatively by the wilderness specialist and documented with selected photos and field notes. This monitoring work will be incorporated into at least biennial hikes of each trail conducted by staff during the normal eight-month use period. Public reports through any medium will also be used to detect changes in the standards. A report of results will be completed yearly as part of plan evaluation.

The success of wildlife catchment modifications in reducing the need to haul water will be evaluated yearly by the BLM and the Arizona Game and Fish Department. This will be documented by the wilderness specialist or wildlife biologists using field notes. The decision to end Arizona Game and Fish Department access to a modified catchment will be made jointly by the two agencies at anytime during the life of this plan. Success in meeting Management Objective 4 of this plan will also affect this decision.

The number of all authorized mechanized and/or motorized uses will be totalled yearly and kept on file at the BLM's Phoenix District Office.

If funding is available, at least one air quality monitoring device will be set up near the North Maricopa Mountains Wilderness by 2004. The frequency of data collection will be determined by the device installed.

Rationale: Success in deterring unauthorized vehicle use or unwanted trail proliferation must be continuously evaluated in order to respond to new situations. Considering the scope of the wilderness program in the Lower Gila Resource Area, qualitative assessments of route reclamation are the most realistic and cost-effective monitoring methods available.

Natural reclamation and revegetation of vehicle routes are relatively slow in the Sonoran Desert environment. Total reclamation will likely take 50 to 100 years. Monitoring this progress systematically in a short timeframe is of limited value. A qualitative assessment at the end of five years is the most appropriate for the mileage involved and resources available.

The disposition of wildlife catchment access routes must be decided jointly due to responsibilities of each agency.

Air quality data will be useful in determining Class II Air Quality Standards and impacts to these standards.

Additional Actions, if Required

If the physical resource standards adopted in Management Action 1.8 are not met, the following

indirect or direct methods separately or in combination will be implemented at the start of the next use period, i.e., October through May. Similarly, if rehabilitation of unwanted surface disturbances is not progressing satisfactorily after one year of the response outlined in Management Action 1.11, the following methods may also be implemented.

Indirect methods

- Inform visitors about less congested areas.
- Improve access to tributary, lightly used areas.
- Provide information to encourage the use of lightly used or relatively unknown areas or to stress the experience and values to be found outside the peak use period.
- Minimize the promotion of an outdoor experience in wilderness and emphasize such uses of undeveloped areas outside wilderness.
- Reroute primary transportation away from major destination areas.
- Redesign and manage trailhead areas, including access roads and parking areas.
- Educate visitors about good wilderness manners and ethics.
- Neglect access roads.
- Remove trailhead improvements and/or restrict travel into areas already overused.

Direct Methods

- Manage areas for foot or pack stock use only.
- Limit the number of people, saddle horses and/or pack stock in parties or the number permitted to stay overnight at specific locations.
- Limit the total numbers of users, length of stay or season of use.
- Charge fees for use.

Excepting actions under 1.11, the nonregulatory indirect methods will be the preferred techniques used.

Objective 2

Provide a diversity of primitive recreational opportunities and a high degree of solitude for wilderness visitors by:

- establishing and/or maintaining five trails and improving or defining eight trailheads by 2001,
- establishing use restrictions at trailheads and on certain trails in 1995 and posting these restrictions as trailheads are developed,
- developing and distributing appropriate visitor information by 1997,
- adopting low-incidence visitor encounter standards to manage visitor use in 1995,
- allowing commercial recreation and hunter guide services, as well as non-profit, special event activities to be permitted under certain conditions,
- pursuing safe access to the South Maricopa Mountains Wilderness cherrystem roads and access easements to the Sierra Estrella and Table Top wildernesses through 2004 and
- encouraging private air services to reduce low-level flights over the North Maricopa Mountains and Sierra Estrella wildernesses beginning in 1995.

This objective addresses activity plan issue 2 and strives to attain National Wilderness Management Goal 2.

Management Actions

2.1 By 2001, establish and maintain four trails and seven associated trailheads, as listed in tables 4 and 5 and depicted on maps 6, 7 and 9. Trail standards will be defined prior to converting former vehicle ways to trails (see Table 1).

Rationale: A trail network with defined trailheads in the North Maricopa Mountains and Table Top wildernesses will encourage visitors to continue using the most frequently traveled routes and foster the use of several others. This will disperse greater future use over several routes while providing visitors with a variety of primitive trail experiences. These maintained trails will also meet Objective 1 by encouraging the majority of visitors to remain on these trails rather than creating others. Development of many new pathways would degrade the prevailing untrammeled appearance of the areas. Defining and maintaining the well-used Quartz Peak Trail in the Sierra Estrella Wilderness and providing visitor improvements at the trailhead will have the same results. No trails or trailhead developments are planned for the South Maricopa Mountains Wilderness.

2.2 Restore the 4.5-mile-long Table Top Trail and improve the associated trailhead facilities (see Map 9) by 1999.

Rationale: Maintenance and improvement of this trail and its associated facilities are needed to

Table 4 -- Trails to be Established and Maintained		
Wilderness	*Trail*	*Length*
Sierra Estrella	Quartz Peak	2.5 miles
North Maricopa Mountains	Margie's Cove	8.5 miles
North Maricopa Mountains	Brittlebush	5.6 miles
Table Top	Lava Flow	7.5 miles

Table 5 -- Trailhead Amenities					
Trail	*P*	*C*	*I*	*V*	*R*
Quartz Peak	7	Y	Y	Y	Y
Margie's Cove East	5	Y	Y	Y	N
Margie's Cove West	15	Y	Y	Y	Y
Brittlebush	5	N	N	Y	N
Lava Flow South	3	N	Y	Y	N
Lava Flow West	10	Y	Y	Y	N
Lava Flow Cherrystem	3	Y	Y	Y	N

Index:
P -- Parking available (number of parking spaces)
C -- Five-day camping stay limit
I -- Interpretive signs of varying detail and design provided, including information on environmental hazards and low-impact ethics
V -- Visitor information provided
R -- Restrooms available
Y -- Yes
N -- No

check trail erosion and spur trail proliferation and to continue providing access to the amenities available at this popular recreational site.

2.3 Extend and define both the Quartz Peak and Table Top trails approximately one-quarter mile to their respective summits (see maps 6 and 9) by 1999.

Rationale: Both trails terminate or are poorly defined short of their natural topographically defined conclusion. Trail building is needed to halt the resultant increase of spur trails.

2.4 Establish and post the following trail and trailhead use restrictions as trailheads are developed.

- Hikers only on the Quartz Peak Trail.
- No camping within 200 feet or within sight of maintained trails (see Table 4 and management actions 2.1, 2.2 and 2.3). NOTE: Trailheads are excluded from this rule.
- A five-day length-of-stay limit at some trailheads.

Rationale: The Quartz Peak Trail is extremely

steep and, as much of it is a scramble over granite bedrock, it does not lend itself to either safe equestrian travel nor can it be maintained for this purpose. These restrictions are necessary to eliminate potential impacts to solitude for visitors hiking or riding the trails. They also assure that access to the trails is available to all visitors. Posting and signing are needed to mitigate impacts to solitude and naturalness, enforce restrictions and provide information to visitors.

2.5 Develop in-house small-scale brochure-size (11" x 17") maps for trailhead distribution and develop and produce maps of each of the four wildernesses for public sale by 1997.

Rationale: Though not intended to increase visitation, information is needed for public education, law enforcement and facilitating public enjoyment of the wilderness resource. Currently, adequate information is lacking.

2.6 Through appropriate response techniques (see "Additional Actions, if Required," for Objective 1), maintain social encounter standards along maintained trails at three encounters per day within a maximum of five individuals per encounter and no more than 10 individuals per day. Maintain off-trail encounter standards at two encounters per day with a maximum of two individuals per encounter and no more than four individuals per day. NOTE: This may be exceeded six days per year.

Rationale: Encounters among wilderness visitors is a useful measure of the quality of their experience of solitude. The levels identified are estimates of what is likely to occur on any given weekend during the normal use period based on current trailhead register information. Accepting these standards will ensure that the solitude experience will not degrade in the future. The standards allow for periodic increases in use over holiday weekends, which are considered exceptions to the general use level.

2.7 Assure that activities and services authorized under the special recreation use permit regulations at 43 CFR 8372 conform with the plan's policies and do not degrade the monitoring standards identified. Such uses or services which are not compatible or which can be accommodated elsewhere outside of wilderness shall not be permitted. Permitted activities or services will be scheduled so as not to infringe on the solitude or primitive experience of the general public. Base camps will be prohibited within the wildernesses. Spike camps, if compatible with policy and monitoring standards, are permissible. Monitor permitted activities and services for permit compliance and their effect on monitoring standards. See the Glossary for definitions of base camp, spike camp, commercial, non-profit and special event. See also "Issues Solved Through Policy or Administrative Action" in Part III regarding hunting outfitters and the use of pack stock and Management Action 1.9 for pack stock management restrictions. Finally, management actions 1.8, 2.6 and the monitoring section for Objective 3 identify monitoring standards which must not be degraded.

Rationale: Regulated special recreation use activities for the enjoyment of nature, sightseeing, photography and hunting, etc., are consistent with this objective.

2.8 Acquire easements to assure legal access to the Sierra Estrella and Table Top wildernesses (see Table 6 and maps 6 and 9) by 1999.

Rationale: A federal right of access over these customary routes to the Sierra Estrella and Table Top wildernesses should be guaranteed and is the most cost-effective way to maintain access. However, easement acquisition depends on the willingness of the landowner.

2.9 Coordinate with the Arizona Department of Transportation to provide safer vehicle access to the South Maricopa Mountains Wilderness at Interstate 8 mileposts 130 and 137 by 1999.

Rationale: There is no opportunity to safely reduce vehicle speed in order to access the wilderness from Interstate 8, the only access to the south end of the area. A shoulder for reducing freeway speeds could be provided without advertising the wilderness to random freeway travelers. This is preferred in order to maintain the current amount of visitation while ensuring safe access.

2.10 Encourage Estrella Sailplanes and Lufthansa to reduce the incidence of low-level overflights of the North and South Maricopa mountains and Sierra Estrella wildernesses beginning in 1995.

Rationale: As the flight limit of 2,000 feet above ground level is only a Federal Aviation Administration advisory and not a regulation, the BLM can only encourage cooperation in these practices.

Table 6 -- General Description of Lands Through Which Access Easements May Be Required		
Wilderness	*Legal Description*	
Sierra Estrella	T. 2 S., R. 1 E.	sec. 29, SW¼ sec. 30, NW¼ NW¼, S½, part of NE¼ NE¼ sec. 31, all
	T. 2 S., R. 1 W.	sec. 34, NW¼ sec. 36, all
	T. 3 S., R. 1 W.	sec. 2, all sec. 3, SW¼ sec. 9, NW¼ NW¼ sec. 10, all
	T. 3 S., R. 1 E.	sec. 5, NW¼ sec. 6, NE¼ NE¼
Table Top	T. 7 S., R. 3 E.,	sec. 16, all
	T. 7 S., R. 1 E.,	sec. 3, SW¼ sec. 10, NW¼ sec. 15, W½
	T. 8 S., R. 1 E.,	sec. 14, NW¼ sec. 26, E½
	T. 7 S., R. 3 E.	sec. 16, all

Monitoring

On-trail and off-trail visitor encounters will be monitored in several ways. Visitor comment cards, to be provided at all trailheads, will be collected periodically and reviewed yearly by the wilderness (park) ranger, who will also hike each trail at least twice during the normal eight-month use period and document encounters. Public comments received via other media will also be recorded and filed. The encounter standards will be evaluated within two years of establishing the associated trailhead register. Analysis will be qualitative. Data which can be statistically manipulated will not be gathered.

All trailheads will be visited twice each month on weekends by either the wilderness (park) ranger or law enforcement ranger. Patrols will be particularly required during the heavily used holiday periods. Contacts will be noted in field notes and violations documented following law enforcement procedures.

Low-level overflights are recorded by the BLM when complaints from wilderness visitors are received. If accurate identification of the craft is reported, the information is passed on to the Federal Aviation Administration. This agency then contacts the owner, informs the owner of the nature of the complaint and recommends that the activity be avoided in the future.

Rationale: Accurate information regarding the experience of solitude must be gathered in order to respond appropriately to maintain the present high quality experience available. Qualitative data are the most reasonable method of monitoring these standards in these wildernesses during the life of the plan.

The BLM has no regulatory authority in matters of civilian or private aircraft use when not under contract with the agency; therefore, all corrective actions must be done by the Federal Aviation Administration.

Law enforcement ranger patrols are necessary to enforce restrictions and educate visitors. Limited security and public assistance can be provided by law enforcement officers when the opportunity arises.

Additional Actions, if Required

If public opinion suggests that standards are inaccurate, adjustments will be made every three years. If the encounter standards appear accurate but are not being met, any of the methods listed under "Additional Actions, if Required" to meet the physical resource standards outlined for Objective 1 will be implemented at the start of the next use period, i.e., October through May. Indirect methods will be the preferred techniques used.

Objective 3

Maintain the present plant communities described in Appendix C by:

- resting impacted areas from livestock grazing for a specified period if foraging standards are exceeded,
- encouraging the Arizona Game and Fish Department to manage big game populations if foraging standards are exceeded,
- under certain conditions, maintaining eight existing livestock control fences using mechanized transport and allowing the use of chainsaws for maintaining 13 fences and
- suppressing all wildfires.

Rationale: This objective addresses activity plan issues 1, 3 and 5 and National Wilderness Management Goals 1, 3 and 4.

Management Actions

3.1 Rest identified areas (see Monitoring discussion below) in the North Maricopa Mountains, Sierra Estrella and Table Top wildernesses from cattle grazing for one favorable growing season and work with the Arizona Game and Fish Department to reduce wildlife populations if the key forage plant utilization standards are exceeded. NOTE: A favorable growing season is dependent on available moisture and the unique phenology of each key species. The season is defined here for key shrubs and trees as January through May when adequate moisture results in a complete plant growth cycle from leaf out to seed dissemination. For galleta grass, a growing season is defined as one full plant growth cycle from leaf out to full seed head development in the months from March through September.

Rationale: If the present conservative use levels are maintained, the current species and composition will remain unchanged. No additional rest should be necessary since the use standards are well below those which would result in physiological damage to these plant species. One favorable growing season's rest from livestock grazing will provide adequate growth to offset the visual impacts created by exceeding the present use levels.

The Arizona Game and Fish Department is responsible for controlling wildlife populations. Any wildlife population management to meet forage use standards must be determined by that agency.

These actions will also serve to meet Objective 4 by maintaining the quality of the wildlife habitat in these areas and Objective 1 by maintaining the natural character of the wilderness landscape.

3.2 Maintain the Don's Tank waterlot fence.

Rationale: The waterlot fence needs maintenance to implement response actions outlined under the Monitoring section below.

3.3 Allow fence replacement material and fence building equipment to be periodically carried by mechanized transport (ATV or pickup truck) into the wilderness by the livestock permittee to perform major maintenance or reconstruction of eight livestock control fences (see Table 7) under the conditions described below. NOTE: This conditional periodic access will be allowed for maintenance of the Butterfield Gap fences (project 0308) until such time as Arizona Game and Fish Department Catchment 454 is adequately modified as per Management Action 1.4. After that, all maintenance of that range improvement will be done by nonmotorized/ nonmechanized means. See "Description of Proposed Action" in Part XI for a detailed description of these activities.

- Maintenance requires reconstructing or replacing large segments of fence or several stress or end panels which cannot be safely or economically transported to the worksite with livestock available to the permittee.
- A request has been made to the Area Manager at least two weeks in advance and

Table 7 -- Range Developments Which May Require Mechanized Transport and Access for Periodic Major Maintenance *

Development	*Number*	*Location*	*Access*	*Allotment*	*Wilderness*
Gap Fence	4743	T.3S.,R.1E., sec. 4; T.2S.,R.1E., sec. 33	SE 10 or 11	Beloat	Sierra Estrella
Beloat Fence	0321	T.4S.,R.3W., secs. 2,3,4	NM 4	Conley/ Beloat	North Maricopa Mountains
Butterfield Fence (3 gaps)	0308	T.4S.,R.2W., secs. 17,18,28	NM 5 and 6	Conley/ Bighorn	North Maricopa Mountains
Hazen Fence	1248	T.4S.,R.3W., secs. 19,30; T.4S.,R.4W., sec. 24	NM 12	Hazen/ Bighorn	North Maricopa Mountains
Unknown Gap Fence	--	T.3S.,R.3W., secs. 5,6	NM 14	Hazen	North Maricopa Mountains
Conley-Bender Fence No. 3	4346	T.5S.,R.2W., sec. 21	SM 11	Bighorn/ Conley	South Maricopa Mountains
Unknown Gap Fence	--	T.5S.,R.1W., secs. 32,33	SM 1	Bighorn/ Conley/ Lower Vekol	South Maricopa Mountains
District Boundary Fence No. 1	0093	T.7S.,R.2E., sec. 21	TT 2	Vekol/ Table Top	Table Top

* See also management actions 1.1 and 3.3 for further clarification

approval has been received by the permittee from the authorized officers.

- BLM pack stock cannot be mobilized to complete the work in a timely fashion.
- The activity will be subject to the time limits and other stipulations identified by the Area Manager.
- Access to the worksite will be limited to those routes identified in Table 7 and route maintenance will be limited to using hand tools, i.e., shovels, picks and axes. NOTE: If barricades have been constructed on any of these access routes in accordance with Management Action 1.1 prior to these approved maintenance activities, they will be temporarily removed or opened by BLM employees or the livestock permittee with written permission from the Lower Gila Resource Area Manager.

No further National Environmental Policy Act compliance will be necessary to complete this work.

3.4 Maintain the following range fences (see maps 7, 8 and 9) without mechanized transport.

- District Boundary Fence No. 5 (Project 0333) -- Table Top Wilderness
- Table Top Fence (Project 0353) -- Table Top Wilderness

- Beloat West Fence (Project 0712) -- North Maricopa Mountains Wilderness
- Conley Pasture Fence (Project 1977) -- South Maricopa Mountains Wilderness
- Pasture 3 Fence (Project 4357) -- South Maricopa Mountains Wilderness
- Approximately three miles of the Beloat West Fence (Project 0712) in T. 3 S., R. 3 W., secs. 10, 15 and 22 -- North Maricopa Mountains Wilderness
- Approximately four miles of the Tohono O'odham Reservation Fence (T. 8 S., R. 2 E., secs. 22 through 24 and T. 8 S., R. 3 E., sec. 19) -- Table Top Wilderness

NOTE: Segments of the last two fences listed make up a portion of the wilderness boundaries. Project 0712 can be accessed from outside the wilderness for maintenance work while the Reservation Fence will be accessed by horseback or from outside the wilderness.

Rationale: Maintenance of all interior drift fences and allotment boundary fences within the wildernesses is needed to assure proper livestock control, promote permit compliance and maintain the current acceptable livestock grazing use. This action will also serve to meet Objective 4 by minimizing the potential for conflict for forage among livestock, desert tortoise and other wildlife species and livestock trampling of desert tortoise. The continued use of the existing access routes for these purposes will not have any adverse impact to wilderness values under the conditions prescribed in this management action. Conditions placed on these activities will limit the number of times motorized use will be necessary. Prior notification is needed for public information purposes and to facilitate compliance.

3.5 Allow the use of a chain saw for post sizing and notching in conjunction with the maintenance of fences identified in management actions 3.3 and 3.4. No cutting of trees within the wilderness for these purposes, however, will be allowed. No further National Environmental Policy Act compliance will be necessary prior to the use of this equipment.

Rationale: Sizing and notching of juniper (cedar) posts for braces, stress or end panels are necessary when replacing or repairing these structures. A chain saw is a quick and adaptable tool for this work. Axes and hand saws are not mechanized but require a level of skill and effort considered excessive for the required work.

3.6 Suppress all wildfires in or threatening to enter the wildernesses.

Rationale: Wildfires do not appear to have played an important role in shaping the natural plant communities of these wildernesses. Vegetation damage by fires will be minimized by active suppression. This action will also serve to meet Objective 1 by maintaining the natural character of the plant cover.

Monitoring

Grazing use of key species will be monitored by range management specialists or wildlife biologists at existing study sites (see maps 6 to 9) with the frequency identified in Table 8. Use standards in this table will be maintained. (NOTE: The table provides a cumulative list of all key species at all sites; specific key species for each site are documented in the Lower Gila Resource Area study files.) Current data collection regarding wildlife/livestock sign will continue. If the standards are exceeded, the animal species responsible will be determined through analysis of the animal sign data and appropriate corrective action will be implemented.

If foraging standards are exceeded by livestock use, the prescribed rest will be provided by closing gates in the Don's Tank and Tucker Tank waterlot fences in the North Maricopa Mountains Wilderness, by removing livestock from the mountain pasture created by the gap fence (project 4743) in the Sierra Estrella Wilderness and by closing the east gate in the Red Tank waterlot fence in sec. 36, T. 8 S., R. 1 E. approximately 1¾ miles west of the Table Top Wilderness. If Hazen Well (within the Hazen Allotment along the cherrystem in sec. 32, T. 3 S., R. 3 W.) is reconstructed, an additional study plot would be necessary to evaluate the impact of livestock grazing in and around Margie's Cove.

If foraging standards are exceeded due to wildlife use, the BLM will work with the Arizona Game and Fish Department to resolve the issue in the affected areas.

The present methods employed to measure forage use, i.e., a combination of the grazed class, key forage and Cole browse methods (see the Glossary), will be continued. Current key species sample size will be increased to 25 samples/key species at each site by sampling the nearest plant to the plot center rather than within the plot as it is currently done.

Table 8 -- Monitoring Sites, Key Species, Standard, Frequency and Target User by Wilderness					
Wilderness	*Site (Biotic Community)*[1]	*Species Type*[2]	*Standard*[3]	*Frequency*	*Target Grazing Animals*[4]
Sierra Estrella	Beloat 54 (AUP)	G	<35% of current growth	Yearly, in spring	LV, BG, R
No. Maricopa Mountains	Beloat 55 (LCV)	T and S	<20%	Yearly, in spring	LV, BG, R
No. Maricopa Mountains	Beloat 57 (AUP)	T and S	<20%	Every five years	BG, R
No. Maricopa Mountains	Hazen 41 (LCV)	T and S	<20%	Yearly, in spring	LV, BG, R
No. Maricopa Mountains	Bighorn 21 (AUP)	T and S	<20%	Every five years	BG, R
So. Maricopa Mountains	Bighorn 18 (AUP)	T and S	<20%	Every five years	BG, R
So. Maricopa Mountains	Bighorn 22 (LCV)	T and S	<20%	Every five years or spring with steers	LV, BG, R
So. Maricopa Mountains	Lower Vekol 15 (AUP)	T and S	<20%	Yearly, in spring	LV, BG, R
Table Top	Table Top 3 (AUP)	T and S	<20%	Yearly, in spring	LV, BG, R
Table Top	Vekol 11 (AUP)	T and S	<20%	Every five years	BG, R
Table Top	Vekol 12 (AUP)	T and S	<20%	Yearly, in spring	LV, BG, R
Table Top	South Vekol 7 (AUP)	T and S	<20%	Yearly, in spring	LV, BG, R
Table Top	South Vekol 8 (AUP)	T and S	<20%	Every five years	BG, R

[1] AUP = Arizona Upland; LCV = Lower Colorado Valley

[2] G = galleta grass (Hilaria rigida); T and S = trees and shrubs. These may vary by site. They are cumulatively: white ratany (Krameria Grayi), range ratany (K. parvifolia), white bursage (Ambrosia dumosa), Mormon tea (Ephedra spp.), shrubby buckwheat (Erigonum fasciculatum), ditaxis (Ditaxis lanceolata), false mesquite (Calliandra eriophylla), ironwood (Olneya tesota) and foothill paloverde (Ceridium microphyllum).

[3] Except for galleta grass, percentages are of all available leaders.

[4] LV = livestock; BG = big game, i.e., mule deer and/or desert bighorn sheep; R = rodent.

Additional vegetative monitoring data will be gathered also at four of the existing study sites. These new data will be collected by 1999 by wildlife biologists, range specialists, botanists or a combination thereof. The study interval for gathering the additional information will be once every five years. At a minimum, key plant species density and saguaro reproduction information will be gathered. Plotless methods (see the Glossary) are recommended -- measuring distances from a number of random points along a transect to the closest plant or plants to each random point. These data should be collected from a minimum of four of the existing 13 study locations. The four locations chosen should be equally distributed among each biotic subdivision and grazed/ungrazed (by livestock) area.

Rationale: Existing study locations will be used to minimize costs and eliminate duplication of work. The use standards chosen represent the current visual evidence of foraging. Estimates will be improved by increasing the number of samples recorded. The methodology change minimizes the amount of time needed to collect the additional samples. The study frequencies provide adequate time for response actions based on the animals being targeted by the studies. The sites selected are the most sensitive to the grazing animals targeted.

The amount of forage use will be the basis for BLM recommendations to the Arizona Game and Fish Department regarding population management.

Objective 4

Provide habitat and water for a diversity of fauna which use these four wildernesses by:

- increasing the storage capacity of six existing wildlife water catchments within the wildernesses by 2001 and seven others adjacent to the North Maricopa Mountains and Table Top wildernesses when possible,
- in the short term, allowing continued mechanized transport of water to six existing catchments and, indefinitely, to two existing catchments, when necessary,
- re-equipping Butterfield Well with a submersible pump by 1995,
- allowing the continued use of mechanized transport to conduct wildlife population censuses indefinitely,
- replacing existing wire fences surrounding six wildlife water catchments with pipe rail fences by 2004,
- prohibiting dogs on the Table Top Trail,
- constructing 1¾ miles of trail to bypass two wildlife catchments by 2001,
- sanctioning desert bighorn sheep transplants and the use of low-level aircraft flights for telemetric tracking of transplanted animals and
- jointly evaluating new bighorn sheep water source proposals on a case-by-case basis.

Rationale: This objective addresses activity plan issues 3 and 4 and all four National Wilderness Management Goals.

Management Actions

4.1 Allow the use of mechanized transport and mechanized/motorized equipment to modify six wildlife water catchments (see Management Action 1.4). The appropriate type of such transport and equipment to be approved will be the minimum necessary to successfully and safely complete the work. Backhoes, helicopters and pickup trucks will typically be considered appropriate tools for this work (see "Description of Proposed Action" in Part X for a detailed description of expected activities and equipment). Motorized ground access for these purposes will be limited to the previously established routes (former vehicle ways) identified in Table 2. Site-specific National Environmental Policy Act compliance may be required prior to these actions.

4.2 In addition to catchments to be modified under Management Action 1.4, upgrade and maintain Arizona Game and Fish Department wildlife catchments 446, 447, 450, 451 and 453 adjacent to the North Maricopa Mountains Wilderness and catchments 555 and 691 adjacent to the Table Top Wilderness (see maps 6 to 9). Site-specific National Environmental Policy Act compliance may be required prior to these actions.

Rationale: The present distribution of wildlife and use of these habitats are a result, to a great extent, of the construction of these water sources in the 1960s and therefore were established at the time of wilderness designation. Improving the reliability of these existing water sources will maintain the current distribution of wildlife species throughout their habitat, including these wildernesses. Upgrading the catchments, many of which were originally constructed as mitigation for highway and

canal construction, will continue to provide mitigation to habitat loss and fragmentation outside the wilderness.

4.3 Continue to authorize the use of trucks to haul water and the use of motorized/mechanized equipment to transport and conduct repairs to those existing wildlife water catchments along previously established routes (former vehicle ways) identified in Table 2 until design modifications identified in Management Action 1.4 prove to be reliable. See also the "Monitoring" section for Objective 1 for protocol regarding decisions on future wildlife catchment access.

Water hauling will occur whenever it is necessary to prevent a water source from going dry during critical periods, such as summer months or in the winter and spring when bighorn ewes are lactating.

The appropriate type of such transport and equipment to be approved for repair work will be the minimum necessary to successfully and safely complete the job. Helicopters, backhoes and pickup trucks may be considered appropriate for repair work (see "Description of Proposed Action" in Part X for a detailed description of expected activities and equipment).

The Arizona Game and Fish Department will notify the Area Manager of planned water-hauling activities one week prior to filling a catchment and again upon completion of the task. A two-week notice to the Area Manager is required prior to initiating repairs. Additional National Environmental Policy Act compliance will not be required for the use of mechanized equipment or transport for such repairs if they do not require new surface disturbance.

Rationale: The continuation of these activities will be necessary to provide the present amount of water available to wildlife until the upgrades prove to be successful in reducing the need for continuous water hauling during the summer months. This is the most cost-effective, reasonable and least intrusive alternative for adding water to these catchments in the interim. The impacts of mechanization for these interim repair activities, previously analyzed in environmental assessments for the wildlife operation and maintenance plans completed for these wildernesses (U.S. Department of Interior, 1992c and 1993b), are also summarized in the assessment of this wilderness management plan (see Part XI).

4.4 Allow the Arizona Game and Fish Department to use helicopters to maintain, check and, when necessary, to haul water to Butterfly Tank (No. 808) and Montezuma Tank (No. 814) within the Sierra Estrella Wilderness. The notification and National Environmental Policy Act compliance procedures needed are identical to those under Management Action 4.3.

Rationale: These two catchments employ retention dams to collect rainwater from the surrounding impervious rock formations. They are within the extremely steep and rocky terrain of the Sierra Estrella Wilderness. Travel to these developments cannot be negotiated by pack animal. Both catchments were constructed with the use of helicopters. Like the apron type catchments discussed above, they were in place many years prior to wilderness designation and are now an integral element of the mountain range's wildlife habitat. There is no alternative way to add water or access these developments for repair other than by helicopter. The impacts of mechanization for these repair activities, analyzed in environmental assessments for the wildlife operation and management plans completed for these wildernesses (U.S. Department of Interior, 1992c and 1993b), are summarized again in Part XI of this document.

4.5 Re-equip Butterfield Well (T. 4 S., R. 3 W., sec. 36, NW¼SW¼) with a new submersible pump by 1995. Allow the use of mechanized transport along the previously established route (former vehicle way NM 9) and mechanized/ motorized equipment to install the device and pump the well once every two years. Also, allow periodic (estimated to be once every five years) motorized access to the facilities along the same route to perform major maintenance, such as removing the submersible pump.

Rationale: Butterfield Well, an important water source for desert mule deer for six years, was recently vandalized and the pump stolen. Re-equipping the well will maintain a water source which has become a part of the habitat prior to the passage of the Act. Due to the depth of the well, solar equipment would be insufficient to power a submersible pump. Also, the use of a pump jack would result in unacceptable sights and sounds within the wilderness. The mechanized/motorized equipment to be used will be the minimum tool needed to safely and effectively install, repair and operate the pump.

4.6 Provide for continued Arizona Game and Fish Department low-level helicopter and fixed-wing aircraft flights to inventory deer, javelina and bighorn sheep in all four wildernesses. When possible, the Area Manager will be notified two weeks prior to planned flights.

Rationale: These activities employ the minimum tools required for adequately censusing these wildlife species. Two-week prior notice is needed for safety and public education reasons.

4.7 Replace existing barbed wire fences around catchments with pipe rail fences by 2004. Further analysis of visual impacts will be prepared prior to this activity. An analysis of this replacement will be done as a part of the environmental assessment referred to in Management Action 4.1.

Rationale: Current barbed wire fences discourage bighorn sheep access to the existing catchments. The pipe rail fences will eliminate this problem and therefore enhance the use of these existing catchments by bighorn sheep. Further National Environmental Policy Act compliance may be required to identify mitigation to visual impacts associated with the pipe rail fences as the measures will vary by site.

4.8 Prohibit dogs on and along the Table Top Trail. As on all public lands within the state of Arizona, dogs found in all other areas of the wildernesses, off this trail, are subject to the restraint required under state law (Arizona Revised Statute 11-1012). These restrictions do not apply to dogs used for animal damage control activities.

Rationale: Pet restraints or restrictions will reduce potential harassment of wildlife. The Table Top Trail, in particular, may be frequented by bighorn sheep during the normal visitor use periods.

4.9 In cooperation with the Arizona Game and Fish Department, construct segments of trail at Margie's Cove East and West trailheads to bypass wildlife catchments 454 and 444/Hazen Well, respectively, by 2001. The placement and design of these bypasses will be done in coordination with the Arizona Game and Fish Department.

Rationale: These new trail segments will route hikers and riders away from these wildlife catchments and water wells, thereby reducing potential violations of Arizona Revised Statute 17-308.

4.10 Cooperate in the management of big game according to BLM Manual 8560.34 and the joint memorandum of understanding between Arizona Game and Fish Commission (1987b) and the BLM. This management will include the following.

- Transplants of bighorn sheep into the three affected herd areas. This would involve either a few mature rams to introduce new genetic material into the population or a larger mix of ages and sexes if the resident population declines severely.
- The use of telemetry and monthly helicopter flights to track transplanted animals.
- The use of helicopter flights to check big game water catchment levels during the summer months.
- Evaluating the need for new wildlife water developments on a case-by-case basis. This evaluation will include:
  - -- the current health of the herd in terms of population trend and the overall population viability,
  - -- the availability, size and present use of nearby habitat by the current population or the availability of movement corridors to these areas,
  - -- the availability of adequate alternative catchment locations outside the wilderness either within the existing herd areas or in nearby habitat,
  - -- the likelihood of future threats which would isolate the present herds,
  - -- the effectiveness of existing and/or upgraded water developments (see management actions 1.4, 4.3, 4.4 and 4.5) in providing water for desert bighorn sheep and
  - -- the effectiveness of measures and locations in mitigating wilderness impacts.

Rationale: Reintroduction of desert bighorn sheep or the construction of new water sources may be consistent with the Arizona Desert Wilderness Act (1990a) by reference to House of Representatives Report 101-405 (1990b) if the population or its habitat is severely threatened and adequate actions cannot be taken outside of wilderness to respond to the problem. Although the populations appear to be in good health and are increasing, little is known about their long-term viability. Therefore, it is

prudent to provide flexibility to respond to possible future downturns in the populations and/or the quality of their habitat.

Telemetry tracking will allow the Arizona Game and Fish Department to assess the success of the transplants.

Monitoring

Censusing of wildlife populations and tracking transplanted animals will be conducted by the Arizona Game and Fish Department. Results of the censuses will be provided to the BLM upon request.

Trends in wildlife-visitor interaction along established trails will be evaluated using information received from the trailhead comment cards discussed under the Monitoring section related to Objective 2. Population trend data from big game censuses provided by the Arizona Game and Fish Department will also be used to evaluate the need for mitigation of visitor use impacts to wildlife. Opinions and observations made by professional wildlife biologists familiar with these areas regarding wildlife-visitor interaction will also be considered.

See also the Monitoring section related to Objective 3 for a discussion of monitoring techniques to be used to measure vegetation foraging by wildlife species and the resulting actions.

Monitoring and current research on desert tortoise populations in the North Maricopa Mountains Wilderness will continue, including those at the desert tortoise plot in secs. 17 through 20, T. 4 S., R. 2 W.

Rationale: Census data from the Arizona Game and Fish Department provide information needed to assess and respond to changing trends in big game populations. They also provide more information regarding animal distribution and movement.

Documentation of visitor use/wildlife encounters may provide some data to justify visitor use restrictions.

Additional Actions, if Required

If impacts from visitor use appear to be detrimental to desert bighorn sheep or desert tortoise or if it is determined that restrictions to visitor use along certain trails should be tested to mitigate negative wildlife population trends, restrictions identified under "Additional Action, if Required" under Objective 1 will be implemented. The indirect methods will be the preferred techniques used.

Part VI -- Plan Evaluation

The success of this plan in meeting its four objectives will be based on whether the standards established by management actions 1.4, 1.8 and 2.6 and described in each respective monitoring section, are met. The type of measurements, their frequency and the evaluation of the data are also specified in the monitoring sections of the plan.

All field reports, photographs and monitoring data will be maintained in official wilderness files at the BLM's Phoenix District Office.

This plan will be revised when the management actions prescribed no longer meet the wilderness management objectives or when a change in the existing situation warrants a new approach. The need for such a revision will be reviewed at least once every five years (1999 and 2004). These reviews will be conducted by an interdisciplinary team which will document its recommendations to the Area Manager. If the decision is made to revise the plan, it will be done with public participation and the authorized officer's approval. Minor revisions, such as typographical errors, may be made at any time by inserting an errata sheet.

Part VII -- Plan Implementation

Wilderness management personnel, with the help of other resource specialists, will implement the wilderness management plan. These personnel will promote the long-term preservation of Maricopa Complex wilderness values by carrying out the ongoing field and office activities requisite for effective day-to-day wilderness management and through the completion of special projects.

Ongoing Activities

The activities reflected in Table 9 are those needed on a day-to-day basis to implement this plan. They are grouped into:

- visitor management and public education,
- administration and
- research, inventories and monitoring.

Each task within a category is listed sequentially, in order of importance. Cumulatively, they require approximately 21 workmonths per year to complete.

Special Projects

Special projects are high priority activities identified in the wilderness management plan. Completion of these projects is considered essential for providing protection and preservation of the four Maricopa Complex wildernesses. Projects are named in tables 10 through 13 and are grouped by type. Each task within a category or project in a table is listed by level of importance. The listing, for general scheduling and tracking, does not suggest that the most important project will be completed first. Due to the diversity of funding sources for these projects (some of which are non-federal), it may be necessary to choose less important projects which can be successfully completed with the use of one specific funding source. Those that are contingent on other prerequisites are noted.

Cumulatively, special projects would require the expenditure of approximately 67 workmonths and $162,000 in materials and/or equipment over a 10-year period.

Existing Vehicle Ways to be Rendered Impassable

Active management will render certain former vehicle ways impassable (see Table 10) by volunteers using wheelbarrows, wheeled carts and nonmechanized means, i.e., smoothing road berms and placing rocks, logs and other native material to naturalize vehicle tracks. Although listed in order of priority in Table 10, vehicle way rehabilitation projects will be completed contingent upon funding sources and volunteer availability. Responsibility for carrying out these actions rests with the Outdoor Recreation Planner and Park Ranger. Alpha-numeric route identifiers refer to maps 2 through 5 in the wilderness management plan.

Vehicle Barriers

Barriers will be constructed to block motorized access on certain former vehicle ways at wilderness boundaries (see Table 11). These projects are listed by priority based on need, but may be completed in a different sequence based on funding sources and availability. Responsibility for carrying out these actions rests with the Outdoor Recreation Planner and Park Ranger.

Designated Trails and Amenities

The Maricopa Complex trail network will be established by rehabilitating former vehicle ways to trail standards, extending and maintaining existing trails and constructing short segments of new trail to lessen impacts to wildlife (see Table 12). Since the preferred method to accomplish this work is volunteer crews using nonmechanized methods, the cost estimates do not include costs for mechanized equipment. Mechanized equipment used in conjunction with the modification of wildlife catchments as per Management Action 4.1 may be employed if appropriate for the planned trail design or necessary to stop unauthorized vehicle travel. If used, however, costs would be greater than estimated. Wheelbarrows and wheeled carts may also be used.

Table 9 -- Implementation Schedule of Ongoing Activities		
Work description	**Responsible parties**	**Work-months per year**
Visitor Management and Public Education, including Emergency Services		
Conduct regular patrols of wilderness boundaries, trailheads and vehicular access points, as well as regular foot patrols within wilderness, including uniformed field presence during high-use periods such as weekends, holidays and hunting seasons. Make regular field contacts with wilderness visitors to ensure compliance with regulations. Provide information reinforcing wilderness values such as "no trace" impact techniques. Assess daily use levels and divide oversized hiking and equestrian groups. Provide miscellaneous services such as distributing litter bags, brochures, maps and area information, as well as information on non-wilderness recreational opportunities.	Outdoor Recreation Planner/Park Ranger	8.0
Maintain boundary signing and vehicle barriers. Rehabilitate to as nearly natural a condition as possible all unauthorized vehicle entry points, fire rings and other surface disturbances resulting from visitor use.	Outdoor Recreation Planner/Park Ranger	2.0
Initiate and maintain regular wilderness boundary patrols by BLM law enforcement officers with wilderness staff, including, but not limited to, uniformed patrols during high-use periods, investigation of unauthorized motorized entry and other criminal activities and visitor contact.	Outdoor Recreation Planner/Park Ranger/BLM Ranger	3.0
Maintain established primitive trails and trailheads. Develop maintenance/reconstruction standard and schedules.	Outdoor Recreation Planner/Park Ranger	3.0
Initiate and maintain a wilderness public education effort in coordination with state and district external affairs personnel, including, but not limited to, providing information and/or presentations to regional schools, area pilots for media and local interest groups. Conduct "wilderness awareness" training for BLM staff, detailing wilderness ethics, standards and regulations.	Supervisory Outdoor Recreation Planner/Park Ranger/ External Affairs	0.5
Encourage "wilderness awareness" among county search-and-rescue personnel and volunteer fire departments through annual outreach.	Outdoor Recreation Planner/BLM Ranger/Park Ranger	0.5

Table 9 -- Implementation Schedule of Ongoing Activities (continued)		
Work description	**Responsible parties**	**Work-months per year**
Administration		
Conduct pre- and post-field season meetings with the Area Manager and resource area staff, summarizing the year's objectives, activities and accomplishments.	Supervisory Outdoor Recreation Planner/ Outdoor Recreation Planner/Park Ranger	0.5
Evaluate and take action to correct impacts as Limit of Acceptable Change standards are approached or exceeded.	Area Manager/ LGRA staff	1.0
Evaluate and take action to protect prehistoric, historic and culturally sensitive sites or areas from vandalism and/or looting, when necessary.	BLM Ranger/ Archaeologist	As needed
Conduct compliance checks of authorized mechanized uses	Park Ranger/Range Management Specialist/Wildlife Biologist	0.25
Issue commercial recreational outfitter-guide and nonprofit special event recreational permits. Contact permittees and conduct compliance checks.	Outdoor Recreation Planner	As needed
Coordinate with the Arizona Game and Fish Department to administer hunting guide-client permits. Issue special use permits as assigned. Contact outfitter-guides to ensure permit compliance.	Supervisory Outdoor Recreation Planner/Outdoor Recreation Planner/Park Ranger	As needed
Inform livestock grazing permittees of potential range improvement use by equestrians.	Range Management Specialist/ Supervisory Outdoor Recreation Planner	As needed
Update wilderness implementation schedule as needed.	Planning and Environmental Specialist	As needed

Table 9 -- Implementation Schedule of Ongoing Activities (continued)		
Work description	**Responsible parties**	**Work-months per year**
Research, Inventories and Monitoring		
Monitor standards for naturalness, solitude and vegetation to include number of authorized mechanized uses, visitor encounters, trail width and depth, frequency of manure on the trail, grazing of vegetation and plant density.	Outdoor Recreation Planner/Park Ranger/Range Management Specialist/Wildlife Biologist/Botanist	1.5
Obtain big game population information annually from the Arizona Game and Fish Department and desert tortoise population information from the contractor.	Wildlife Biologist	0.1
Document incidents of aircraft observed or reported below the 2,000-foot Federal Aviation Administration advisory, including aircraft type and direction of travel.	Outdoor Recreation Planner/LGRA Staff	As needed
Evaluate research proposals; permit those acceptable and monitor activities to ensure permit compliance. Request copies of research reports.	Supervisory Outdoor Recreation Planner/Outdoor Recreation Planner/ LGRA Staff	As needed

Table 10 -- Implementation Schedule of Special Projects: Former Vehicle Ways to be Rendered Impassable			
Route (miles)	*Cost (workmonths/materials)*	*Route (miles)*	*Cost (workmonths/materials)*
SE 7 (2.21) +	.3/$265	TT 10 (.55)	.1/$70
SM 4 (4.55) *	.7/$545	TT 3 (.18)	.1/$20
SM 3 (2.86) *	.4/$345	TT 5 (.28)	.1/$35
SM 6 (1.01)	.2/$120	TT 7 (.59)	.1/$70
SM 5 (1.31)	.2/$160	TT 8 (.06)	.1/$10
TT 4 (.53) *	.1/$65	NM 23 (.32)	.1/$40
TT 14 (2.25)	.4/$270	NM 24 (.78)	.1/$95
TT 15 (.43)	.1/$50	NM 8 (1.02)	.2/$125
TT 16 (.12)	.1/$15	NM 2 (.12)	.1/$15
TOTAL	**3.5/$2,315**		

\+ This route will be rendered impassable upon acquisition from the state of Arizona
* Completion of the project is contingent on successful completion of the Arizona Game and Fish Department catchment modification

Table 11 -- Implementation Schedule of Special Projects: Vehicle Barriers					
Road	*Barrier type* *	*Cost (workmonths/ materials)*	*Road*	*Barrier type* *	*Cost (workmonths/ materials)*
NM 9	PC	.6/$2,485	TT 3	R	.1/ --
SM 1	PC	.6/$2,030	TT 6	BW	.4/$1,252
SM 3	PC	1.0/$1,385	TT 8	BW	.4/$850
SM 4	PC and BW	1.0/$2,080	SM 6	BW	.4/$815
NM 16	BW	.4/$950	SM 2	R	.1/ --
TT 2	BW	.4/$815	SM 12	BW	.4/$880
TT 4	BW	.4/$815	SM 5	Eliminate gated access	--
NM 18 - 19	BW	.6/$1,200	NM 6	Eliminate gated access	--
NM 20	BW	.4/$600	NM11	PC and BW	.6/$1,750
NM 21	BW	.4/$600	NM 15	BW	.4/$1,010
NM 22	BW	.4/$600	TT 18	BW	.4/$600
TT 9	BW	.4/$600	TT 11	BW	.4/$600
TT 9	BW	.4/$710	SM 13	BW	.4/$850
Total 10.6/$22,877					

* PC = post-and-cable
BW = barbed wire fence with hiker walkthrough
R = natural obstructions

Vehicle barriers will be constructed where required and trailhead amenities will be provided as described in the plan. These trail/trailhead projects (see Table 12) are listed in order of priority; however, various components of each project will be completed as funding becomes available. Responsibility for carrying out these actions rests with the Outdoor Recreation Planner, Park Ranger or Lower Gila Resource Area staff.

Other Special Projects

The plan identifies other one-time material purchases or jobs which are needed for wilderness management of the Maricopa Complex. They include tasks related to visitor and wildlife management, access, water right acquisition and monitoring called for in the plan. They are listed sequentially by level of importance within each category in Table 13.

Table 12 -- Implementation Schedule of Special Projects: Trails and Trailheads		
Trail	*Work description*	*Cost (workmonths/ materials)*
Quartz Peak	Rehabilitate existing vehicle way (SE 6, .41 mile) to trail standards; extend existing trail .5 mile to summit and maintain existing trail; install vehicle barrier at parking area; install planned trailhead amenities and post restrictions.	7.1/$17,740
Margie's Cove East *	Rehabilitate existing vehicle way (NM 5, 2.35 miles) to trail standards; install vehicle barrier; install planned trailhead amenities; post restrictions and construct 25 miles of new bypass trail.	4.4/$3,902
Margie's Cove West *	Rehabilitate existing vehicle way (NM 15, 2.65 miles) to trail standards; install vehicle barrier; install planned trailhead amenities; post restrictions and construct 1.5 miles of new bypass trail.	4.2/$17,197
Brittlebush	Rehabilitate existing vehicle way (NM 11, 2.82 miles) to trail standards; close approximately .75 mile of cherrystem road to control vehicle access; install vehicle barrier; install planned trailhead amenities and post restrictions.	3.4/$2,200
Lava Flow	Rehabilitate existing vehicle way (TT 11, 7.45 miles) to trail standards; install planned trailhead amenities and post restrictions.	6.2/$5,255
Table Top	Extend existing trail 0.2 mile to summit; maintain existing 4.5 miles of trail; maintain and expand existing trailhead amenities and post restrictions.	2.5/$1,000
	TOTAL	27.0/$47,294
* Completion of this project is contingent on successful completion of the catchment modification		

Table 13 -- Implementation Schedule of Special Projects: Other Special Projects		
Work description	**Responsible parties**	**Workmonths/ other costs during life of plan**
Special visitor management and public education projects (includes emergency services)		
Develop "comment card" experience assessment form and install at all trailheads according to the priority for trailhead amenities.	Outdoor Recreation Planner/Park Ranger	0.25/$1,000
Design and install portal signs for regulating vehicles.	Outdoor Recreation Planner/Park Ranger	1.0/$1,000
Develop maps, brochures and other printed materials.	Outdoor Recreation Planner/Park Ranger/ External Affairs	12.0/$10,000
Establish communication with commercial aircraft manufacturers and operators including Lufthansa and Estrella Sailplanes regarding wilderness ethics and overflights.	Area Manager/ Supervisory Outdoor Recreation Planner/Park Ranger	.25
Develop wilderness element of the Phoenix District's search-and-rescue (SAR) plan. Coordinate with Maricopa and Pinal counties Sheriff's offices and Phoenix District SAR Coordinator. Establish memorandum of understanding with military authorities for crash rescue and recovery.	Area Manager/ Supervisory Outdoor Recreation Planner/Park Ranger	0.5
Develop and conduct annual "wilderness awareness" training for Phoenix District personnel and multi-media/multi-curricula presentations for local schools and groups. Develop Volunteer Park Ranger cadre from the Adopt-A-Wilderness program.	Outdoor Recreation Planner/Park Ranger/ External Affairs	2.0
Develop a standardized and computerized (ORCA interface recommended) wilderness field report form to document contacts, changes in Limits of Acceptable Change indicators, authorized uses and other observations, etc., from every field patrol.	Outdoor Recreation Planner/Park Ranger	1.0/$200
Wildlife and Habitat Enhancement		
Modify Arizona Game and Fish Department wildlife water developments to diminish motorized wilderness entries to those needed for emergency repairs only in the order of: No. 707, No. 708, No. 445, No. 454, No. 554 and No. 705. Replace barbed wire exclosures with pipe rail fences. *	Arizona Game and Fish Department/ Area Manager/ LGRA Staff	1.5/$10,725 each

Table 13 -- Implementation Schedule of Special Projects: Other Special Projects (continued)		
Special projects	**Responsible parties**	**Workmonths/ other costs during life of plan**
Wildlife and Habitat Enhancement (continued)		
Install a submersible pump in the Butterfield Well. Transport and run a generator to pump the well every two years. Repair facilities as needed.	Arizona Game and Fish Department/ Area Manager/ LGRA and Operations Staffs	2.5/$5,000
Update photograph file of range and wildlife facilities and improvements.	Range Management Specialist/Park Ranger/Wildlife Biologist	0.25
Access, Easements and Acquisitions		
Close up to one mile of roads leading to NM 11 and NM 15 in the North Maricopa Mountains Wilderness.	Area Manager/ Outdoor Recreation Planner	0.25
Coordinate with the Arizona Department of Transportation to provide safety pulloffs along Interstate 8 to access the South Maricopa Mountains Wilderness.	Outdoor Recreation Planner	0.5
Acquire inholdings and easements in Sierra Estrella, North Maricopa Mountains and Table Top wildernesses as opportunities arise.	LGRA Realty and Minerals Staff/ Supervisory Outdoor Recreation Planner	3.0 when needed
Water Rights		
Inventory and quantify water sources/developments and submit notification of federal reserved water rights for each wilderness to the Arizona Department of Water Resources.	Water Rights Specialist	0.5
Monitoring		
Purchase and install an air quality and pollution monitoring device.	Supervisory Outdoor Recreation Planner/Park Ranger	0.5/$12,000
* NOTE: The upgrade of additional wildlife developments per Management Action 4.2 are not included in this implementation schedule and the overall cost of implementing special projects within this plan or any of the alternatives which appear in Part XI. It remains as a management action, however, to emphasize that the wilderness wildlife resource would benefit from the addition of the water storage and collection capacity of these adjacent developments. This work is not critical, however, to the implementation of this wilderness management plan.		

Part VIII -- Public Involvement

Public scoping meetings were held in Gila Bend, Casa Grande, Goodyear and Phoenix, Arizona from August 24 through 27, 1992 to identify issues in managing these wildernesses. Written comments regarding issues were also accepted until September 15, 1992. Meeting participation was relatively light, with a total of 41 attendees.

In addition, a work group of interested public and agency personnel assisted in developing the plan. Participants in this group were:

- Robert Bruenig, director of the Desert Botanical Gardens, Phoenix, and member of the Arizona Wilderness Coalition
- Matt McWenie, teacher and member of the Arizona Wilderness Coalition
- Robert Mings, professor of geography, Arizona State University
- Jeanne Trupiano, Arizona State Parks, natural areas program steward
- Michael DeRosier, Rainbow Valley, rancher and grazing permittee for the Beloat Allotment
- Bill Brandell, Region 4 (initial representative) local wildlife manager, Arizona Game and Fish Department
- John Hervert, Region 4 (subsequent representative) wildlife program manager, Arizona Game and Fish Department
- Barbara Heslin, Region 6 habitat manager, Arizona Game and Fish Department

Duke Fox, mayor of Gila Bend and local businessman, was asked to work on the plan but was unable to participate.

Participants met five times during the planning process to review and provide feedback and advice to the BLM planning team. In response to a special request, a public briefing was held in Gila Bend on August 26, 1993.

Examples of groups and individuals personally contacted or briefed regarding the plan included:

- the Yavapai, Gila River, Ak-Chin, Salt River Pima-Maricopa, Colorado River, Hopi and Tohono O'odham Native American communities,
- the Phoenix District Multiple Use and the Southwest Desert Grazing Advisory boards,
- grazing permittees,
- the U.S. Fish and Wildlife Service and
- the Arizona Game and Fish Department.

The draft Maricopa Complex Wilderness Management Plan was distributed for public review and comment for a 45-day period beginning on September 13, 1994. The public was notified of the availability of the draft plan through Federal Register and local media notices. A total of 425 copies of the draft plan was also mailed directly to a wide spectrum of publics, governing bodies, organizations and institutions. Recipients were those who either expressed an interest in the plan, were directly affected by its proposed actions or might enhance public awareness of the document.

Two public meetings were also held to encourage public comment: one in Gila Bend, Arizona on September 28, 1994 and the other in Phoenix on October 3, 1994. A total of 14 individuals participated in these meetings and provided comments. Ten written comments were also received during the comment period.

All public comments recorded during the meetings specific to management of these wildernesses appear in the following paragraphs along with the written comments. Comments recorded during the meetings are paraphrased. Responses to the comments, as well as an explanation of any changes to the draft plan resulting from the comments, are provided as indicated.

1

Paraphrased Comments Recorded During Public Meetings at the Gila Bend Community Center on September 9, 1994 and the BLM Phoenix District Office on October 3, 1994

1-1 Don't agree with the exclusion of motorized vehicles which came with designation. It discriminates against certain family members and therefore does not allow traditional family activities. The existing vehicle ways should have been excluded from the wilderness and preserved as motorized/mechanized corridors.

1-2 The draft plan states that only two low-level helicopter flights are conducted annually by the Arizona Game and Fish Department over the North and South Maricopa mountains and Table Top wildernesses. This is incorrect. The Department conducts more of these flights during the summer months when needed to check catchment water levels.

1-3 The document should be updated to reflect the latest population estimates for bighorn sheep within the herd areas encompassing these wildernesses.

1-4 Opposed to administrative closures of cherrystems proposed under Management Action 1.2. Too many roads which were used customarily by local residents of Gila Bend have been closed due to wilderness designation. Additional vehicle access routes should not be closed or shortened.

1-5 Prohibiting campfires, as proposed in Management Action 1.10, is perhaps too drastic a measure. It is not justified considering the current lack of fire rings and campsites in the areas. Such a proposal restricts wilderness use.

1-6 Concerned that the BLM would apply the "Additional Actions, if Required" under objectives 1, 2 and 4 of the draft plan, in the most restrictive way. For example, the BLM would close or limit areas in response to unacceptable surface disturbance. The BLM should refer visitors elsewhere, rather than restrict the use of a trail or area.

1-7 Trails, as they currently exist, are adequate to accommodate visitor use. The BLM should not refine or reroute them as proposed under management actions 2.1, 2.3 and 4.9.

Concerned that the re-development/maintenance of the Quartz Peak Trail, as proposed under management actions 2.1 and 2.3, will increase human visitation near Butterfly Tank and will negatively affect the bighorn sheep using the area.

1-8 Visitor use of the Quartz Peak Trail can be properly managed to accommodate the bighorn sheep.

1-9 To reduce impacts to wildlife, pets should not be allowed on the Quartz Peak Trail.

1-10 Large-scale topographic maps of the wildernesses would be useful, if available.

1-11 Maintaining solitude should not be a reason for restricting the use of all or part of a wilderness as stated in Management Action 2.6.

1-12 Actions associated with wildlife management, e.g., management actions 4.5, 4.6 and 4.10, do not appear consistent with maintaining natural conditions within the wilderness.

1-13 Clarify, on maps, how near the proposed trail bypasses, proposed under Management Action 4.9,

1

1-13 are to each associated wildlife catchment.

The criteria for evaluating the construction of new wildlife water developments, proposed in Management Action 4.10, are adequate. However, if the Arizona Game and Fish Department feels that the additional catchments presented under Alternative B of the Environmental Assessment are needed to preserve herd viability, the Arizona Desert Bighorn Sheep Society favors Alternative B, excluding the trail developments also proposed in that alternative.

1-14 Regarding Management Action 4.10, no new water catchments should be constructed in the wilderness unless bighorn sheep herds are suffering.

Attending the public meetings were:

Ronald G. Martin, Gila Bend
Tom Fitzgerald, Gila Bend
Bob Schumacher, Ajo, Cabeza Prieta National Wildlife Refuge
Steve Holt, Gila Bend
Gary Miller, Buckeye
Tony R. Davis, Gila Bend
Ron Henry, Gila Bend
David Miller, Gila Bend
Richard Stuart, Gila Bend
Pete Gonzales, Gila Bend
Dan Urquidez, Jr., Gila Bend, Arizona Game and Fish Department
Warren Leek, Scottsdale, Arizona Desert Bighorn Sheep Society
Joe Machac, Phoenix, Arizona Desert Bighorn Sheep Society
Jim Vaaler, Phoenix, Sierra Club

2

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October 3rd, 1994

Jim Vaaler
4644 E. Montecito
Phoenix, AZ 85018

Bureau of Land Management
Lower Gila Resource Area
Attention: John Jamrog
2015 West Deer Valley Road
Phoenix, Arizona 85027

RE: Draft wilderness plan for Sierra Estrella, North Maricopa, South Maricopa, and Table Top Wilderness areas.

John Jamrog:

2-1 Building any new Desert Bighorn Sheep water catchments in the Sierra Estrella Wilderness Area will have the detrimental effect of concentrating Desert Bighorn Sheep activity in one small area of this mountain range. In order to guarantee a viable and vigorous herd of Desert Bighorn Sheep over the entire mountain range, water catchments need to be placed on Indian lands as well. Efforts need to be made to open channels of communication with tribal governing bodies to see what can be done to benefit the Desert Bighorn Sheep on the Indian lands that are adjacent to the Sierra Estrella Wilderness Area. If this can be accomplished the "conflict" between hikers and Bighorns would be greatly reduced.

Sincerely,

Jim Vaaler

c.c. Don Steuter

3

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UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ARIZONA ECOLOGICAL SERVICES STATE OFFICE
3616 West Thomas Road, Suite 6
Phoenix, Arizona 85019

Telephone: (602) 379-4720 FAX: (602) 379-6629

October 4, 1994

In Reply Refer To:
AESO/TE
2-21-92-I-571

MEMORANDUM

TO: Area Manager, Lower Gila Resource Area, Bureau of Land Management, Phoenix, Arizona

FROM: State Supervisor

SUBJECT: Maricopa Complex Wilderness Management Plan and Environmental Assessment

This memorandum is in response to your August 29, 1994, request for concurrence with your finding of no affect to the federally endangered lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*) and Nichol's Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*) regarding the Maricopa Complex Wilderness Management Plan. The draft Wilderness Management Plan and Environmental Assessment (EA) includes four wildernesses in the Lower Gila Resource Area: Sierra Estrella Wilderness, North Maricopa Mountains Wilderness, South Maricopa Mountains Wilderness, and the Table Top Wilderness. We appreciate the opportunity to review the draft document and we offer the following comments.

In general, the draft Maricopa Complex Wilderness Management Plan and EA was well written and informative. Because these areas are fairly close to metropolitan Phoenix, they offer a unique opportunity for passive recreationists to enjoy the scenic beauty and solitude of the Sonoran Desert.

After review of the Wilderness Plan and EA and our most current information, the Fish and Wildlife Service (Service) concurs with your finding of no affect to the lesser long-nosed bat and Nichol's Turk's head cactus. We recommend that any ground disturbing activities be planned in such a manner to prevent removal of any of the species of cacti (i.e., saguaro and agave) used as forage by the lesser long-nosed bat. Also, if any revegetation is necessary on unauthorized trails, we recommend using native species of vegetation.

3-1

3

As stated in the draft Management Plan and EA, all four wilderness areas contain desert tortoise habitat. The desert tortoise (Sonoran population) (*Gopherus agassizii*), a category 2 candidate for listing, may be present in all four wilderness areas. The Service recommends that surveys for desert tortoise be conducted in areas to be effected by any type of ground disturbing activities. If desert tortoises are found, project areas should be adjusted, if possible, to avoid adverse effects to desert tortoises, their burrows, and other habitat components. If adverse effects cannot be avoided, the Service recommends that affected animals be temporarily relocated to adjacent, undisturbed habitat. Any handling or relocation of desert tortoises should be coordinated with and approved by the Arizona Game and Fish Department, including obtaining any necessary permits. The Service also recommends that all on-site workers be informed that desert tortoises may occur in the area and that capture of desert tortoises is prohibited by law.

3-2

We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. In future communications on this project, please refer to consultation number 2-21-92-I-571. If we may be of further assistance, please contact Brenda Andrews or Tom Gatz.

Sincerely,

Kathe A. Kay
for Sam F. Spiller
State Supervisor

cc: Director, Arizona Game and Fish Department, Phoenix, Arizona

4

SIERRA CLUB

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Grand Canyon Chapter · Arizona

PALO VERDE GROUP

October 4th, 1994

Jim Vaaler
4644 E. Montecito
Phoenix, AZ 85018

Bureau of Land Management
Lower Gila Resource Area
Attention: John Jamrog
2015 West Deer Valley Road
Phoenix, Arizona 85027

RE: Draft wilderness plan for Sierra Estrella, North Maricopa, South Maricopa, and Table Top Wilderness areas.

John Jamrog:

It was stated by the BLM moderator at the October 3rd meeting that no new grazing structures would be permitted in wilderness areas, not because wilderness values would be adversely effected, but because all four of these wilderness areas were considered to be critical habitat for the Desert Tortoise. This is all well and good and I am certainly glad to see the Desert Tortoise getting some respect. However I do believe wilderness designation in and of itself should be enough of a reason to stop the placement of NEW grazing structures in our wilderness areas. New grazing structures do not improve the wilderness resource and will lead to a general degradation of the wilderness resource and a concurrent degradation of the experience that is available therein. It has become fashionable among some public land management agencies to pass off the building of new grazing improvements as also benefitting wildlife.

4-1

4

However we in the Sierra Club just can't make that quantum leap in bad logic. We see cows for what they are: A threat to wildlife and a threat to wilderness.

Sincerely,

Jim Vaaler

c.c. Don Steuter

5

COPYS SENT TO ALL AZ. U.S. SENATORS + REPRESENTATIVES

10/6/94

FOR THE RECORD

JOHN JAMROG,
MARICOPA COMPLEX WILDERNESS MGT. PLAN
EA AZ-026-94-20

JOHN - I WOULD GO FOR ALT. D – NO ACTION
OUR GREAT COUNTRY IS IN DEBT OVER 4 TRILLION
DOLLARS + GOING HIGHER EVERY MINUTE. HOW COULD
YOU PROPOSE ANY OF THE OTHER ALTERNATIVES?
ALT A PROPOSED - COST EST $163,000.00 OR
WORK UP ALT B AT EST $255000.00,
WE THE TAXPAYERS HAVE TO FOOT THESE BILLS.

ALSO YOU KNOW MY BELEIFS THAT YOU ARE
DISCRIMATING AGAINST THE HANDICAPPED -
THE SENIORS WHO CANT WALK DISTANSES – FAMILYS
WITH CHILDRERN BY BLOCKING OFF OLD ROADS
5–1 BEFORE THE 1976 LAW THAT SAYS YOU CANT.
FOREST SERVICE IS DOING SAME THING PRESCOTT
NAT. FOREST HAS BLOCKED APPROX. 663 MI ON THIS
FOREST ALONE.
YOU SHOULD CHERRY STEM ALL OLD ROADS +
LEAVE ROOM TO CAMP ALONG THESE ROADS.
THIS WOULD BRING REVENUE TO STATE + FED. FROM
ALL TAXES PAID – GAS - SALES - HUNT LIC - SO MUCH MORE
THAN THE BACKPACKERS THAT YOU CATER TO.
THEN ALL PEOPLES COULD ENJOY THE WILDERNESS.
RANCHERS COULD MAINTAIN THEIR WATERS FOR GAME
5–2 + LIVESTOCK.

FRED J. TOWNE Fred J Towne (AZ. NATIVES

HC 68 BOX 95
KIRKLAND, AZ 86332

MEMBER:
YAVAPAI PROPERTY RIGHTS COALITION
PEOPLE FOR THE WEST
WEAVER MINING DIST.
YAVAPAI CATTLE GROWERS

[illegible] AZ 749 [illegible]
HC 68 BOX 95
Kirkland, AZ 86332
Phone 602-427-3248

6

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ARIZONA DESERT BIGHORN SHEEP SOCIETY, INC.

P.O. Drawer 7545 • Phoenix, Arizona 85011

(602) 912-5300 • FAX (602) 957-4828

October 27, 1994

Mr. John Jamrog
Lower Gila Resource Area
Bureau of Land Management
2015 W. Deer Valley Road
Phoenix, AZ 85027

Re: Draft Maricopa Complex Wilderness Management Plan and Environmental Assessment (EA AZ-026-94-20)

Dear Mr. Jamrog:

The Arizona Desert Bighorn Sheep Society, Inc. (ADBSS) would like to comment on the above referenced document. Since all four of the wilderness areas addressed in the draft plan contain desert bighorn sheep and bighorn sheep habitat, we are keenly interested in the management actions proposed. We will comment on those management actions which we feel pertain to desert bighorn sheep species and habitat management. We will address the management actions in the order they appear in the draft plan.

1.1 and 1.4

These actions are related. The theory is that increasing storage and collection capacity of the wildlife developments will reduce the need for a truck to periodically haul water to these catchments. This is intended to reduce authorized and discourage unauthorized travel. The BLM's hope, according to the rationale in 1.4, is to "eventually eliminate the need for motorized ground transport altogether." This in turn would facilitate reclamation of these routes to a more natural state.

6-1 While the intent of increasing storage and collection capacity of the wildlife waters is admirable, ADBSS cautions that because these catchments are located in the Sonoran desert, and because the desert is subject to periodic droughts, the need to haul water by motorized vehicles will never be eliminated entirely regardless of the modifications made. We suggest the language of the rationale in 1.4 be amended by deleting the words "and eventually eliminate the need for motorized ground transport altogether."

6

1.6

We are pleased to see pursuit by BLM and Arizona Game and Fish Department (AGFD) employees of suspects in serious game violations provided for in future wilderness management. We support this management action as written.

Objective 1 Monitoring

We are pleased to see any decisions to end access to a modified catchment made jointly by the BLM and AGFD. We urge you to accept the fact that drought situations will never totally eliminate the need for water hauling to some catchments.

2.1

6-2 ADBSS is concerned about the negative impact construction of the Quartz Peak Trail would have on desert bighorn sheep in the Sierra Estrella Mountains. This trail may be justified from the standpoint of visitor use, but cannot be justified due to its potential for disrupting desert bighorn sheep activity in the vicinity of Butterfly Tank. We do not support the construction of the Quartz Peak Trail and suggest it be deleted from this management action.

3.5

6-3 ADBSS requests chain saws be allowed for construction and maintenance of wildlife developments on an as needed basis if this implement meets the minimum tool criteria.

4.1

6-4 ADBSS is pleased to see allowance made for the use of mechanized transport and mechanized/motorized equipment to modify six wildlife water catchments. Readers are directed to see "Description of Proposed Action" in Part XI for a detailed description of expected activities. The description is actually found in Part X of the Environmental Assessment on page 69. Part XI is appendices.

6-5 In the description of the Proposed Action on page 69 there is a list of eight items intended for use in the modification of six apron style catchments. We approve of all the items on the list, but request the addition of the *Pionjar*, which is a gasoline powered drill. This tool has a variety of uses and is an important addition to the list. We also request this complete list be added to the text of Management Action 4.1. This will augment backhoes, helicopters and pickup trucks, which are the only items currently listed under this management action.

6

Page 3

4.3

This Management Action is similar to 1.4 and 4.1 and contains components of both. We reiterate we are pleased to see the use of trucks and motorized/mechanized equipment to haul water and repair existing wildlife waters, respectively. ADBSS is concerned, however, that the intent of this Management Action appears to be eliminating future access for water hauling to the six catchments listed in Table 2 once they are modified. Even design modification will not eventually eliminate the need for motorized ground transport altogether in drought situations. Be realistic and allow for water hauling to the redesigned catchments as needed to protect the wildlife resources of these wilderness areas.

6-6

ADBSS is grateful for the acknowledgement of helicopters, backhoes and pickup trucks as the appropriate type of equipment for repair work on catchments. We request the specific list of equipment, with the addition of the *Pionjar*, from page 69 of the Proposed Action - Part X be included in 4.3.

6-7

4.4

ADBSS is pleased to see helicopters acknowledged for use in checking, maintaining and hauling water to Butterfly and Montezuma Tanks. We support this management action as written.

4.6

ADBSS is pleased to see helicopter and fixed wing aircraft allowed for wildlife inventories in all four wildernesses. We support this management action as written.

4.7

ADBSS is pleased to see replacement of existing four strand barbed wire fence around catchments with pipe rail fences. We support this management action as written.

4.9

ADBSS agrees with the concept of reducing potentially unwanted or inadvertent interactions between visitors and wildlife using catchments 445 and 454. We are not supportive of the construction of new trail segments to accomplish this management action.

6-8

6

Page 4

4.10

ADBSS is pleased to see the BLM acknowledge its joint memorandum of understanding with the AGFD. We support this management action as being in keeping with the intent of Congress when it passed the Arizona Desert Wilderness Act of 1990 and Appendix B of H.R. 2570.

Objective 4 Monitoring

ADBSS does not feel impacts to wildlife from visitor use along established trails monitored through information received from the trailhead comment cards is an accurate reflection of impact to wildlife. Hikers may not have sufficient background and training in animal behavior and wildlife biology to know what actions they observe in wildlife indicate an adverse response. We suggest you delete this methodology from this section. We feel strongly any proposed visitor use restrictions be assessed by credible wildlife professionals. The yearly BLM/AGFD coordination meeting can provide the forum for this discussion if needed. Solid justification is needed to support any restrictions.

6-9

Other than our concerns over the proposed construction of new trails in wilderness areas which will negatively impact desert bighorn sheep, ADBSS supports Alternative B. The feature of this alternative which we find especially appealing is the development of new wildlife waters.

We congratulate the BLM on this draft plan. It displays a complete reevaluation of your attitudes toward wildlife management from the very first draft we reviewed. In this document you finally acknowledge the true intent of Congress in Section 101(e) and Section 101(h) of the Arizona Desert Wilderness Act of 1990 and Appendix B of the Report of the Committee on Interior and Insular Affairs which accompanies H.R. 2570 of the One Hundred First Congress (H. Rept. 101-405). We appreciate your willingness to address wildlife management issues in a new light. This attitude should carry over to future wilderness management plans developed in the Lower Gila Resource Area.

Thank you for the opportunity to comment on this draft plan. Please keep us advised of other plans which impact desert bighorn sheep and their habitat.

Sincerely,

Richard Robles

Richard Robles, President
Arizona Desert Bighorn Sheep Society, Inc.

7

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Elizabeth B. Wirt
2103 E. 8th Street
Tucson, Arizona 85719

Nov 2, 1994

Bureau of Land Management
Lower Gila Resource Area
Attention: John Jamrog
2015 West Deer Valley Road
Phoenix, Arizona 85027

Dear BLM,

This letter is a voice of opinion about the Maricopa Complex Wilderness Management Plan. I enthusiastically support alternative C -naturalness.

I am a graduate student in the ecology department at the University of Arizona. I am currently writing my Master's thesis on "The population of desert tortoises in the Maricopa Mountains, Maricopa Co., Arizona". I started in 1987 by conducting a 60 day census of desert tortoises in the Maricopas for the BLM. Since then, I have continued to make numerous visits every year to continue my study of desert tortoises in the Maricopas. I have taken a special interest in observing and recording the flora and fauna, geology, topography, climate, historical artifacts, and local politics of the Maricopas. I am intimately acquainted with the Maricopas and the surrounding valleys and communities.

The following is an ecological and biological overview of the Maricopa Mountains area which also includes the Rainbow Valley and the community of Mobile, Arizona. The following sections following address desert tortoises, cattle grazing, and recreation in the Maricopas. Comments are based on my ecological training and my own wilderness experiences in the Maricopa Mountains.

Biota

The Maricopas and surrounding valleys are an ecological treasure chest. The area is a uniquely complex transitional zone with very high diversity despite low elevation stature. To the west of the Maricopas the Lower Colorado River Valley Subdivision dominates as the elevation gradually drops towards Yuma and is more influenced by winter rainfall patterns. To the east the Arizona Upland Subdivision dominates, influenced by summer monsoonal rainfall. These two biotas are distingished by a steep precipitation gradient with high varience that is reflected by the vegetation communities.

There are three zones of flora and fauna that come together in the Maricopas. The first is a finger of southern species that extends from Mexico through Organ Pipe Cactus National Monument to the north. The Maricopas are also the meeting zone for east and west species distributions. Since the Maricopas form the extreme east and west edge, in some years the summer rains never get far enough to the west, or the winter rains never get far

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enough to the east. In 1980's El Nino years the Maricopas may have got high precipitation both seasons. Biologically the result is that occasionally the Maricopas are lush and flush with vegetation and reproduction, then the exact opposite, dry and dead will dominate for several years. The combination of shifting weather patterns and three distributional zones all meeting in the Maricopa mountains area means this is where organisms can meet, or can not meet and possibly interbreed. The Maricopas are uniquely ideal for ecological study because the harshness of the area eliminates many compounding factors present in more mesic environments.

The Valley

The Rainbow Valley contributes enormously to the wilderness value of Sierra Estrella and North Maricopa areas. The valley is presently mostly undeveloped. A large swath of BLM land cuts across the valley in a south west line from the Sierra Estrella through Sierra Espanto to the North Maricopas. This swath is undisturbed valley floor. This is an excellent wildlife corridor between the two wildernesses. Maintaining open land for wildlife travel is critical for long term genetic viability of wilderness areas or they face genetic isolation and bottlenecks similar to island populations. The BLM should consider maintaining existing wildlife corridors between wilderness areas in order to preserve as much genetic variation as possible.

Unfortunately, Phoenix seems to have it's eye on the Rainbow Valley as the next industrial zone area. The quality of the Sierra Estrella and Maricopa wildernesses will be an enormous compromise if much of the valley becomes industrially developed. Instead of looking out and seeing the other wilderness across an undisturbed valley, you will see smoke stacks, oil tanks, an oversized airport and enormous garbage dumps. This will greatly alter the wilderness experience (and the wilderness). Wildernesses are being created so that the same quality wilderness experience you have now will be available in the future. The BLM must protect their wilderness areas by being heavily involved in the planning and development of the surrounding valleys. This is where the management efforts must be concentrated. The Rainbow and Mobile Valleys must not be the next industrial zone for Phoenix undesirables. An oil refinery, toxic waste dump turned municipal dump and a private oversized airport are not good neighbors for two wilderness areas. These wilderness areas are being reserved now as insurance for the future, foresight must also be used now to protect them from careless urban sprawl.

7-1

Desert Tortoises

Desert tortoises in the Maricopas have suffered heavy mortality in recent years. Population recovery is uncertain. Young desert tortoises are documented to have heavy mortality due to ravens in the Eastern Mohave Desert. The presence of trails, garbage cans, hikers, campers, dogs, wildlife water catchments,

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7-2 and cows will provide opportunities for ravens to find food and water and increase their numbers in the Maricopa Wilderness areas. For the desert tortoise, the immature or juvenile stage is the most vulnerable and therefore the numbers of tortoises that survive naturally are very low. In order for the Maricopa population to recover, lots of juveniles must survive, each one is critical. Any tortoise losses due to accidents by dogs,

7-3 people, ravens or any other human related means could result in a major setback to the recovery of the Maricopa desert tortoise population or even local extirpation. Therefore, the only alternative for the desert tortoises in the Maricopas is C-naturalness. This alternative will remove water catchments and

7-4 not encourage visitor use by means of trails with garbage cans and parking lots.

Grazing

The most direct impact that current management activities in

7-5 the Maricopas have on desert tortoises is cattle grazing. Cattle effect tortoises by directly competing for the same plants to eat and by soil compaction. The areas of primary concern are the bases of the slopes. In the Maricopas this is where the greatest overlap of tortoises and cows occurs. This is an extremely important area for tortoises. Tortoises spend most of their lives underground in burrows. These are primarily constructed under large rocks for protection from the natural elements and predators. Desert tortoises also dig burrows in developed soils. Soil development is greater at the base of a slope than on the sides. Plants generally grow better in developed soils than in rocky soils. Tortoises eat grasses and flowering plants. Tortoises bury their eggs in soil and soil burrows maintain a higher relative humidity than rock burrows. New data suggests that desert tortoises rely on soil burrows during the hottest, driest months more heavily than previously thought. Cattle

7-6 compact soil which can lead to erosion. Soil loss or soil compaction are bad for desert tortoises.

Fence lines necessary for maintaining cows inside grazing

7-7 allotments are bad for desert tortoises. Fence lines are generally put up across narrow gaps between steep ridges. Cattle are herding animals and tend to group up together at a fence line. A group of ten cattle will, in a matter of days, trample and degrade the soil and vegetation in a narrow gap at the fence line. These gaps are also natural cross over areas between mountainous areas for tortoises. Narrow gaps provide crossover places for gene flow between tortoise populations on different mountain ridges. Gene flow enhances demographic stability which is good, especially for small struggling populations like the Maricopa tortoises. Unless there is water or fences cattle do not generally get stuck in one place very long. They keep moving which means they spread their presence over a larger area rather than concentrating it. Removing gap fence lines is an excellent

7-8 idea for wilderness areas since cattle will be less likely to trammel areas sensitive for tortoises.

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Recreation and Wilderness

Wilderness is a special term reserved for the wildest and

7-9 most pristine the region has to offer. It does not fall in the category of recreational use and wildlife management for big game. By using wilderness in this context the term is degraded, the wilderness is tamed, it is not as wild any more, it has trails.

Trails attract hikers. Most people will not drive two hours

7-10 from Phoenix to walk up a wash or bushwack around the desert, but they will drive two hours to hike a "wilderness trail". Trails take away the responsibility of the hiker to know where he/she is going and give a sense of security. They think that they won't get lost and perish in the wilderness if they stay on a trail and that the trail must lead to some great vista that will reward their efforts. The hiker is somehow guaranteed a wilderness experience on the trail. Trails make the wilderness experience convenient and prepackaged. I don't think wilderness needs to be

7-11 made convenient or needs the kind of person that wants an organized wilderness. They can go to a National Park. Trails restrict the freedom of the wilderness experience; if there is one in the area most people go out of their way to get to it and then feel obliged to use it and "stay on the trail". Please do not build or improve trails in the Maricopa Wilderness Complex.

Management Zones

I think the BLM should approach wilderness management like

7-12 the concentric zones concept. The center core or the wilderness areas which have the least amount of access should be left as pristine as possible with as little human influence as possible. The next area around the core, the "regular" BLM lands is where the great management ideas such as wildlife improvement plans and hiking trails listed in alternatives A and B in the Maricopa Complex Wilderness Plan should be implemented.

In the North Maricopas, the Boy Scouts use the Butterfield Pass every year, and the area south of the pass is used by off road vehicle recreationists in the winter. This area was therefore not included in the wilderness area however, it should not be a sacrifice zone because it should be managed so it does

7-13 not become further degraded. These are appropriate areas to develop trail heads with parking lots and raven-proof garbage cans and to manage wildlife water catchments and improve conditions for big game. Develop the Butterfield Pass as a historical route used by a Mormon Battalion and a stage route, reconstruct the original route between Mobile and Gila Bend and allow commercial outfits to use horses through the pass as a winter horse packing trip or a replica stage coach ride as a historical tourist activity. Communicate with the groups that currently use the area and manage the Boy Scouts and the ORV folks with education, and alternatives that are not destructive to the area.

Interagency cooperation is the trend these days. Possibly

7-14 the BLM could look ahead and start planning with the city of Phoenix to create an off road vehicle driving coarse and shooting range with camping and restroom facilities at the dump site when it is full. Maybe the city managers would agree to only dump "safe garbage" in the later years when the dump is getting full in order to assist the project. This would provide an alternative for the ORV folks and manage the wilderness by keeping them in a place where it would be ok to rip up the road, and help the Mobile folks with long term jobs and income that wouldn't further degrade the rural lifestyle that has been permanently altered by the paved highway.

Issues of concern to me that affect the North Maricopa Wilderness and are not necessarily addressed in this letter include:

7-15
* Development of the Valley
* Increased Traffic on paved road, easier access to valley higher instances of road kills, speeding, character change of slow pace previously in the valley.
* Paving of the rest of the Mobile/Gila Bend road.
* Cattle Grazing
* Off Road Vehicles
* Air Traffic at all levels, military, private, commercial.
* Hunters/Target Shooters
* Cowbirds/Feral Bees (Africanized ??) supported by wildlife water catchments
* White Fly Clouds drifting in from agricultural areas
* Rock Harvest for commercial landscaping
* Blowing trash from dump.

I am a big fan of the Maricopas. I have had so many wonderful experiences in the Maricopas that I am hopelessly in love with the place. I have seen many changes in the area over the past nine years and I am very concerned about the fate of the Maricopa Mountains area. I sincerely believe the C -naturalness alternative is the correct choice for the Maricopa Wilderness Complex. I strongly recommend the BLM to consider the other issues mentioned in this letter. I would be happy to assist the BLM with further explanations or any other requests concerning the Maricopa Wilderness Complex.

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Sincerely,

Elizabeth B. Wirt

Elizabeth B. Wirt

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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Fife Symington, Governor Edward Z. Fox, Director

Nonpoint Source Unit, 5th Floor
1-800-234-5677 (Arizona Only)
FAX (602) 207-4467
(602) 207-4535

November 4, 1994

John R. Christensen
Area Manager
Lower Gila Resource Area
Phoenix District Office
USDI-BLM
2015 West Deer Valley Road
Phoenix, Arizona 85027

Re: Maricopa Complex Wilderness Management Plan and Environmental Assessment, Your Letter 9-13-94

Dear Mr. Christensen:

The Arizona Department of Environmental Quality, Division of Water Quality, Nonpoint Source Unit (NPS), appreciates the opportunity to comment on the Maricopa Complex Wilderness Management Plan and Environmental Assessment. The Arizona Department of Environmental Quality offers the following comments:

1. The Gila River (HUC 15050100-001, 15070101-015,014) was evaluated as partial and non attaining for lead, metals, bacteria, pH and Dissolved Oxygen (DO) in the 1988 NPS Assessment Report, (see enclosed Surface Water Assessment, Middle Gila River Basin).

2. The Gila River (HUC 15050100-001, 15070101-015,014) was evaluated and monitored as partial and non attaining for lead, metals, bacteria, pH, phenolics, fecal coli and Dissolved Oxygen (DO) in the 1990 305(b) Report, (see enclosed Surface Water Assessment, Middle Gila River Basin).

3. The Gila River (HUC 15050100-001, 15070101-015) was evaluated and monitored as partial and non attaining for boron, mercury, selenium, sulfates, pH, Dissolved Oxygen (DO), Total Dissolved Solids (TDS), and turbidity in the 1991 205(j) Report, (see enclosed Surface Water Assessment, Middle Gila River Basin).

4. The Gila River (HUC 15050100-001, 15070101-015,014) was evaluated and monitored as partial and non attaining for boron, mercury, Dissolved Oxygen (DO), Total Dissolved Solids (TDS), and turbidity in the 1992 305(b) Report (see enclosed Surface Water Assessment, Middle Gila River Basin).

5. The Gila River (HUC 15050100-001, 15070101-015,014) was evaluated and monitored as partial and non attaining for arsenic, beryllium, boron, mercury, selenium, sulfates, pesticides, Dissolved Oxygen (DO), Total Dissolved Solids (TDS), and turbidity in the 1994 305(b) Report (see enclosed Surface Water Assessment, Middle Gila River Basin).

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A surface water hydrologic connection exists between the Gila River and the Maricopa Complex Wilderness Management Plan and Environmental Assessment via Gila River and unnamed washes by the tributary rule.

The Arizona Department of Environmental Quality recommends that:

8-1

1. Where applicable the Management Agency and or Owner/Operator shall over-site any construction to ensure that discharges from the watershed or to all Waters of the State/Waters of the U.S. shall meet all applicable Water Quality Standards;

2. Best Management Practices should be implemented to protect watershed condition and riparian areas, to maintain adequate vegetative cover, and to minimize the discharge of sediment, nutrients, bacteria and manure to the Gila River via the Gila River and unnamed washes or to all Waters of the State/Waters of the U.S.;

3. Best Management Practices should be implemented during and after all construction phases to protect watershed condition and riparian areas, to maintain adequate vegetative cover, and to minimize the discharge of sediment, petroleum, nutrients, bacteria and other pollutants to the Gila River via the Gila River and unnamed washes or to all Waters of the State/Waters of the U.S.;

4. Best Management Practices should be implemented to protect watershed condition and riparian areas from erosion due to prescribed burn;

5. Best Management Practices should be implemented for construction activities for mechanical equipment to minimize ground disturbance;

6. Construction activities for mechanical equipment need to minimize the amount of particulate matter (dust) generated, including incidental emissions caused by strong winds, and tracking of dirt off the construction by mechanical equipment. Regarding rules that may apply contact Mr. Joe Gibbs at (602) 207-2378 with the Arizona Department of Environmental Quality, Air Quality Planning Section;

7. A monitoring program should be implemented to evaluate the effectiveness of Best Management Practices in protecting watershed condition and Waters of the State;

8. Where applicable the Management Agency and or Owner/Operator shall demonstrate a knowledge of waste streams, permits and hazardous materials handling as well as indicate the destination of each hazardous waste being disposed off-site;

9. A Clean Water Act, Section 402, NPDES Permit is required for all ground disturbing activities which exceed 5 acres in impact. Contact Mr. Robert Wilson at (602) 207-4574 with the Arizona Department of Environmental Quality regarding assistance in applying for this federal permit;

10. A Clean Water Act, Section 404 Permit may be required for the discharge of dredged or fill material into the navigable waters. Contact Ms. Cindy Lester of the US Army Corp of Engineers at (602) 640-5385 regarding a 404 Permit application. In addition a Section 401

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8-1 Certification may be required and can be obtained from ADEQ. Contact **Mr. Jim Matt at (602) 207-4502** with the Arizona Department of Environmental Quality, Engineering Review and Permits, for assistance in obtaining certification;

8-2 11. Prescribed burns require that air quality concerns and issues be addressed. Contact **Mr. Peter Lahm at (602) 207-2356** with the Arizona Department of Environmental Quality, Evaluation Unit, regarding assistance in applying for this permit; and

8-1 12. A.A.C. R18-11-109, Surface Water Quality Standards Rules must be complied with as set forth in Section G (enclosed).

Enclosed for your information and reference, please find a copy of A.A.C. R18-11-107/108/109, Surface Water Standards Rules. The Arizona Department of Environmental Quality would appreciate receiving information on the progress of this project. Thank you for your cooperation, should you have any questions, please contact me at (602) 207-4535.

Sincerely,

Karl F. Meyer

Karl F. Meyer
Nonpoint Source Unit

Enclosures

cc: John Jamrog, USDI-BLM, Phoenix District Office
Pat Mariella, ADEQ
Larry Stephenson, ADEQ
Mike Hill, ADEQ
Kris Randall, ADEQ
Peter Jagow, ADEQ
Dan Salzler, ADEQ

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240

GAME & FISH DEPARTMENT

2221 West Greenway Road, Phoenix, Arizona 85023-4399 (602) 942-3000

November 16, 1994

Mr. John Christensen
Area Manager, Lower Gila Resource Area
Bureau of Land Management
2015 West Deer Valley Road
Phoenix, Arizona 85207

Re: Draft Maricopa Complex Wilderness Management Plan (DWMP) and Environmental Assessment (DEA)

Dear Mr. Christensen:

The Arizona Game and Fish Department (Department) has reviewed the above-referenced documents, dated September 1994, and the following comments are provided.

The Department appreciates the additional time afforded for our review of the DWMP and DEA. As you are aware, several Wilderness Management Plans within the Phoenix District are being concurrently developed, and the extra review period greatly contributed to our ability to complete a thorough evaluation of the subject documents. The DWMP and DEA are well written and have addressed many of the concerns expressed by the Department during early planning meetings with your staff. The recommendations outlined below are intended to clarify or build upon the existing information.

Draft Wilderness Management Plan

Page 11, left column, third paragraph

9-1 The last sentence states that civil aircraft are not exempt from the Federal Aviation Administration (FAA) "altitude limitation" of 2000 feet above ground level (AGL). This statement is misleading and implies that a federal regulation or law would be violated during flights under 2000 feet AGL over a Wilderness Area. Since the 2000 foot level refers to an FAA advisory, this is not the case.

Page 11, Approved Motorized/Mechanized Uses, paragraph 4

9-2 In addition to the two high-elevation catchments in the Sierra Estrella Wilderness surveyed by the Department, aircraft are also used to survey the other pertinent low-elevation catchments. Since several factors can influence the length of time water will be available, we recommend the second to last sentence be modified to

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9-2 read "When an inspection reveals a level below 16 percent of water storage capacity, **or when available water is anticipated to last less than four weeks**, water is added...".

Page 11, Approved Motorized/Mechanized Uses, paragraph 5

9-3 The Department had previously indicated that although raptor surveys are not presently being conducted in the area, they may be proposed in the future. No proposal for raptor surveys in the Sierra Estrella Wilderness is presently being considered by the Department. We recommend that the sentence concerning raptor surveys in the Sierra Estrella Wilderness be deleted.

9-4 In addition, the Bureau has no authority to "approve" low-level Department flights which do not involve landing within, or transport of materials or water to a Wilderness Area. Therefore, reference to such flights would be more appropriately discussed in the "Aircraft Overflights" section of Page 6.

Page 14, Wildlife, paragraph 1

9-5 Twenty-one desert bighorn sheep were observed during the 1994 aerial survey of the Sierra Estrella Wilderness. Survey time was abbreviated due to windy conditions, and the Department estimates the current population to range from 26 to 40 animals in this Wilderness. The bighorn sheep count in the fall of 1993 was 111 for the North and South Maricopa Mountains, with a population estimate of 200. Estimates of population may vary with changes in survey effort or variation in environmental conditions over time. Population dynamics are very complex, and numbers may fluctuate from year to year. The Department recommends that this paragraph be edited to reflect the updated information from surveys, and that a statement concerning population variability be added to the text.

Page 14, Wildlife, paragraph 3

9-6 The last sentence states that a mule deer catchment has been proposed for the Sierra Estrella Wilderness. The Department believes that a potential site for such a catchment had been identified some time ago, however, no formal proposal to construct the catchment has been developed.

Page 27, 1.1

9-7 The Department recommends that roads leading to redeveloped catchments not be actively rehabilitated until the success of a redevelopment is established. Any subsequent motorized entry to correct unanticipated catchment deficiencies would be counter-productive to road rehabilitation efforts. The Department recommends that two summer seasons be allowed to pass in order to determine the functioning status of modifications. In addition, and as stated on Page 47, motorized access to these catchments could potentially occur until the catchment modifications prove to be reliable, presumably after several years of monitoring.

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Page 27, 1.2

9-8 The Department is concerned that this management action could decrease public access to the subject Wilderness Areas. We recommend that any consideration of such closures be carefully weighed against the benefits and lawful uses of these roads.

Page 42, Objective 3

The third statement infers that limitations on big game populations would solve excessive foraging problems that could develop within these Wilderness Areas. Adverse impacts to plant communities have historically been the result of poor livestock grazing practices. In contrast, the Department is not aware of any documented cases of "excessive foraging" by wildlife in the subject habitat type in Arizona. The Department believes this statement is unnecessary, and is already addressed by existing policy and the Arizona Game and Fish Commission's Memorandum of Understanding (MOU) with the Bureau of Land Management (Bureau). We recommend that this statement be deleted.

9-9 **Page 42, 3.1**

As noted in our comments above, the Department believes that the likelihood of excessive key forage plant utilization by wildlife is so remote that its mention does not appear to be warranted.

Page 44, 3.4

9-10 The Department recommends that continued maintenance of fences in and along the Wilderness Areas include conversion to wildlife fence specifications whenever possible. In addition, portions of fencing identified as being in conflict with bighorn sheep movements should be considered for replacement with piperail fencing. Both of these measures should be considered as mitigation or corrective measures to compensate for human influences upon the Wilderness Areas.

Page 45, Objective 4

9-11 The second statement implies that supplemental water is only necessary during summer months and after a catchment has gone dry. Neither situation reflects the Department's requirements for effective management of wildlife resources. Although supplemental water is most commonly necessary during summer months, the need for additional water can occur during other seasons such as winter or spring, when bighorn ewes are lactating. In addition, the Department strives to ensure that supplemental water is made available <u>prior to</u> any important water development going dry.

Page 47, 4.2

9-12 Please note that redevelopment of Department catchment 444 has already occurred. This also reduces the number of catchments addressed in the first statement under Objective 4, Page 45.

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Page 48, 4.5

9-13 The DWMP does not indicate what data was used to calculate the need to refill the Butterfield Well tank once every two years. The Department recommends that provisions be included to refill the well annually, if use of the site justifies doing so.

Page 48, 4.6

9-14 Consistent with Bureau authorities regarding airspace, the Department recommends modifying the first sentence to read "**Provide for continued** Arizona Game and Fish Department low-level helicopter and fixed-wing aircraft flights...". Because several factors can influence scheduling of these survey flights, and consistent with our MOU, the Department requests that the second sentence be modified to read "**When possible,** the Area Manager will be notified...". If a scheduled survey flight is changed after notification is given to the Bureau, the Department will make every attempt to advise the Area Manager of the change.

Page 48, 4.6, Rationale

9-15 Some clarification may be necessary to explain what safety factors are being satisfied by the Department giving prior notice of survey flights.

Page 48, 4.8

9-16 The Department requests that the last sentence be modified to read "...dogs for animal damage control activities, **or hunting dogs used during open seasons.**"

Page 48, 4.9

9-17 The Department believes that avoidance of wildlife water developments alone may not be adequate justification for the construction of new trails. Although such avoidance is perceived to have a positive effect for wildlife using the development, new trails may increase visitor use of other wildlife habitat, thereby resulting in an uncertain net effect. In addition, the anticipated months of highest trail use by visitors does not coincide with the anticipated period of high use of water sources by wildlife. The Department recommends that the rational for this management action be expanded upon to avoid the perception that construction of these trails is entirely for the benefit of wildlife.

Page 48, 4.10

9-18 The Department requests that the first sentence be modified to read "**Cooperate in the management of big game** according to...". This change more accurately addresses the jurisdiction and responsibilities of the Bureau.

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Page 49, left column

9-19 The Department recommends that the second criteria for evaluating the need for new wildlife water developments be clarified. With regard to the availability and size of nearby habitat, the Department does not believe that these factors should overshadow the need for wildlife-related management actions within the subject Wilderness Areas. Although these factors are certainly to be considered, the availability of nearby habitat outside of Wilderness boundaries does not diminish the need to maintain wildlife resource values within a given Wilderness Area. This is especially critical if the long-term availability of wildlife movement corridors is in question.

Page 49, Rationale

9-20 The Department believes that the positive influence of water developments on bighorn sheep and mule deer is fairly well documented. It is not clear what "further analysis is required to assure that the impacts to wilderness are justified." As in the past, the Department notes that wildlife water sources can be developed with minimal impacts to Wilderness values. In most cases, we believe that any perceived adverse impacts are insignificant compared to the anticipated benefits currently documented in available literature.

Page 49, Monitoring, second paragraph

9-21 Survey and monitoring data collected by the Department will be inadequate to determine any cause and effect relationship between population trend and visitor use.

Draft Environmental Assessment

The Department notes that several comments provided above are pertinent to corresponding sections of the DEA. To avoid repetitive comments on our part, please cross-reference Department concerns expressed on the DWMP to appropriate portions of the DEA.

Page 68, right column, third complete paragraph

9-22 Please refer to our comments addressing Page 42, Objective 3 and 3.1.

Page 75, Alternative C

Based on existing policy and Wilderness legislation, the Department does not believe that this alternative is acceptable. We recommend

9-23 that this alternative be altered to exclude all references to wildlife water development removal, or to drop this alternative from consideration in the final version of the Environmental Assessment.

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The Department appreciates the opportunity to comment on these draft documents. We look forward to continued cooperation in the management of Arizona's wildlife resources. If you have any questions, please contact me at 789-3605.

Sincerely,

Ron Christofferson

Ron Christofferson
Project Evaluation Coordinator
Habitat Branch

RAC:rc

cc: Larry Voyles, Regional Supervisor, Region IV, Yuma
Kelly Neal, Regional Supervisor, Region VI, Mesa
Richard Rico, Chief, Development Branch
Tice Supplee, Chief, Game Branch

AGFD# 09-08-94(03)

Responses

1-1: The Wilderness Act of 1964 prohibits the use of mechanized transport, including motorized vehicles, as well as permanent or temporary roads within wilderness except in very specific instances such as emergency response and other essential administrative purposes. The boundaries of the Maricopa Complex wildernesses were established by Congress in the Arizona Desert Wilderness Act of 1990. The agency responsible for managing these areas -- in this case, the BLM -- has no authority to change these congressionally designated boundaries. Therefore, requests to open historic vehicle paths now within the wilderness boundaries cannot be entertained.

1-2: The language in the final plan reflects this periodic use of aircraft to check water levels in all catchments by the Arizona Game and Fish Department.

1-3: The final plan reflects the most current population estimates available and the nature of population variability.

1-4: Access to the wilderness would not be significantly affected by the proposed closures. A maximum of approximately one mile out of a total 19.6 miles of "cherrystemmed" access would be affected by these administrative closures. Specifically, the two-mile-long Margie's Cove West cherrystem road would be shortened by four-tenths of a mile. The 1½-mile-long Margie's Cove East cherrystem road would be shortened by one-tenth of a mile. The ¾-mile-long Brittlebush cherrystem road would be shortened by ¼ to ½ mile. The administrative closure of the Lava Flow cherrystem road will not be necessary and this proposal has been dropped from the final wilderness management plan. Ten of 13 cherrystems would not be shortened.

These closures are needed for three reasons. First, motorized vehicles can be better managed at the shortened locations than at the ends of the congressionally drawn cherrystem roads. Second, these locations provide more hardened, flat and open surfaces for parking vehicles than those found at the end of the congressionally defined road. And last, it will promote compliance with Arizona Revised Statute 17-308, which prohibits camping within ¼ mile of a game or domestic stock water source. Game catchments exist within ¼ mile of the end of the Margie's Cove East and West cherrystem roads. The Arizona Game and Fish Department will continue to have access to game catchment 444 at the Margie's Cove West trailhead area via the road just as the livestock grazing permittee will have access to Hazen Well (0690) beyond the administrative closure.

1-5: In general, these wildernesses lack the typical campsite impacts found on surrounding public lands where fire scars and fire rings are common. Discouraging wood fires is particularly important in relatively undisturbed places because fire scars tend to attract repeat use (Cole, et.al., 1987). Prohibition of campfires is a preventative measure aimed at maintaining pristine conditions in anticipation of the inevitable growth in visitor use which will occur in these areas. This prohibition was not taken lightly as it limits the freedom of the wilderness visitor. Many alternatives were considered, i.e., allowing fire pans only, burning off-site wood only, the use of charcoal only, etc. These were not chosen, however, as efforts to educate the burgeoning number of potential visitors to the use of these alternate methods would be slow, resulting in unacceptable campsite impacts over the next 10 years. Restoration efforts would not likely keep abreast of them either.

Additional reasons for prohibiting campfires and the collection of firewood in these areas are to lessen the potential for human-caused fires and to maintain ground cover for small vertebrates provided by dead and down woody plant material. Once removed, the replacement of decadent plant material is extremely delayed due to the slow growth rate of desert vegetation. As firewood material is removed from plants in the vicinity of campsites, visual impacts multiply.

1-6: With the exception of the direct methods proposed to rehabilitate unwanted surface disturbances outlined under Management Action 1.11, the non-regulatory, indirect methods listed under the Additional Actions, if Required section to meet objectives 1, 2 and 4 will be the preferred techniques used. Wording has been added to emphasize this intent. Also, it is anticipated that complete closures of trails as a result of Management Action 1.11 would be a rare occurrence.

1-7: All existing routes are currently being used by the public as hiking and riding trails. Except for the two "bypasses" and two short summit extensions, no new routes are being created. By making existing vehicle ways NM5, NM11, NM15 and TT11 (depicted on maps 3 and 5) more "trail-like," low-impact use will be promoted, thereby protecting wilderness values. Information provided at the trailheads will explain low-impact techniques to visitors and heighten environmental awareness. Currently, visitors are not provided with educational materials as they enter the wilderness.

The bypasses at the Margie's Cove East and West trailheads were proposed to direct visitors away from the existing wildlife catchments and a livestock well at these locations. This was intended to reduce the potential for instances of camping within ¼ mile of these water sources, a violation of Arizona Revised Statute 17-308. Because of several comments received regarding these bypasses, however, Management Action 4.9 has been changed in the final plan to read: "Construct segments of trail at Margie's Cove East and West trailheads to bypass wildlife catchments 454 and 444/Hazen Well, respectively, by 2001. The placement and design of these bypasses will be done in coordination with the Arizona Game and Fish Department."

The Table Top Trail has been part of the Arizona State Trails System since 1987. The Quartz Peak Trail has been used by the public for more than 10 years. Both are featured in many Arizona trail guide publications. Restoration of portions of these trails will not increase human visitation. It will, however, increase the ability to manage this use and, therefore, indirectly benefit wildlife. Access to these areas will not be improved beyond the current conditions.

Finally, attempts to maintain the wilderness experience of solitude along the trails under Management Action 2.6 may have indirect benefits to wildlife by striving to maintain the current low levels of visitor use.

1-8: The management techniques listed under the Additional Actions, if Required section to achieve Objective 4 provide many management options to respond to potentially negative bighorn sheep/visitor interaction problems which may arise.

1-9: Prohibiting dogs on the Quartz Peak Trail does not appear to be justified as the bighorn sheep population is dispersed throughout the Sierra Estrella Mountain range. Dogs were prohibited on the Table Top Trail due to its proximity to lambing areas on Table Top Mountain.

1-10: Management Action 2.5 addresses this need.

1-11: The opportunity to experience solitude is one of four specific characteristics of wilderness defined by the Wilderness Act of 1964. The BLM's National Wilderness Management Goals, in Part II of this plan, state that this opportunity will be managed so as to remain unimpaired. Management must therefore focus on maintaining the experience of solitude along with other wilderness values.

1-12: Policy for managing wildlife within wilderness is directed by the Wilderness Act, guidance from Congress and the International Association of Fish and Wildlife Agencies and a memorandum of understanding between the Arizona Game and Fish Department and the BLM. The actions proposed are all consistent with this guidance. Some of these activities may appear inconsistent with allowing natural processes to occur. However, most of the wildlife populations in these wildernesses have been monitored and managed by humans for many years prior to and since wilderness designation. Thus, it may be desirable and perhaps necessary to continue current and future intervention to maintain current wildlife species using these ecosystems. For example, up-to-date population estimates, derived by habitat census using aircraft, are crucial in determining the long-term health of certain wildlife species found in the wildernesses.

1-13: Due to map scale limitations, this could not be done accurately in the draft plan. See the response to comment 1-7 regarding the location and design of these bypass trails.

1-14: As stated in the text of the action, the health of the benefiting herd will be used to evaluate the need for new catchments under Management Action 4.10.

2-1: No new desert bighorn sheep water catchment is proposed or considered for the Sierra Estrella Wilderness in the plan. A lower elevation mule deer catchment was proposed, but due to comments to the draft plan received by the Arizona Game and Fish Department, it was deleted from the final plan. See comment 9-6.

3-1: No species of cactus used as forage by the lesser long-nosed bats will be removed during trail work or restoration. Mitigation measures addressing this concern were added to the final plan regarding any surface disturbances, e.g., catchment modification, construction and work and restoration of former vehicle ways.

3-2: These recommendations were added to the mitigation measures for the plan. In addition, information will be provided at trailheads to promote desert tortoise awareness and protection.

4-1: This concern has been addressed somewhat with the addition of Management Action 1.13. The decision does not prohibit, however, nonmechanized construction of livestock control structures such as gap fences initiated by the BLM to eliminate or lessen negative impacts from livestock grazing to wilderness and wildlife values which might arise in the future. No such impacts are anticipated, however, at this time and therefore no such projects are identified in this plan.

5-1: See response to comment 1-1.

5-2: Table 7 identifies those livestock developments which may be accessed periodically under certain conditions.

6-1: The concern that access to game catchments would be stopped prematurely or unwisely is addressed in the Monitoring section under Objective 1. It states that the decision to end access to a modified catchment will be made jointly by the Arizona Game and Fish Department and the BLM anytime during the life of this plan. Success in meeting the wildlife water needs of these areas will affect this decision. Reference to this joint decision-making process has been added to Management Actions 1.1, 1.4 and 4.3 in the final plan to make the wording more consistent.

6-2: See response to comment 1-7.

6-3: Chainsaws have been added to the list of potential mechanized equipment which might be used for maintaining or constructing wildlife developments. The list appears in the Description of the Proposed Action section of Part X of the final plan as referenced under management actions 4.1 and 4.3.

6-4: The text is corrected in the final plan.

6-5: The drill was added to the list in the proposed action description in the final plan. Since the environmental assessment is reproduced in the final and the list is referenced in management actions 4.1 and 4.3, there is no need to reproduce the list in the action. The words "and equipment" were added to the reference to clarify what appears in the proposed action description.

6-6: See response to comment 6-1.

6-7: See response to comment 6-5.

6-8: See response to comment 1-7.

6-9: Wording was modified in the Monitoring section under Objective 4 in the final plan. The modification was intended to clarify that information provided on the trailhead "comment cards" would not be the sole source of evidence used to identify causal relationships between visitor use and negative trends in wildlife populations. Reference to professional input was added. However, the information received at the trailheads should not be dismissed as it can indicate a general trend in visitor-wildlife encounters. All reasonable sources of information will be used in determining the needed changes in visitor use management of these areas.

7-1: Issues regarding actions on lands surrounding these wildernesses are not addressed in this plan (see the Issues Beyond the Scope of This Plan section). The issues, however, are being seriously considered in a planning effort of larger scope concurrently being conducted by this office. The Lower Gila Resource Area Amendment/Environmental Assessment to the Lower Gila North Management Framework Plan and the Lower Gila South Resource Management Plan addresses the need for maintaining wildlife corridors on nonwilderness public lands, for example. Impacts to wilderness resources from proposed actions on BLM lands outside of wilderness are also assessed routinely through the environmental assessment process which the BLM is required to complete by the National Environmental Policy Act of 1972.

Actions which occur on state, county, municipality or privately owned lands are not within the authority of the federal government. However, the BLM often comments on environmental

assessments of actions of other jurisdictions which may affect BLM lands or programs.

7-2: All of the activities described in this comment -- with the exception of installing garbage cans -- will occur regardless of implementation of this plan. Also, there are no plans or proposals to provide garbage cans at the trailheads. The plan specifies efforts to control and minimize impacts on the wilderness and therefore the desert tortoise. Low-impact activities will be stressed through information provided at the trailhead and other means. See also the response to comment 1-7.

7-3: Monitoring of the North Maricopa Mountains desert tortoise plot will continue as stated in the Monitoring section associated with Objective 4 of the plan. The status of the population will be evaluated regularly. Possible causal relationships between visitor use impacts and downturns in the population will be included in this evaluation. See also the response to comment 7-2.

7-4: Again, no garbage cans will be placed at the trailheads. Also, vehicle parking presently occurs along the cherrystemmed roads. The plan identifies the need to locate these areas in places where resource impacts are minimized. See also the response to comment 1-4.

7-5: Current policy described under the Issues Solved Through Policy or Administrative Action section regarding ephemeral plant foraging and Management Action 3.1 address the issue of forage competition between livestock and desert tortoise. Eight of the 13 monitoring locations shown in Table 8 are at the bases of slopes.

7-6: Although soil compaction will not be monitored directly, the standards described in the response to comment 7-5 and in Table 8 should not result in any increases in soil compaction.

7-7: Although there may be some localized impacts associated with the gap fences, at this time they also have the positive effect of discouraging cattle from drifting into approximately 40,000 acres of core wilderness and tortoise habitat. The fences also serve the important function of separating adjacent grazing allotments, thereby improving livestock management and administrative oversight.

7-8: See previous response.

7-9, 7-10 and 7-11: The Wilderness Act of 1964 provides for the use and enjoyment of these areas for, among other things, outstanding opportunities for primitive and unconfined types of recreation. See also the response to comment 1-12.

The routes proposed for trails are already used by hikers and horseback riders. For the most part, they will follow existing vehicle ways. No bushwhacking is required when hiking these routes. Also, these trails represent less than one hundredth of one percent of the total wilderness acres covered by this plan. The majority of the remaining vehicle ways within the wilderness boundary will be rehabilitated or blocked under this plan. The entire South Maricopa Mountains Wilderness will remain trailless.

7-12: Although an apparently valid approach, the presence of developments prior to wilderness designation, the existence of cherrystemmed boundaries and the language regarding "buffer zones" in the Arizona Desert Wilderness Act make it impractical. Appropriate recreational uses of public lands adjacent to the wilderness boundaries are being addressed in the planning effort referred to in the response to comment 7-1.

7-13: See response to comments 7-2 and 7-4. Presently, several initiatives are planned as well as being acted upon by the BLM to interpret the historical Butterfield Overland Trail. The BLM also works with several Boy Scout troops annually on site protection and interpretation projects. Also see Item 4 under the Issues Beyond the Scope of This Plan section.

7-14: These ideas, though good, are beyond the scope of this wilderness management plan.

7-15: The control of Valley of the Sun traffic, lifestyle, road paving, development and military overflights is beyond the scope of this plan. See responses to comments 4-1 and 7-5 regarding livestock grazing issues. Management actions 1.1 through 1.7 and 1.11 address off-road vehicle issues while Management Action 2.10 addresses commercial and private overflights. Please note, however, that the Federal Aviation Administration, not the BLM, regulates air space. Hunting and target shooting can

be safety issues; however, neither is prohibited by the Wilderness Act. If these activities become a problem, however, they will be addressed through the use of other federal authority as would illegal rock harvesting. Please refer to items 3, 6 through 9, 11 and 12 under the Issues Solved Through Policy or Administrative Action section addressing the remaining topics listed. All illegal activities reported or discovered are investigated by the BLM. Several violations which have occurred in the wildernesses have been successfully prosecuted over the years.

8-1: Recommendations 1 through 3, 5 through 10 and 12 will be followed where applicable. Also see response to 8-2 regarding recommendation 4. Please note, however, regarding recommendation 9, that the cumulative new surface disturbance arising from this plan will not exceed five acres. Further, approximately 115 acres of the estimated total 141 acres of current surface disturbance which occurred prior to wilderness designation will be restored by actions within the plan.

8-2: No prescribed or controlled burns are proposed in this plan. See Management Action 3.6.

9-1: The wording has been changed in the final plan to eliminate any potential misunderstanding.

9-2: See response to comment 1-2.

9-3: The sentence was deleted.

9-4: The reference was moved to the requested section in the final document.

9-5: See response to comment 1-3.

9-6: The sentence referencing this catchment was dropped in the final document. Note that reference to the deer catchment was also dropped from Alternative B in Part X, the environmental assessment. Map 10 and the impact analysis also reflect this change.

9-7: The wording of the explanatory text following Management Action 1.1 has been changed to make it more consistent with the wording in Management Action 4.3 and that within the Monitoring section following Objective 1. The new wording reflects that the decision to render the catchment access routes impassable will be made with the concurrence of the Arizona Game and Fish Department. The flexibility to rehabilitate these access routes at the time of catchment enhancement remains, however, if it is acceptable to the Arizona Game and Fish Department. See also the response to comment 6-1.

9-8: See response to comment 1-4.

9-9: The management action is designed to meet the objective of maintaining the present vegetative condition within the wilderness. One of the impacts to these conditions can be foraging. The foraging standards adopted will be applied to all herbivores which may remove plant material. The sign and sighting of animals within the area of the forage monitoring site will be recorded. If this evidence does not point to wildlife, it will not be necessary to work with the Arizona Game and Fish Department to reduce wildlife populations. During the planning process, it was the opinion of team members and the public that wildlife populations would perhaps exhibit self-regulating behavior or experience disease before reaching the numbers needed to exceed key forage plant use levels. However, the same individuals agreed that a forage use standard was perhaps the most appropriate method for the BLM to use to monitor the effects that wildlife might have on wilderness habitats. The wording of Objective 3 was changed to be consistent with that used in Management Action 3.1.

9-10: This issue was not identified during the planning process. However, a decision in the Lower Gila South Resource Management Plan states ". . . where existing fences in big game habitat do not meet BLM specification, they will be modified according to Bureau of Land Management Manual 1737 when they are scheduled for replacement or major maintenance." This decision is not modified by this wilderness management plan and applies to all fences within and outside of these wildernesses.

9-11: The wording of the objective has been changed to "when necessary" and is further clarified with the addition of the following sentence under management action 4.3. "Water hauling will occur whenever it is necessary to prevent a water source from going dry during critical periods, such as during the summer months or in the winter and spring when bighorn ewes are lactating."

9-12: Reference to Catchment 444 was deleted and the totals were changed.

9-13: The schedule was based on the BLM's experience with pumping the well. Records show that 15,000 gallons of water lasts about two years before requiring a refill.

9-14: The requested changes were made in the final plan.

9-15: The BLM prefers to be aware of these flights over designated wilderness so appropriate individuals can respond to any search and rescue assistance which might arise with a downed aircraft. Search and rescue activities within the wilderness may pose unique response needs.

9-16: An exception for hunting dogs was not included. Hunting dogs along the Table Top Trail pose the same potential conflict with wildlife as do dogs which accompany other hikers and equestrians. However, the wording of this decision with respect to the restraint of dogs off the Table Top trail was changed to read: "As on all public lands within the state of Arizona, dogs found in all other areas of the wildernesses, off this trail, are subject to the restraint required under Arizona State Law (Arizona Revised Statute 11-1012)."

9-17: See response to comment 1-6.

9-18: The requested changes were made in the final plan.

9-19: Although the statement was somewhat modified to improve its readability, no further clarification was deemed necessary. This is merely a factor which should be considered in combination with the others listed when evaluating the need for a new wildlife water development within these wildernesses. For example, the need for a new wildlife water development would be questionable if habitat adjacent to the wilderness along with connecting corridors was being used by a wildlife species, and the population was viable and not subject to future threats. Also, any adequate location for a new development outside of wilderness would be preferable to one within wilderness. This latter intent is made clear in the language contained in Appendix B of the Arizona Desert Wilderness Act of 1990 which states: "For the benefit of wildlife that spend only part of the year in wilderness, give first priority to locating facilities or habitat alterations outside wilderness."

9-20: The statement regarding water source effectiveness was deleted from the final wilderness management plan. See also the response to comment 9-19.

9-21: See response to comment 9-9.

9-22: See response to comment 6-9.

9-23: After review of the legislative guidance provided under appendices A and B of the Arizona Desert Wilderness Act of 1990, Alternative C was modified to eliminate the proposals to remove the six miles of grazing allotment boundary fences and the seven wildlife catchments from the wilderness. Specifically, the Act states that "if livestock grazing activities and facilities were established in an area at the time Congress determined that the area was suitable for wilderness and placed the specific area in the wilderness system, they should be allowed to continue," and regarding wildlife developments, "The administering agency and the State agency will jointly make decisions to remove existing water related improvements." Regulations regarding the National Environmental Policy Act require alternatives analyzed to be reasonable. In light of the Wilderness Act guidance, the removal of these improvements is not considered reasonable at this time. Environmental impact analysis was modified as a result of these changes.

Part IX -- List of Preparers

BLM employees who formed the core interdisciplinary team which prepared this plan include:

- John Jamrog, planning and environmental specialist,
- Richard Hanson, supervisory outdoor recreation planner,
- Dave Hoerath, wildlife biologist and
- Dave Scarbrough, wilderness park ranger.

Significant contributions were also made by the following BLM employees.

- Wendell G. Peacock, writer/editor,
- Claire Ginger, wilderness specialist, cooperative education student,
- Jim Mahoney, seasonal outdoor recreation planner,
- Lisa Patton, seasonal outdoor recreation planner,
- Jason Brander, cartographic technician and
- Tim Fudge, cartographic aide.

BLM employees who provided periodic expertise include:

- John Reid, outdoor recreation planner,
- Jack Watts, law enforcement ranger,
- Glenn Joki, fire management officer,
- Mark Schwab, geologist,
- Kyle Mohan, range conservationist,
- Jane Pike, archaeologist,
- Cheryl Blanchard, archaeologist,
- John Anderson, botanist,
- Lin Fehlmann, water rights specialist,
- Ken Mahoney, Arizona wilderness program leader,
- Jeff Jarvis, national wilderness program leader,
- Diane Barnett, cartographic aide,
- Christopher L. Horyza, natural resource specialist,
- Fareed Abouhaidar, GIS assistant,
- Dave Wilson, cartographer and
- David Konopka, writer/planner

Part X -- Environmental Assessment

Introduction

Purpose and Need

The Arizona Desert Wilderness Act of 1990 created the four wildernesses -- North Maricopa Mountains, South Maricopa Mountains, Sierra Estrella and Table Top -- that make up the Maricopa Complex. It is BLM policy to manage these areas under the guidance of a wilderness plan. This environmental assessment provides an analysis of the environmental and social impacts of the proposed action and three alternatives for responding to management issues within the Maricopa Complex. Impacts of projects such as road reclamation, trail and trailhead development and authorized mechanized uses associated with livestock and wildlife management are analyzed. Additional environmental assessments will be completed where more site-specific analyses are warranted.

The alternatives provide management direction for the Maricopa Complex wildernesses. Overall, the purpose of the proposed action alternative is to protect and preserve the wilderness values, including the natural processes and aesthetic, recreational and special features for which these wildernesses were designated.

Conformance with Land Use Plan

The proposed action and alternatives addressed in this environmental assessment are consistent with the Lower Gila South Resource Management Plan (1988).

Relationship to Statutes, Regulations or Other Plans

The Wilderness Act of 1964, Public Law 88-577, defines wilderness as "an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural condition." Under the Act, the BLM must manage wildernesses within its jurisdiction to protect wilderness values.

Wilderness preservation became one of the BLM's multiple use mandates with the signing of the Federal Land Policy and Management Act (FLPMA) into law in 1976.

The Arizona Desert Wilderness Act of 1990, Public Law 101-628, established the North Maricopa Mountains, South Maricopa Mountains, Sierra Estrella and Table Top wildernesses.

Regulations governing the management of wildernesses are found at 43 CFR 8560. BLM Manual 8560 - Management of Designated Wilderness Areas provides further guidance for wilderness management.

This environmental assessment complies with the National Environmental Policy Act of 1969 as it provides the decisionmaker with a range of alternatives for managing these four wildernesses and describes the environmental impacts of implementing each of the alternatives. A 45-day comment period is also provided for public review and input.

Where the environmental impacts of actions proposed in these alternatives have been assessed in previous environmental assessment documentation in interim range improvement maintenance plans or wildlife operations and maintenance plans, they are summarized again in this document.

The Phoenix District's Search-and-Rescue Plan is supplemented. The Lower Gila South Habitat Management Plan (1990) is amended by Alternative C in this environmental assessment. The Phoenix District's Interim Guidance for Fire Suppression in Wilderness (1991), the range improvement plans for the Sierra Estrella Wilderness (1991) and the Table Top Wilderness (1992) and the wildlife operations and maintenance plans for the North and South Maricopa mountains and Sierra Estrella wildernesses (1991) and the Table Top Wilderness (1994) are superseded by the proposed action and alternatives B and C.

Description of Proposed Action and Alternatives

Four management alternatives are presented below and summarized in Table 14. The final

decision for managing the Maricopa Complex can be made up of any one of the individual alternatives in its entirety or can consist of portions of different alternatives.

Alternative A -- Proposed Action

The alternative is the total of the 39 management actions and associated monitoring procedures outlined in the preceding pages of the draft Maricopa Complex Wilderness Management Plan. Emphasis is on providing a balance among four objectives within the Maricopa Complex: protecting natural values, providing recreational opportunities and maintaining flora and fauna that depend on the areas for their habitat. While there would be a somewhat different balance among these objectives within each of the four wildernesses, overall management of each area would allow some human activities while protecting vegetation and natural processes.

A total of 79 miles of vehicle ways will be rehabilitated or allowed to reclaim naturally; 16 miles will be converted to hiking and riding trails. Three cherrystems may be shortened to facilitate control of unauthorized vehicle travel and 17 vehicle barriers will be provided. Six existing wildlife water catchments will be modified to reduce the need for truck water hauling and, together with two others, will be maintained. A new pump will be installed at a wildlife water well and periodically pumped with a generator. Five earthen water tanks for livestock will continue to be abandoned. However, 13 livestock control fences will continue to be maintained, eight of these with the assistance of periodic mechanized transport. New livestock control facilities such as gap fences may be constructed using nonmechanized means when necessary to protect wilderness and wildlife resources. Coordination among multi-jurisdictional agencies responsible for search and rescue and law enforcement will be improved. Surface and subsurface inholdings, totalling 5,760 acres, will be acquired and easements obtained for future access to two of the four wildernesses.

Restrictions will be placed on the use of some trails, pack stock and recreational activities. Campfires, charcoal fires, woodcutting, wood gathering and other surface disturbances will be prohibited and rehabilitation of unwanted disturbances will be pursued within a year of their occurrence.

Within the Maricopa Complex, 21.6 miles of new hiking and riding trails will be maintained and seven miles of existing trail will be redefined, slightly extended and maintained. Seven trailheads will also be developed and maintained. Safety shoulders will be provided along Interstate 8 in coordination with the Arizona Department of Transportation for safer vehicle access.

The existing Quartz Peak Trail in the Sierra Estrella Wilderness will be extended .5 miles to its summit and .4 miles of former vehicle way SE 6 will be converted to trail standards. In the North Maricopa Mountains Wilderness, former vehicle ways NM 5 and NM 15 will be converted to trail standards and become part of the five-mile-long Margie's Cove Trail. Former vehicle way NM 11 will be converted to the 2.82-mile-long Brittlebush Trail. In the Table Top Wilderness, the existing Table Top Trail will be extended .2 miles to its summit and former vehicle way TT 11 will be converted to trail standards and become the 7.45-mile-long Lava Flow Trail. New trailhead facilities will be provided at the Quartz Peak, Margie's Cove (east and west), Brittlebush and Lava Flow (Cherrystem, west and south) trailheads. Existing facilities at the Table Top trailhead may be expanded.

Physical resource trail and social encounter standards will be adopted; maps and other public information provided. Commercial outfitters and guides for recreational activities, including hunting, may be permitted.

A reduction in civilian overflights will be encouraged. New grazing use standards will be established and will be maintained. Areas will be rested from livestock grazing if standards are exceeded and Arizona Game and Fish Department will be encouraged to manage wildlife if overuse from native species occurs. All wildfires will be suppressed, primarily by aircraft with nonpersistent liquid fire retardant, when needed.

After appropriate notification, water hauling and repair work on six wildlife catchments will continue until planned modifications are successfully completed. Water hauling by helicopter will continue indefinitely to two catchments in the Sierra Estrella Wilderness. Wildlife censuses and catchment water level checks using aircraft will continue. Wildlife water source exclosures will be modified from barbed wire to pipe rail and some hiker routes will be realigned to avoid two catchments. Transplants of desert bighorn sheep and aircraft telemetry following will be sanctioned and the installation of new wildlife catchments will be evaluated on a case-by-case basis.

In the short term, i.e., one to nine years, former

vehicle ways would be rehabilitated by volunteers using hand tools, wheelbarrows and/or wheeled carts. It is possible, though less likely, that the use of a ripping tooth mounted on a backhoe or tractor/dozer would be used to assist in road rehabilitation in conjunction with and concurrently with its use in modifying six wildlife catchments.

Also, in the short term, mechanized transport and motorized equipment may be used for:

- periodic major repairs of livestock and wildlife developments,
- hauling water to existing wildlife developments,
- modifying existing wildlife developments,
- surveying wildlife (big game) populations and catchment water levels and
- emergency and certain law enforcement activities.

In the long term, i.e., 10 years or more, it is expected that the modification of wildlife developments will be complete and further maintenance or water hauling to these modified catchments would be very infrequent. Water hauling by helicopter to the two unmodified catchments in the Sierra Estrella Wilderness would continue indefinitely. The periodic repair of livestock developments and the survey of wildlife populations and catchment water levels involving mechanized/ motorized equipment use would also continue. Emergency and law enforcement activities are anticipated to remain extremely infrequent and the amount of this use is not projected for impact analysis.

It is estimated that up to two incidents of motor vehicle use may be required annually for the periodic maintenance of two of the eight livestock fences accessible by former vehicle ways within the wilderness. Each incident, if needed, would involve one round trip per day over one to three days. At most, two former vehicle ways (approximately two miles) would be driven for this use each year. The use of chainsaws could be required up to three times a year for the maintenance of 13 fences in the wilderness. This use would occur for a period of one to three days per incident.

In addition, in the short term, water could be hauled by truck to six existing wildlife catchments up to 12 times annually. If needed, each incident would involve an estimated two round trips per day over six former vehicle ways (eight miles). Each incident would last a day.

Up to 15 incidents of low-level aircraft use could occur annually, two for hauling water to the high-elevation catchments in the Sierra Estrella Wilderness, four to check on catchment water levels during the summer months and the remaining nine for surveying wildlife populations in all of the areas. Each incident would last one to two days. This use would continue indefinitely.

In the short term, seven occurrences of mechanical transport would be authorized to modify seven existing wildlife developments. Modification of six apron-type catchments may entail the use of:

- a backhoe or tractor/dozer to excavate a hole and install and bury two to three new water storage tanks and short lengths of pipeline,
- a motorized cement mixer to lay a concrete footing for the new tanks and construct small water collection dams,
- a compressor to seal the tanks with a sealing compound,
- a dump truck to haul away unused excavated dirt or haul in more visually acceptable surface material,
- a portable arc welder and cutting torch to weld pipe rail fences and pipe,
- a pickup for hauling material and miscellaneous equipment,
- a gasoline-powered Poinjar rock drill,
- miscellaneous power hand tools,
- a generator to operate motorized equipment and miscellaneous hand tools and
- a chainsaw.

With regard to the seventh development, the Butterfield Well, a heavy truck with a boom or crane will be used to install a new submersible pump and a pickup will be used to haul miscellaneous materials.

Each of these modification projects would take from 14 to 60 days to complete. It is anticipated that up to three of these projects could occur a year, though not every year. Therefore, the need for this use would end within nine years.

After installation of the pump at Butterfield Well, an ATV or pickup will be used to haul a trailer-mounted generator ¾ of a mile along former vehicle way NM 9 to the well site. The generator will be operated for no more than three days; this activity would occur once every two years.

It is estimated that the use of motorized equipment of the type listed above could also be authorized once annually for maintenance of all eight existing wildlife catchments, exclusive of the Butterfield Well. Equipment would be delivered to

the six catchments accessible by ground vehicle transport in conjunction with the water hauling activities mentioned above. Following the described modifications, it is anticipated that this use will cease in the long term. However, aircraft would be used to transport heavy equipment for repair purposes to the two high-elevation catchments in the Sierra Estrella Wilderness indefinitely. These repair activities would last up to five days.

The use of mechanized transport will continue indefinitely for certain maintenance of the Butterfield Well. Specifically, this would be necessary for removal of the submersible well. This is expected to occur once every five years. The activity associated with this use of motorized equipment would last approximately three to five days per incident.

Summarizing, in the short term, mechanized ground transport would be used up to 15 times over a period of one to 26 days annually to access livestock and wildlife developments for repairs and water hauling. This use would involve access along as much as 18 miles over nine former vehicle ways yearly. Up to 15 low-level aircraft flights could occur over 14 to 17 days each year to haul water and survey wildlife and water catchments. The modification and repair of existing wildlife catchments and the repair of livestock developments could also involve up to 195 days of other motorized equipment operation within the Maricopa Complex annually. Chainsaws may be operated up to three days each year in the wildernesses.

In the long term, the use of mechanized ground transport and other motorized equipment would decrease to no more than seven occurrences lasting up to nine days annually. The 14 to 17 days of probable aircraft use each year would continue indefinitely, however.

If, after case-by-case evaluation, construction of new wildlife developments is permitted, motorized/mechanized use would be authorized for this work as well as for future maintenance of the new facilities. A more complete explanation of these activities is provided under the description of Alternative B.

Alternative B -- Visitor Use and Wildlife Enhancement Alternative

This alternative places more emphasis on recreation and wildlife than Alternative A. More facilities are added to meet recreation objectives. Within the overall Maricopa Complex, an additional 15.5 miles of trail would be provided for a total of 37 miles of trail and six more trailheads would be developed for a total of 13. Two freeway exits would be established along Interstate 8 in coordination with the Arizona Department of Transportation to facilitate access to the South Maricopa Mountains Wilderness. Unlike Alternative A, further evaluation of wildlife developments will not occur. Three new wildlife catchments would be constructed (see maps 11 through 13).

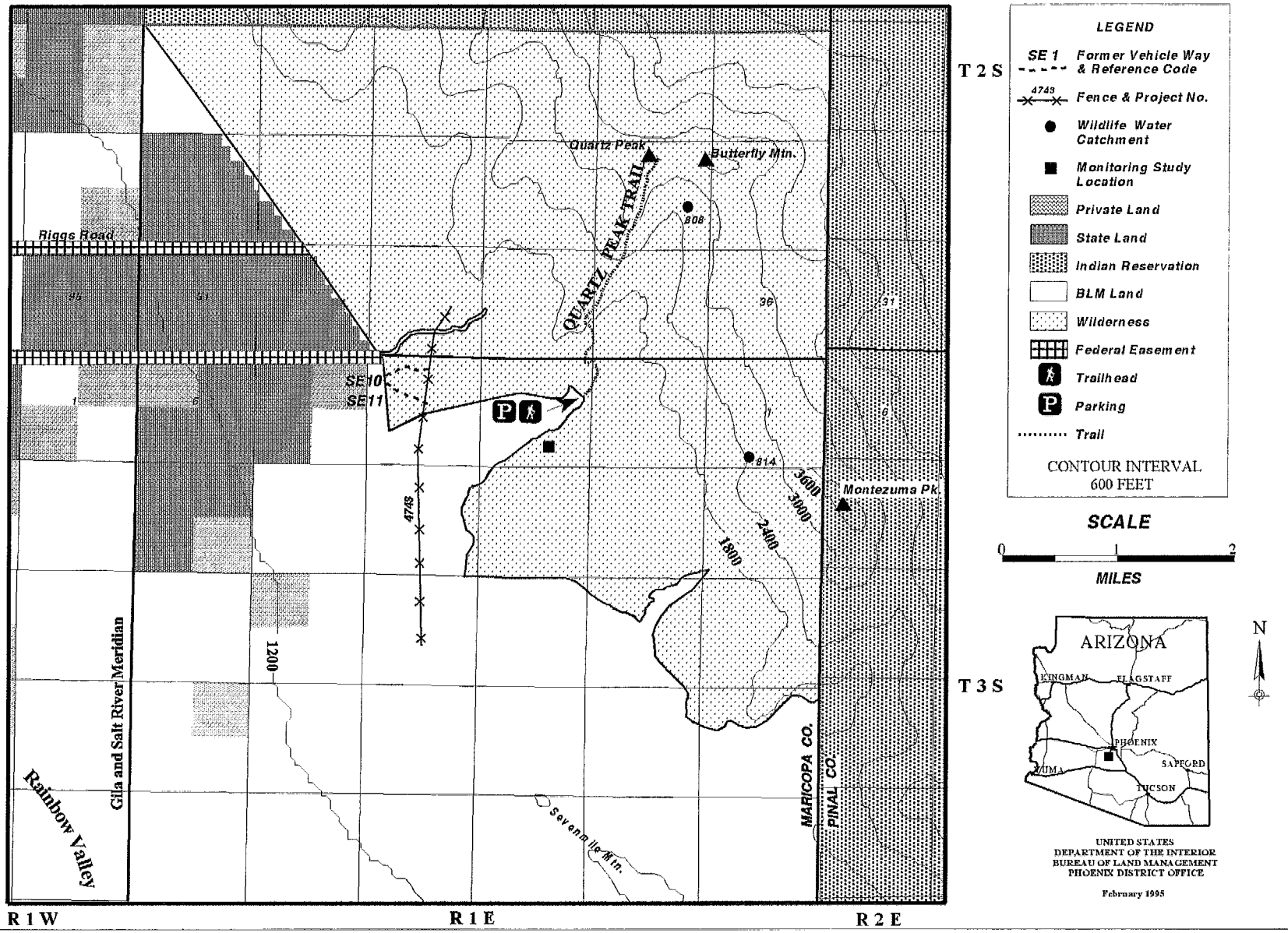
In the North Maricopa Mountains Wilderness, the routes identified as NM 16 and NM 9 would become the Sheep Mountain Trail (3.5 miles) and the Butterfield Well Trail (two miles), respectively, rather than allowed to naturally rehabilitate. Also, a trailhead would be created for each of these trails (see Map 11). In the South Maricopa Mountains Wilderness, two trails and three trailheads would be developed. The South Maricopa Loop would connect the two cherrystems, primarily using existing routes SM 3 and SM 5, identified for reclamation under Alternative A. This would create a seven-mile-long trail through the middle of the wilderness and a trailhead would be built at each end of the loop. The second trail would be the Old Mine Trail Route (one mile), identified as SM 1 and targeted for natural reclamation under Alternative A. This trail would also have a trailhead associated with it (see Map 12). In the Table Top Wilderness, the Lava Flow Trail would be extended one mile and former vehicle way TT 4 would be converted to a one-mile-long Indian Butte Trail instead of undergoing reclamation. A trailhead would also be developed (see Map 13).

Three new water developments, one each in the North Maricopa Mountains, South Maricopa Mountains and Table Top wildernesses, would be built and maintained in high-elevation bighorn sheep habitat (see maps 11 through 13). Each catchment would consist of two or three aboveground tanks and a drinker. Overall water capacity of these developments would be either 5,300 gallons or 7,450 gallons, depending on how many tanks could be placed at a particular site. All developments would be located and designed to minimize visual impacts to naturalness.

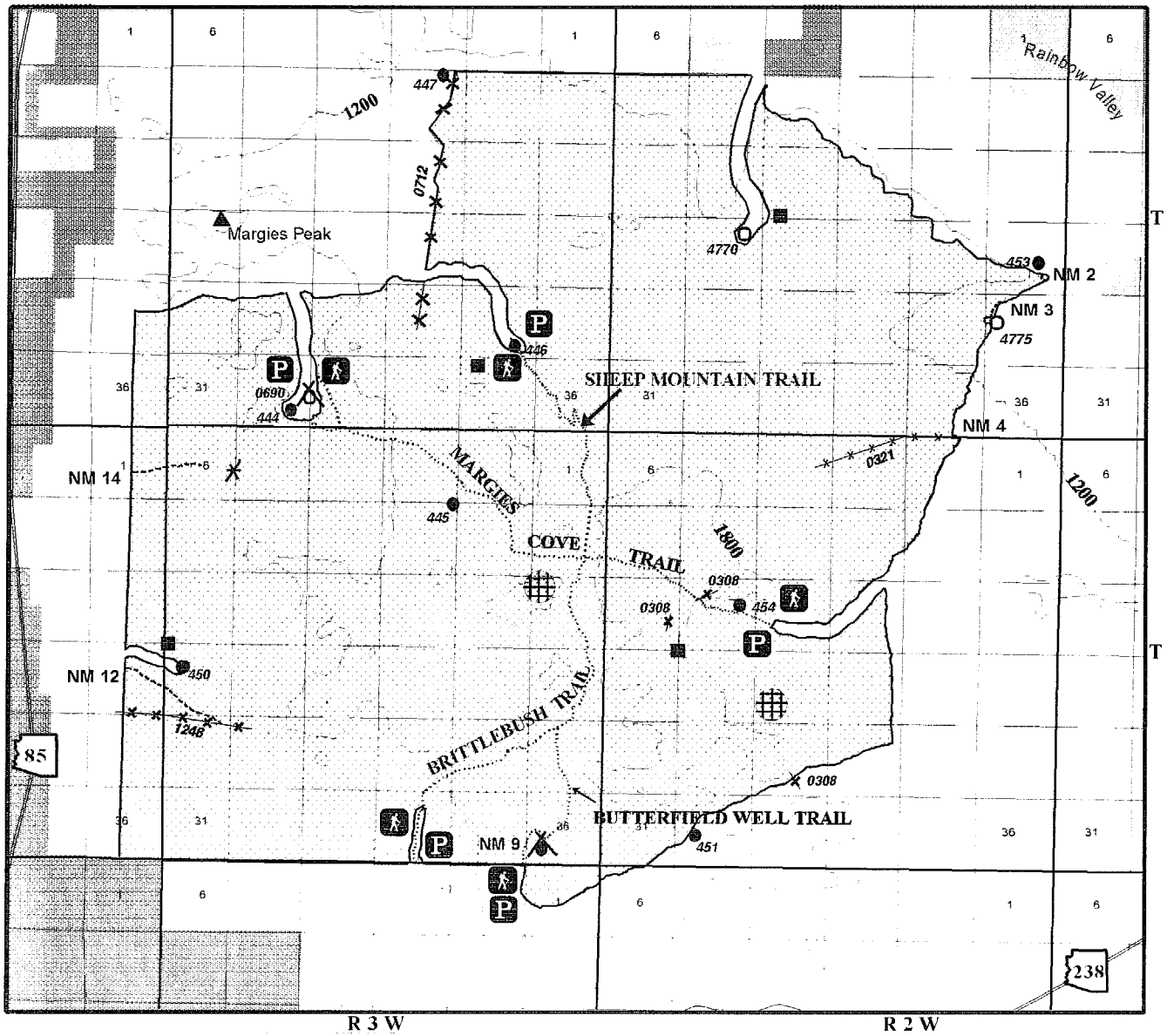
In addition to the motorized/mechanized use required under Alternative A, the construction of each new wildlife development would entail the use of:

- a helicopter,
- a motorized cement mixer,
- a compressor,

Map 10: Sierra Estrella Wilderness
Visitor Use and Wildlife Enhancement Alternative



Map 11: North Maricopa Mountains Wilderness Visitor Use and Wildlife Enhancement Alternative



LEGEND

- NM 1 — Former Vehicle Way & Reference Code
- 4749 — Fence & Project No.
- Earthen Stock Tank
- Livestock Well
- Wildlife Water Catchment
- Wildlife Well
- Monitoring Study Location
- Private Land
- State Land
- Public Land
- Wilderness
- Alternative Locations Proposed for New Catchment
- Trailhead
- Parking
- Trail

CONTOUR INTERVAL
600 FEET

SCALE
0 1 2 3
MILES

N

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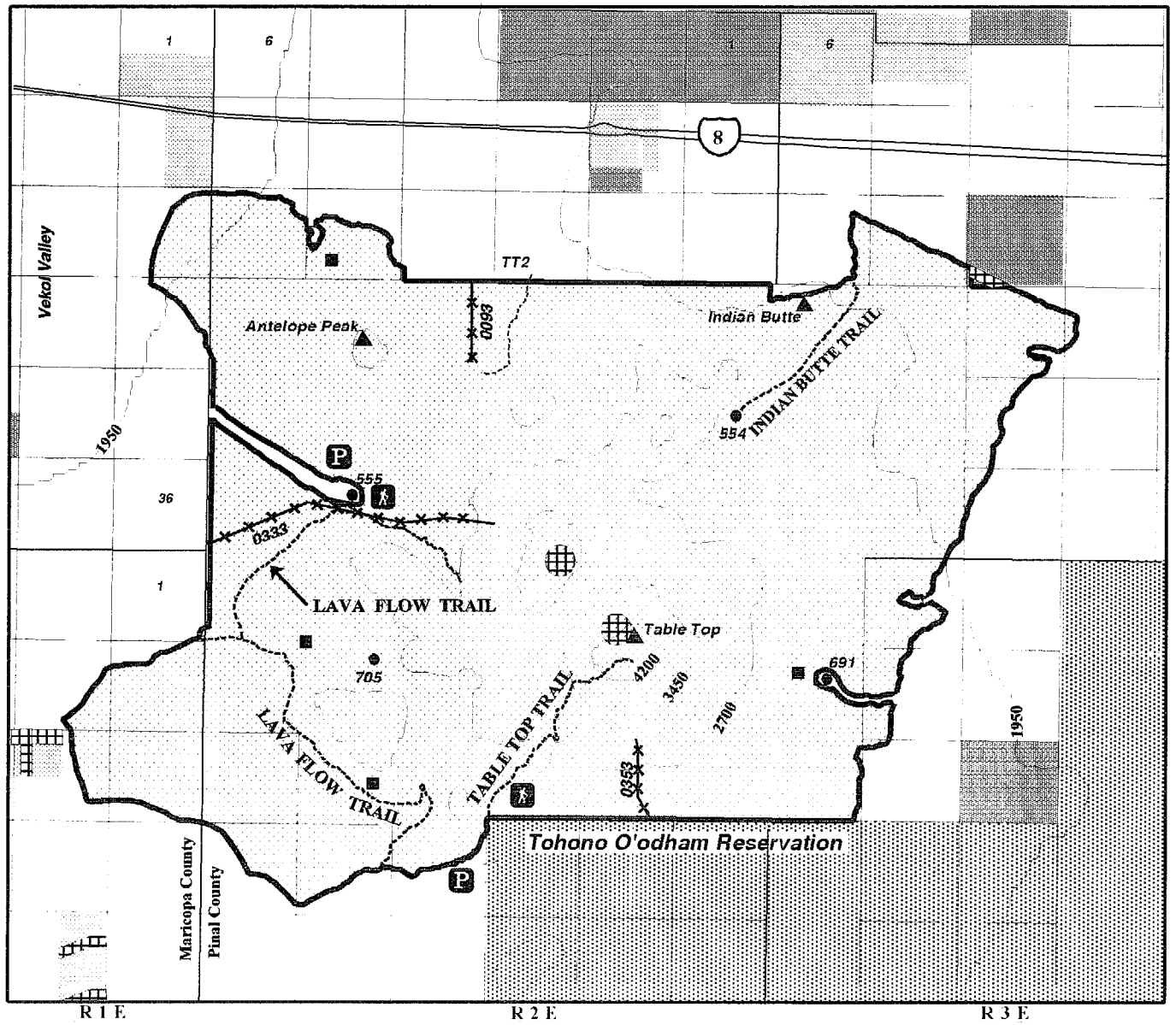
PHOENIX DISTRICT OFFICE

February 1995

Map 13: Table Top Wilderness
Visitor Use and Wildlife Enhancement Alternative



LEGEND

- TT 1 — Former Vehicle Way & Reference Code
- 4743 — Fence & Project No.
- Earthen Stock Tank
- Wildlife Water Catchment
- Monitoring Study Location
- Private Land
- State Land
- Indian Reservation
- BLM Land
- Wilderness
- Federal Easement
- Trailhead
- Parking
- Trails
- Alternative Locations Proposed for New Wildlife Catchment

750 FEET
CONTOUR INTERVAL

SCALE

0 1 2 3
MILES

N

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PHOENIX DISTRICT OFFICE

February 1995

- a portable arc welder and cutting torch,
- miscellaneous power hand tools,
- a gasoline-powered Poinjar rock drill,
- a generator and
- a chainsaw.

Construction will require the use of this equipment for approximately seven days and 20 helicopter trips per project. These projects would also employ the use of volunteer labor. After construction, it is estimated that periodic repair would require approximately five days of motorized equipment use per catchment every two years. A helicopter would be used for access. Helicopter water hauling would also be needed an estimated once a year per catchment. This repair and water hauling would continue indefinitely.

All other actions and policies of Alternative A would also be adopted under this alternative.

Alternative C -- Naturalness Enhancement Alternative

Under Alternative C, emphasis would be placed on preserving natural values in the Maricopa Complex. Existing trails would not be maintained and no former vehicle ways would be converted to trails in any of the four wildernesses. No brochures would be developed and publicity about the areas would be kept to a minimum. Rudimentary maps would be developed and no commercial recreation activities would be permitted. All former vehicle ways would be rehabilitated. Those providing access to existing wildlife catchments would be rehabilitated immediately after storage upgrades are completed. The six apron-type wildlife water catchments would be upgraded as under alternatives A and B. Butterfield Well would be abandoned. Low visitor use levels will be maintained using strict social encounter standards and visitor control techniques available through current BLM policy (see Off-Trail Social Encounter Standards in Management Action 2.6 and the Additional Actions, if Required section under Objective 1 in Part V of the Draft Maricopa Complex Wilderness Management Plan.

Maintenance of all livestock fences and existing wildlife developments (except those two within the Sierra Estrella Wilderness) would be by nonmotorized/nonmechanized means and without the use of mechanized transport. Fourteen to 17 days per year (15 instances) of low-level aircraft censusing and catchment water level checking would continue indefinitely. Although water hauling to all catchments would be accomplished by helicopter when necessary, it is not anticipated that this would occur regularly. All other policies and management actions identified under Alternative A would be implemented.

Ten days (two instances) of helicopter and other motorized equipment use would be needed to maintain the two Sierra Estrella Wilderness wildlife developments during the life of the plan. No new developments would be constructed or maintained within the Maricopa Complex.

Alternative D -- No Action

Under this alternative, the BLM would not initiate any new actions. Management would occur reactively as issues arise with the exception that all activities approved in the Sierra Estrella and Table Top wilderness range improvement plan and wildlife operation management plans for all four areas would continue. Butterfield Well would not be re-equipped. There would be no other plans to provide direction for management activities and all new actions would be considered on a case-by-case basis including the construction of new wildlife water developments. Inholdings or access easements would not be acquired. Nonprofit, special event recreational activities would be permitted on a case-by-case basis. With the exception of hunting guide services, commercial recreational activities would not be permitted.

Desert tortoise and vegetation monitoring will continue as per the Lower Gila South Resource Management Plan of 1988 and current policy. See Table 14 for more details.

Affected Environment

A detailed description of the environment affected by the proposed action and alternatives can be found on pages 76 through 79 of the Lower Gila South Final Wilderness Environmental Impact Statement completed in 1987 and on pages 106 through 108 of the Arizona Mohave Final Wilderness Environmental Impact Statement completed in 1989. The former describes the environment of the North and South Maricopa mountains and Table Top wildernesses; the latter, that of the Sierra Estrella Wilderness (see a more current description under General Management Situation in Part I of this plan.

Environmental Impacts

Resources which have been analyzed and are either not present or, based on current information, would not be affected by the proposed action or any of the alternatives include:

- riparian or wetland zones,
- wild and scenic rivers,
- prime or unique farmland,
- hazardous or solid waste,
- areas of critical environmental concern,
- cultural resources,
- Native American religious concerns,
- floodplains and
- threatened and endangered species.

The issues assessed below for the proposed action and each of the alternatives are:

- naturalness,
- soil, water and air,
- recreation and social conditions,
- vegetation,
- livestock grazing,
- wildlife and
- administration costs.

Impacts are identified for the short- and long-term. For the purposes of this analysis, short-term is identified as one to nine years and long-term is more than nine years (see Table 15 for a summarized comparison of the impacts of each alternative).

Alternative A -- Proposed Action

Naturalness

Overall, in the long term, Alternative A would have a positive impact on naturalness. In addition to the benefits described in the following sections on vegetation and soil, water and air impacts, the acquisition of inholdings would eliminate the possibility of human development within the Maricopa Complex on these lands. The prohibition of wood gathering would leave dead-and-down wood to cycle through the nutrient process of the ecosystem and maintain the pristine visual character of the wildernesses. The exclusion of campfires and rock alignments would prevent the proliferation of fire rings and decrease the visibility of campsites.

Impacts on naturalness from activities pursued by livestock grazing permittees and the Arizona Game and Fish Department would be temporary impairment to naturalness and solitude by sights, sounds and evidence of motorized vehicles (including aircraft) and equipment. These impacts would vary with the type and duration of use, time of year, proximity of the user to the activity and the sensitivity of the user.

In the short term, up to 33 instances of these activities could potentially occur annually, involving as much as 241 days. However, this estimate, based on the highest possible instances, is not likely to be realized. In the long term, the potential for mechanized/motorized use will be reduced to 22 instances annually involving 26 days. This long-term potential will remain indefinitely.

In the short term, the impacts from motorized vehicles hauling water or accessing developments for repairs could occur along nine former vehicle ways for no more than approximately 18 total miles. In the long term, the impacts would be confined to no more than eight miles of existing vehicle routes. This access would be limited to those identified routes passable with hand tool maintenance at the time of use. Ground travel will leave vehicle tracks along the existing identified access routes which will remain visible for up to a year after this use and detract from the natural quality of the areas along these routes.

The sights or sounds of motorized ground vehicles would interfere with a visitor's perception and expectation of a landscape free of human activity and the natural quiet expected in wilderness. The likelihood of a visitor encountering these activities decreases in the long term.

Overflights for wildlife surveys and to assess catchment water levels would be felt over a larger area and could last up to six hours each day for two days. This impact would occur no more than four days each year in each wilderness during high visitor use periods and would continue indefinitely. The use of chainsaws for three days a year could also occur indefinitely.

If new wildlife developments are constructed after case-by-case evaluation, the impacts associated with construction and long-term maintenance of these structures would be identical to those detailed under the impact analysis of Alternative B.

Soil, Water and Air

Soil conditions along 79 miles (115 acres) of former vehicle ways would improve as vehicle entry barriers are established and rehabilitation occurs. Also, 16 miles of former vehicle ways would be rehabilitated and managed for trail use. This could eliminate soil compaction on another 20 acres of

ground surface in the long term. Management of the seven miles of existing hiking and/or riding trail would improve soil conditions on another one acre of ground surface by reducing the tread width along these routes by one-half. Directing use along developed trails would prevent the creation of spur trails and the associated compaction of soil. Controls on pack stock and fire suppression activities would also limit disturbance to surface soil.

Modifications to wildlife developments would reduce the number of times ground vehicle access will be required for hauling water from six times each year to zero, in the long term. Approximately two trips by ground vehicles per year would continue for range improvement maintenance. Soil compaction would remain along as much as 18 miles of vehicle routes in the short term as a result of these authorized maintenance and water-hauling activities. This could be reduced to eight miles of routes in the long term.

Transitory impacts to soil and air are expected to occur when the existing wildlife developments are modified. Site-specific impacts from modification or new wildlife development activities will be analyzed in separate project environmental assessments. The access routes identified in Table 2 of the Draft Maricopa Complex Wilderness Management Plan would be subject to 25 to 50 vehicle trips per route during a period of 14 to 60 days per development modification project. If new wildlife developments are built after case-by-case evaluation, the impacts to soil and air would be identical to those analyzed under Alternative B.

There would be some compaction of soil along the 20 miles of trail as equestrian use increases within the trail standards established per Management Action 1.8 of the Draft Maricopa Complex Wilderness Management Plan.

Water sources would be quantified and notification of federal-reserved water rights filed submitted to the state to ensure water availability for wildlife development in the future.

Recreation and Social Conditions

Recreation opportunities in the Maricopa Complex would increase with Alternative A. Development of approximately 22 miles of hiking trails and seven new trailheads and improvement of two access points along Interstate 8 would add to recreational opportunities in the wildernesses. The number of hiking trails would increase from two to five. Furthermore, providing maps and brochures about the wildernesses can be expected to add to the experience of some users. Social conditions would be managed along the trail routes through the implementation of social encounter standards and education about wilderness ethics.

Opportunities for off-trail, cross-country, more isolated recreation would be maintained in 99.7 percent of the area. Future public access would be assured through the acquisition of easements across state and private lands to access the Sierra Estrella and Table Top wildernesses.

Expected future demands for commercial recreation use will be met. Current demand for guided hunting and nonprofit special event uses will continued to be met. Interaction among visitors and ground and air transport associated with the accepted uses will detract from the primitive recreational experience of the visitor as described under impacts to naturalness.

Vegetation

This alternative would have positive impacts on vegetation in the Maricopa Complex wildernesses. Both current and future conditions would be positively affected by the plan. Some short-term and transitory negative impacts would be associated with modifications to the wildlife catchments, periodic motorized ground transport to perform major maintenance of certain range developments and authorized emergency response and firefighting activities.

Under the proposed rehabilitation of the existing 95 miles of former vehicle ways, 136 of the estimated 141 acres in the Maricopa Complex that lack vegetative cover due to these routes would be returned to natural conditions over the long-run. The remaining five acres would be managed for trail use and, therefore, would remain unvegetated.

A range of actions including visitor, pack stock and trail management, limitations on authorized motorized access, coordination with other agencies, controls on fire suppression activities, monitoring activities and modifications to wildlife catchments will have a positive impact on vegetation. Visitor use standards and trail management actions would have a positive effect on vegetation by limiting the number of people and pack animals present in the areas and directing most use along maintained trails. The prohibition of wood gathering and campfires would have a positive impact by protecting woody vegetation that might otherwise be damaged by these activities.

Limitations on motorized access and improved coordination among emergency, law enforcement and search-and-rescue agencies would help prevent the creation of vehicle ways and associated negative impacts to vegetation. Controls over fire suppression activities would limit the use of mechanized equipment and surface-disturbing actions, thus reducing the associated damage to vegetation. Through implementation of vegetation monitoring and additional actions, if required, related to grazing activities, vegetative conditions would be tracked and actions would be taken to avoid degradation to vegetation. The generation of baseline data and subsequent monitoring will provide information for decision making about vegetative conditions.

If new wildlife developments are built after case-by-case evaluation, vegetation impacts will be identical to those described under the environmental impact analysis of Alternative B.

Livestock Grazing

Alternative A is not expected to adversely affect grazing operations. The use of motorized access for emergencies and for major fence repairs will require the allottees to notify and work with the BLM to limit the impacts of these activities. The abandonment of one earthen tank in the South Vekol Allotment, one in the Table Top Allotment (both in the Table Top Wilderness), two in the Bighorn Allotment (in the South Maricopa Mountains Wilderness) and one in the Hazen Allotment (in the North Maricopa Mountains Wilderness) would not negatively affect grazing operations as the tanks are in disrepair and are no longer needed by the allottees.

Monitoring standards adopted reflect the existing grazing conditions and therefore should not impact the permittee adversely.

Monitoring of vegetation could lead to periodic fencing of livestock water sources in the North Maricopa Mountains and Table Top wildernesses or removing cattle from a pasture in the Sierra Estrella Wilderness for a growing season.

Finally, visitor use by hikers and horseback riders, which will continue at low levels and along former vehicle ways, is not expected to adversely affect livestock operations. Casual use of stock water adjacent to the wilderness by recreational pack stock is not expected to be a problem.

Wildlife

Overall, the proposed action would have positive impacts on wildlife. Existing wildlife habitat conditions would be maintained via modifications to and maintenance of existing wildlife developments and management actions taken to minimize impacts of human activities on vegetation. The wildlife catchment systems already present, which would be modified, could increase the amount of stored water by at least a factor of three. The replacement and operation of the Butterfield Well pump would affect the loss of this water after 1991. Monitoring wildlife populations, checking catchment water levels in the summer and the use of aircraft to haul water to the two catchments in the Sierra Estrella Wilderness by the Arizona Game and Fish Department would continue indefinitely.

Short-term stress to animals is caused by the sight and sound of aircraft and vehicles associated with development repair and maintenance, population survey flights, catchment water level checks and water hauling. This would be reduced in the long term.

Benefits derived would be the collection of population data to make decisions on management questions and harvest recommendations. Short-term water hauling and long-term improved storage capacities would reduce water stress during hot, dry seasons.

Prohibiting dogs along the Table Top Trail and rerouting segments of two trails in the North Maricopa Mountains Wilderness would reduce the potential for harassment of wildlife in those areas. Furthermore, overall recreation use would be kept low and directed along trails that parallel the former vehicle ways. This is unlikely to lead to any impacts on animal populations with the possible exception of short-term impacts to desert tortoise along the Margie's Cove Trail in the North Maricopa Mountains Wilderness before the trail can be closed or rerouted. This population is in decline due to climatic conditions and any handling or removal of individuals by trail users could compound the problem. Potential impacts to desert bighorn sheep along established trails will be monitored and appropriate visitor management actions implemented to reduce this impact.

If case-by-case analysis of new proposals results in the construction of new wildlife developments, impacts to wildlife will be identical to those analyzed under Alternative B.

No known threatened or endangered species will be impacted by this alternative. The U.S. Fish and Wildlife Service has concurred with this finding (see comment letter 3 in Part III of this document).

Administration and Costs

Alternative A would increase the level of administrative activities associated with managing the Maricopa Complex. Over the 10-year life of the plan, it is expected that 284 workmonths and $162,000 in equipment and materials would be required to implement the coordination, monitoring, visitor management and special projects identified under this alternative.

This alternative is also expected to have only minor impacts on fire suppression activities. Fire would be suppressed under the proposed action and managed according to Appendix D of the draft Maricopa Complex Wilderness Management Plan. The Area Manager would be delegated the authority to authorize the use of all motorized/mechanized firefighting equipment within the wildernesses, thus perhaps reducing response time. Policy relative to cold trailing would limit the circumstances under which scratch line would be constructed. The exclusion of campfires is expected to reduce the potential for human-caused fires.

Mitigation Measures

1. The modification of existing catchments, construction and maintenance of new catchments, operation of the Butterfield Well and maintenance of range improvements will be scheduled when visitor use is expected to be low, e.g., on weekdays, not during weekends or holidays.
2. When more than one incident of authorized use of mechanized transport and mechanized/motorized equipment is planned within a reasonably similar timeframe, they will be combined whenever possible.
3. Temporary notices will be posted in the Public Room of the Phoenix District BLM office and at public access points and trailheads. The notices will inform visitors of the schedule and purposes of overflights and the repair, operation, modification or construction of a development as provided by the plan.
4. When possible, water will be pumped via a hose lay from a portable water source outside the wilderness boundary to Butterfield Well storage tanks rather than transporting and operating a generator in the wilderness.
5. No saguaro or species of agave will be removed as a result of any ground-disturbing activity associated with this plan.
6. Contact with desert tortoise will be avoided when possible during surface-disturbing activities proposed in this plan. If contact cannot be avoided, affected animals will be temporarily relocated to adjacent and undisturbed habitat using accepted Arizona Game and Fish Department protocol.

Residual Impacts

Under Alternative A, long-term residual impacts would include the compaction of five acres of soil along six miles of eight former vehicle ways. Negative impacts to naturalness, solitude and visitor experience due to the periodic use of motorized/ mechanized equipment and transport for repair of range and wildlife developments, modification and operation of wildlife developments and big game and catchment water level censusing could occur for up to 26 days each year. Additional impacts would also occur if any new wildlife water catchments are constructed after a case-by-case decision to build is made. Commercial recreational use will be sanctioned.

Cumulative Impacts

If WAATS is located in Marana, Arizona, associated helicopter flight training could have cumulative negative impacts on the solitude in the Table Top Wilderness. No other significant cumulative impacts are anticipated from actions which have occurred or are anticipated to occur within these wildernesses.

Alternative B -- Visitor Use and Wildlife Enhancement

Naturalness

Impacts to the naturalness of these four wildernesses under Alternative B would be similar to

those identified under Alternative A with the following exceptions.

The naturalness of all four wildernesses will be degraded by the mechanized construction of a new wildlife catchment in three of the four wilderness. The presence of these structures would negatively affect the appearance of naturalness locally and within sight of the catchments. This visual impact would be minimal as the catchments would be placed in areas which are generally inaccessible to visitors and built with natural-looking materials.

However, further negative impacts to naturalness would result from the long-term motorized and mechanized activities which would be associated with the possible maintenance of these new developments. The sight and sound of helicopter ferrying for seven days during high visitor use periods would be expected perhaps every other year.

In the short term, these new construction and maintenance activities could potentially add another 42 days (86 instances) of motorized/ mechanized use annually to the potential impacts of Alternative A. In the long term, the additional potential could require 14 days (six instances) of such use annually.

The three new water developments would also increase the dependency of wildlife on these manmade structures in the wilderness and could change distribution patterns which existed at the time of designation. These appurtenances require an increased level of human involvement in the wilderness.

Soil, Water and Air

Alternative B would result in higher levels of soil compaction than Alternative A due to the increased number of trails and potentially greater visitor use. However, current soil conditions would be expected to improve as a result of the rehabilitation of 63.5 miles (92 acres) of former vehicle ways. In addition, 31.5 miles of former vehicle ways would be managed for hiking and/or riding trails.

In the short term, the construction of the new wildlife water catchments would result in soil disturbance. This impact would be minimal in the long term. Other impacts would be expected to be the same as those under Alternative A.

Recreation and Social Conditions

Recreation conditions in the Maricopa Complex under Alternative B would be similar to those under Alternative A. However, additional trails, trailhead amenities and two freeway exits along Interstate 8 would be provided. This would increase the opportunities for trail use within the Maricopa Complex. Opportunities for more isolated, off-trail recreation would be maintained in 99.5 percent of the area. Other impacts are expected to be the same as those under Alternative A.

Interaction among visitors and ground and air transport associated with the accepted uses will detract from the primitive recreational experience of the visitor. This impact will last for the duration of the accepted mechanized/motorized activity. Under this alternative, the potential for this impact would be greatest with the addition of three wildlife developments. Other impacts described for Alternative A would be the same as those under this alternative.

Vegetation

The effects of Alternative B on vegetation would be very similar to those under Alternative A with three exceptions. First, with the development and maintenance of 38.5 miles of trail within the Maricopa Complex rather than 23 miles, 134 acres as opposed to 136 acres under the proposed action would be rehabilitated to natural conditions. Second, with the addition of two trails in the South Maricopa Mountains Wilderness and increased miles of trail throughout the Maricopa Complex, visitor use could be greater and potential for damage to vegetation would increase accordingly. Third, the construction of three new wildlife water catchments would have some transitory impact on vegetation arising from the operations to install them. This impact would be minimal in the long term. Other impacts would be the same as those identified for Alternative A.

Livestock Grazing

Alternative B is not expected to have any impacts on grazing operations. The impacts would be the same as those identified under Alternative A except that visitor use levels may be elevated. However, like the proposed action, this use would occur along existing routes and is not expected to adversely affect livestock operations.

Wildlife

Overall, Alternative B would enhance conditions for wildlife. The addition of three wildlife water catchments would provide more accessible water to wildlife populations in areas that are distant from

human activities. High-elevation catchments in the North and South Maricopa mountains and Table Top wildernesses would provide water in the best available, occupied desert bighorn sheep habitat within these herd units. While there would potentially be increased visitor use due to the greater number of trails, overall recreation use would be directed along former vehicle ways. However, with the placement of a bighorn sheep water catchment at the summit of Table Top Mountain, hikers would more likely come into contact with sheep, which could impact the bighorn population. Other impacts to wildlife (including short-term impacts to desert tortoise along the Margie's Cove Trail in the North Maricopa Mountains Wilderness) would be the same as those identified under Alternative A.

No known threatened or endangered species will be impacted by this alternative. The U.S. Fish and Wildlife Service has concurred with this finding (see comment letter 3 in Part VIII of this document).

Administration and Costs

Alternative B would increase the level of administrative activities associated with managing the Maricopa Complex. The level of staff commitment necessary to implement this alternative would be slightly higher than that Alternative A due to the increased need for visitor management and development of additional wildlife catchments. Specifically, it is expected that 410 workmonths and $254,000 in equipment and material costs would be required to implement the coordination, monitoring, visitor management and special projects identified for this alternative over the 10-year period.

Impacts to fire suppression activities under Alternative B would be identical to those under Alternative A.

Mitigating Measures

1. The modification of existing catchments, construction and maintenance of new catchments, operation of the Butterfield Well and maintenance of range improvements will be scheduled when visitor use is expected to be low, e.g., on weekdays, not during weekends or holidays.
2. When more than one incident of authorized use of mechanized transport and mechanized/ motorized equipment is planned within a reasonably similar timeframe, they will be combined whenever possible.
3. Temporary notices will be posted in the Public Room of the Phoenix District BLM office and at public access points and trailheads. The notices will inform visitors of the schedule and purposes of overflights and the repair, operation, modification or construction of a development as provided by this plan.
4. When possible, pump water via a hose lay from a portable water source outside the wilderness boundary to Butterfield Well storage tanks rather than transporting and operating a generator in the wilderness.
5. No saguaro or species of agave will be removed as a result of any ground-disturbing activity associated with this plan.
6. Contact with desert tortoise will be avoided when possible during surface-disturbing activities proposed in this plan. If contact cannot be avoided, affected animals will be temporarily relocated to adjacent and undisturbed habitat using accepted Arizona Game and Fish Department protocol.

Residual Impacts

Under Alternative B, long-term residual impacts would include the continued compaction of five acres of former vehicle ways. Impacts to naturalness, solitude and visitor experience would occur on approximately 40 days a year. Commercial recreation will be sanctioned.

Cumulative Impacts

If WAATS is located in Marana, Arizona, associated helicopter flight training could have cumulative negative impacts on the solitude in the Table Top Wilderness. No other significant cumulative impacts are anticipated from actions which have occurred or are anticipated to occur within these wildernesses.

Alternative C -- Naturalness Enhancement Alternative

Naturalness

Alternative C would have a positive impact on natural qualities. In addition to the impacts identified above under vegetation and soil, water and air, the acquisition of inholdings would eliminate the possibility of human development of these lands. Eighteen instances of mechanized use (up to 197 days) annually would occur to modify and upgrade

six apron-type big game catchments. Arizona Game and Fish Department monitoring activities and the exclusion of wood gathering and campfires would have the same impacts on naturalness as those identified for alternatives A and B. Impacts associated with the long-term mechanized maintenance of livestock and six wildlife developments would be eliminated.

Fourteen to 17 days of low-level wildlife and catchment water level census aircraft overflights (15 instances) each year would continue indefinitely.

Soil, Water and Air

Soil conditions would be most improved under Alternative C as all 95 miles of former vehicle ways and seven miles of trail would be rehabilitated and visitor use would not be encouraged. There would be some short-term disturbance to surface soil associated with activities to remove wildlife and range developments. The impacts from fire suppression activities would be the same as those outlined under alternatives A and B.

Recreation and Social Conditions

Recreation opportunities would decrease under this alternative. In the short term, closed vehicle routes and existing trails would continue to be used by visitors. In the long term, however, use of these routes would cease to exist and visitors would be limited to a cross-country recreational experience. Without access points, trailhead amenities and detailed maps, the wilderness would be less accessible to potential users. Social conditions would probably move toward a more isolated and primitive experience as the closed vehicle routes revegetate and use levels drop or are controlled. Future access to the Sierra Estrella and Table Top wildernesses would be assured through the acquisition of easements across state and private lands adjacent to these wildernesses. Opportunities for commercial recreation will not be realized.

Vegetation

Under Alternative C, all 95 miles of former vehicle ways and seven miles of trail would be rehabilitated. Thus, 141 acres would be returned to natural vegetative conditions over the long term. Impacts from recreation users along trail corridors would be less than under the proposed action as trails would be rehabilitated to a natural condition. However, off-trail impacts to vegetation could increase as visitors seek out their own travel routes. This could be offset by measures to maintain low visitor use levels.

Other actions and policies (i.e., prohibiting wood gathering and campfires, limitations on motorized access, coordination with other agencies, fire policy, vegetation monitoring, policies related to grazing activities, generation of baseline data and subsequent vegetative monitoring) would have the same impacts on vegetation as under alternatives A and B.

Livestock Grazing

Livestock permittees would have to maintain developments by nonmechanized, nonmotorized means. Visitor use levels would be lower and, therefore, as under the previous alternatives, there would be no impacts from recreational activities.

Wildlife

Except for the two Sierra Estrella catchments, the Arizona Game and Fish Department would not be able to maintain the wildlife developments using mechanized means. This could result in delays in repair which could have negative impacts on the mule deer and bighorn sheep populations and distribution in the affected herd areas.

The mule deer population in the North Maricopa Mountains Wilderness may be adversely affected by not replacing the pump in Butterfield Well.

Recreation activities under this alternative are not expected to affect wildlife. While these activities would not be directed along trails, efforts would be made to keep visitor use at low levels. This would minimize impacts to wildlife. Overflight monitoring activities by the Arizona Game and Fish Department would be the same as those outlined under the previous alternatives. Positive impacts from continuing these flights are identical to those also described. Potential short-term negative affects on desert tortoise as the Margie's Cove Trail in the North Maricopa Mountain Wilderness would not occur.

No known threatened or endangered species will be impacted by this alternative. The U.S. Fish and Wildlife Service has concurred with this finding (see comment letter 3 in Part VIII of this document).

Administration and Costs

Alternative C would increase the level of administrative activities currently associated with managing the Maricopa Complex, but to a lesser

degree than the previous alternatives. Specifically, it is expected that 218 workmonths and $110,000 in equipment and material costs would be required to implement coordination, monitoring and special projects under this alternative. The level of staff commitment necessary to implement this alternative would be lower than that of the proposed action because the need for projects associated with trail development and visitor management would be reduced, as would compliance associated with appropriated development and operation repair activities.

Impacts to fire suppression activities under Alternative C would be identical to those under alternatives A and B.

Mitigation Measures

1. The modification of existing catchments will be scheduled when visitor use is expected to be low, e.g., on weekdays, not weekends or holidays.
2. Temporary notices will be posted in the Public Room of the Phoenix District BLM office and at public access points and trailheads. The notices will inform visitors of the schedule and purposes of overflights or modification of a development as provided by the plan.

Residual Impacts

Under Alternative C, long-term residual impacts to naturalness, solitude and visitor experience would be limited to 14 to 17 days a year for wildlife-related monitoring overflights and helicopter water hauling.

Cumulative Impacts

If WAATS is located in Marana, Arizona, associated helicopter flight training could have cumulative negative impacts on the solitude in the Table Top Wilderness. No other significant cumulative impacts are anticipated from actions which have occurred or are anticipated to occur within these wildernesses.

Alternative D -- No Action

Naturalness

Under Alternative D, natural conditions would be expected to deteriorate. In addition to the impacts identified in the vegetation and soil, water and air sections, without acquisition of inholdings, there would be a possibility that new human development would occur on these lands, thus further degrading natural values. This development could include the need to access state inholdings. This could lead to road building and other developments in the wildernesses.

Without a prohibition of wood gathering, campfires, etc., the supply of dead-and-down wood cycling through the nutrient process of the ecosystem would be reduced, as would the natural appearance of the areas. This would also result from the proliferation of the number of campfire rings and other surface disturbances. Impacts on naturalness from activities pursued by livestock grazing permittees and the Arizona Game and Fish Department would be the same as those described under alternatives A and B. However, these impacts could be greater as this would not be coordinated or preplanned as well; rather, it would be administered on a case-by-case basis. Since any requests for mechanized use would be evaluated on a case-by-case basis, it is difficult to project how many instances of such activities could occur. However, for comparison purposes, it is estimated that potentially 33 instances involving 49 days of annual authorized mechanized use would occur in these wildernesses, indefinitely, under this alternative. This would increase if new developments were constructed.

Soil, Water and Air

Under Alternative D, soil conditions would be the least improved as rehabilitation would take longer and continued unauthorized use of motor vehicles would lead to ongoing soil disturbance all along former vehicle ways. Without modifications to wildlife catchments and the abandonment of some range developments, the use of motorized vehicles for maintenance would be more frequent and would be accompanied by continued soil compaction along all access routes. Finally, the lack of control over visitor use would lead to higher levels of soil compaction as unchecked use increases.

As in all the previous alternatives, water sources would be quantified; notification of federal-reserved water rights would be submitted to the state to ensure water availability for wildlife development in the future.

Recreation and Social Conditions

Recreation opportunities are likely to deteriorate under this alternative due to the lack of a developed trail system. While use may keep existing trails open, the Quartz Peak Trail would not be maintained

and would be subject to further erosion and deterioration. Furthermore, the proliferation of spur trails and campfire rings as well as other surface disturbances would have a negative impact on some users' recreational experience. Without visitor information, the wilderness could be less accessible to some users. Social conditions might also deteriorate without the implementation of social encounter standards and visitor management actions. Surface disturbance would increase without adopting and monitoring off- and on-trail resource standards. This would lead to a loss in opportunities for solitude. Without acquiring easements to the Sierra Estrella and Table Top wildernesses, public access to these two areas could be severely reduced or new roads would have to be constructed.

Interaction among visitors and ground and air transport associated with the accepted uses will detract from the primitive recreational experience of the visitor, much as is described under the impact analysis of alternatives A and B. Opportunities for potential commercial recreational activity would not be realized.

Vegetation

Alternative D would likely result in higher overall negative impacts to vegetation. Without proactive management, 141 acres along the 102 miles of former vehicle ways and existing trails would take longer to revegetate due to prolonged unauthorized use of the closed routes. Furthermore, without planned actions to control, rehabilitate and coordinate activities in the Maricopa Complex, vegetation could be damaged due to the creation of new trails and spur trails, scratch line around cold fire perimeters and other surface disturbances. Without a prohibition on wood gathering and campfires, vegetation is also more likely to be damaged. Modifications to the wildlife catchments would not be made and use of motorized vehicles for maintenance would be more frequent. This use would be accompanied by some transitory damage to vegetation. Finally, without the enhanced monitoring activities, tracking vegetation conditions would be impaired.

Livestock Grazing

Overall, Alternative D is not expected to have any negative impacts on livestock grazing. For the Table Top and Sierra Estrella wildernesses, the impacts would be similar to those under alternatives A and B relative to motor vehicle access and coordination with the BLM with the exception that one livestock earthen reservoir could be maintained periodically with a bulldozer. The no action alternative would leave the issue of range improvement maintenance unresolved for allottees operating in the North and South Maricopa mountains wildernesses. These issues would have to be determined on a case-by-case basis.

Wildlife

Wildlife conditions could deteriorate under Alternative D as unmanaged visitor use increases. Impacts could include damage to habitat from spur trails, unchecked and unauthorized vehicle use and new routes arising from emergency and law enforcement activities. In addition, harassment of the desert bighorn sheep populations by dogs along the Table Top Trail could occur. Potential impacts to desert tortoise from visitors using former vehicle way NM 6 would go unchecked.

Positive impacts from maintenance of existing catchments and monitoring overflights, would be the same as described under alternatives A and B. The mule deer population in the North Maricopa Mountains Wilderness may be adversely affected by not replacing the pump at Butterfield Well.

No known threatened or endangered species will be impacted by this alternative.

Administration and Costs

Alternative D would not increase the ongoing level of administrative activities associated with managing the wildernesses. In the short term, the level of staff commitment necessary to implement this alternative could be lower than that of the proposed action because monitoring would not be enhanced and visitor use management or special projects would not take place. However, responding reactively when issues arise would result in the need for occasional high levels of attention to these areas. For this reason, it can be equally argued that this case-by-case intervention would cost more than implementing any of the previously described alternatives.

Fire suppression activities would not be negatively affected under Alternative D. The Phoenix District Interim Guidance for Fire Suppression in Wilderness developed in 1991 and currently used by the Phoenix District BLM would continue to be

followed. No prohibition of campfires and no management of visitor use could lead to a higher potential for human-caused fires.

Residual Impacts

Under Alternative D, long-term residual impacts would include an anticipated approximately 95 miles of former vehicle ways that would still be visible as would new trails and vehicle routes. Soil compaction would continue on 141 acres of surface soil. Impacts to naturalness and solitude from accepted uses would occur an estimated 49 days per year. This could increase, however, if new developments were to be constructed.

Cumulative Impacts

If WAATS is located in Marana, Arizona, associated helicopter flight training could have cumulative negative impacts on the solitude in the Table Top Wilderness. No other significant cumulative impacts are anticipated from actions which have occurred or are anticipated to occur within these wildernesses.

Consultation and Coordination

Information about consultation can be found in Part VII of the draft Maricopa Complex Wilderness Management Plan.

Table 14 -- Draft Maricopa Complex Wilderness Management Plan Environmental Assessment-- Summary Comparison of Alternatives

Objective	*Alternative A -- Proposed Action*	*Alternative B -- Enhanced Uses*	*Alternative C -- Naturalness*	*Alternative D -- No Action*
Naturalness	▫ 79 miles of former vehicle ways rehabilitated to natural conditions; 16 miles rehabilitated to trail standards ▫ Up to 1.5 miles of cherrystem could be closed ▫ 17 vehicle barriers provided ▫ Six wildlife developments modified to reduce water hauling needs ▫ Five earthen livestock water tanks abandoned ▫ Emergency and law enforcement activities coordinated ▫ Low-level civilian aircraft users contacted ▫ Trail monitoring and pack stock standards adopted ▫ Campfires, wood gathering and other surface disturbances prohibited ▫ Unauthorized vehicle use, tracks, spur trails and other surface disturbances rehabilitated within one year ▫ Approximately 5,760 areas of surface/subsurface inholdings and access easements acquired ▫ Less surface-damaging fire suppression activities adopted ▫ All authority for approval of mechanized transport and/or equipment for fire suppression delegated to Area Manager	▫ 63.5 miles of former vehicle ways rehabilitated to natural conditions; 31.5 miles rehabilitated to trail standards ▫ All others the same as under Alternative A	▫ 95 miles of former vehicle ways rehabilitated to natural conditions ▫ Five livestock fences (6 miles) and nine wildlife developments removed ▫ No new developments ▫ All others the same as under Alternative A	▫ No active rehabilitation of former vehicle ways ▫ No additional cherrystem closures or wildlife development modifications ▫ One earthen livestock water tank and two fences maintained by period mechanical use ▫ Approval for mechanized use for repair of four earthen livestock water tanks and 11 fences evaluated on a case-by-case basis ▫ Emergency and law enforcement activities not coordinated ▫ Campfires and other surface-disturbing activities not prohibited ▫ Inholding not acquired ▫ Scratch line allowed around cold fire perimeters; authority for mechanized use for fire suppression shared by Area Manager and District Manager

Table 14 -- Draft Maricopa Complex Wilderness Management Plan Environmental Assessment -- Summary Comparison of Alternatives (page two)				
Objective	*Alternative A -- Proposed Action*	*Alternative B -- Enhanced Uses*	*Alternative C -- Naturalness*	*Alternative D -- No Action*
Recreation and Visitor Use	▫ Three new trails (21.6 miles) and seven new trailheads established in addition to two (seven miles) existing trails ▫ Maps, brochures and other user outreach materials developed ▫ Low social encounter levels maintained ▫ Commercial recreational outfitting and guide services allowed ▫ Nonprofit special events allowed ▫ Camping prohibited within 200 feet of established trails ▫ Safety pulloffs along I-8 to South Maricopa Mountains Wilderness provided	▫ New trails (37.5 miles) and trailheads established in addition to two (seven miles) existing trails and one trailhead ▫ All others the same as under Alternative A except that safety pullouts would be upgraded to freeway exits	▫ No new trails; seven miles of existing trails and one trailhead not maintained ▫ No public outreach or improved visitor information ▫ Commercial recreation prohibited ▫ Off-trail social encounter standards of alternatives A and B also adopted for entire wildernesses	▫ Table Top Trail (4.5 miles) and trailhead maintained; Quartz Peak Trail (2.5 miles) not maintained ▫ General use unmanaged ▫ No public outreach or improved visitor information ▫ Access easement not acquired ▫ No use restriction permitted ▫ Commercial recreational activities limited to hunting outfitters

Table 14 -- Draft Maricopa Complex Environmental Assessment-- Summary Comparison of Alternatives (page three)

Objective	*Alternative A -- Proposed Action*	*Alternative B -- Enhanced Uses*	*Alternative C -- Naturalness*	*Alternative D -- No Action*
Vegetation	▫ 20 to 30 percent forage use standards established within wilderness ▫ Rest from livestock grazing provided in certain areas for a grazing season when standards are exceeded ▫ Eight existing livestock control fences maintained once every five years using mechanized equipment and motorized access ▫ Periodic use of chainsaw for major repairs of 13 fences allowed ▫ Monitoring sample size increased and frequency of measurement increased to at least once in five years ▫ All wildfires suppressed	▫ Same as under Alternative A	▫ Same as under Alternative A except that 13 livestock control fences maintained nonmechanically, without motorized access	▫ 50 percent forage use standard ▫ No wilderness-specific rest identified ▫ A 10-year monitoring schedule ▫ No wilderness-specific livestock rest policy adopted

Table 14 -- Draft Maricopa Complex Environmental Assessment -- Summary Comparison of Alternatives (page four)				
Objective	*Alternative A -- Proposed Action*	*Alternative B -- Enhanced Uses*	*Alternative C -- Naturalness*	*Alternative D -- No Action*
Wildlife	▫ Six water developments maintained or supplemented with mechanized equipment and motorized transport until upgrades are successful ▫ Butterfield Well re-equipped and pumped periodically with mechanized/motorized transport and equipment ▫ Eight water developments adjacent to wilderness upgraded ▫ Low-level flights for big game censusing of all areas and maintenance of and water hauling to two water developments in the Sierra Estrella Wilderness to continue indefinitely ▫ New water development proposals evaluated on a case-by-case basis ▫ Big game transplants and telemetry flights sanctioned ▫ Barbed wire fence around catchments to be replaced with pipe rail ▫ Pets prohibited on Table Top Trail ▫ Approximately 1¾ miles of trail created to avoid two water catchments	▫ Same as under Alternative A except that four new water developments constructed and maintained, one in each wilderness	▫ Same as under alternatives A and B except that all existing water developments removed and no new wildlife developments	▫ No upgrades to existing catchments ▫ Butterfield Well not reequipped ▫ New catchments considered on a case-by-case basis ▫ All transplants considered on a case-by-case basis ▫ No pet restrictions or trail rerouting ▫ Mechanized water hauling to and repair of all existing catchments continued ▫ Low-level flight for game censusing continues

Table 15 -- Draft Maricopa Complex Wilderness Management Plan Environmental Assessment -- Impact Comparison				
Element	*Alternative A -- Proposed Action*	*Alternative B -- Enhanced Uses*	*Alternative C -- Naturalness*	*Alternative D -- No Action*
Naturalness	▫ Periodic accepted use of 18 miles of former vehicle ways reduced to eight miles in the long term ▫ In the short term, 29 annual instances (up to 237 days) of potential mechanized use, more if new catchments are constructed ▫ Over the long term, instances reduced to no more than 18 (22 days) per year (six additional instances for 14 days of helicopter access needed for new catchment maintenance, if constructed) ▫ Acquiring inholdings reduces potential future impacts ▫ Positive impacts from ban on wood gathering and campfires, adoption of trail standards and pack stock management policies	▫ Periodic use of former vehicle ways is same as under Alternative A over the long term ▫ In the short term, 43 annual instances (up to 279 days) of potential mechanized use ▫ Over the long term, instances reduced to no more than 22 (36 days) per year ▫ All other impacts the same as under Alternative A ▫ Naturalness degraded somewhat more than under Alternative A due to increased number of developed trails and wildlife developments	▫ All former vehicle ways rehabilitated ▫ Nine instances of mechanized use (22 to 45 days) for one time removal of existing developments; no subsequent use of former vehicle ways ▫ Over the long term, instances of accepted mechanized uses reduced to 11 per year (10 days) ▫ All other impacts the same as under alternatives A and B	▫ Periodic use of 18 miles of former vehicle ways ▫ 29 annual instances (45 days) of potential mechanized use, more if new catchments are constructed ▫ Continued inholding presence could lead to degradation ▫ Negative impacts from wood gathering and fire rings ▫ Visual impacts to vegetation could increase from grazing
Soil, Water and Air	▫ Continued surface compaction of five acres ▫ Some soil compaction due to increased equestrian use ▫ Some transitory surface disturbance from special projects and emergency law enforcement activities ▫ Water for wildlife development quantified; notification of water rights filed	▫ Same as under Alternative A except soil compaction increased to seven acres	▫ Same as under Alternative A except: ▫ Minor indiscriminate surface soil compaction due to low levels of hiking and pack stock use ▫ Short-term impacts to soil while removing developments	▫ Same as under Alternative A except continued potential for soil compaction of 141 acres

Table 15 -- Draft Maricopa Complex Wilderness Management Plan Environmental Assessment -- Impact Comparison (page two)				
Element	*Alternative A -- Proposed Action*	*Alternative B -- Enhanced Uses*	*Alternative C -- Naturalness*	*Alternative D -- No Action*
Recreation and Social Conditions	▫ Positive impacts on recreation through maintenance and/or development of 21.6 miles of trail, trailhead amenities, improving two access points, brochures and maps ▫ Social conditions maintained through social encounter standards and education ▫ Solitude potentially impacted for up to 237 days per year in the short term; 22 days per year in the long term (more if new wildlife developments constructed) ▫ Commercial use sanctioned	▫ Enhanced recreation through development of 31.5 miles of trail, trailhead amenities, four new access points, brochures and maps ▫ Solitude potentially impacted for 279 days per year in the short term; 36 days per year in the long term ▫ Same as under Alternative A with some additional pressure from increased use	▫ Recreation opportunities would decrease as former vehicle ways cease to exist ▫ Areas would be less accessible ▫ Social conditions would improve for a more isolated experience ▫ Solitude potentially impacted for 10 days per year in the long term ▫ Commercial recreational opportunities not realized	▫ Recreational opportunities would deteriorate due to lack of developed trail system ▫ Accessibility would be unchanged ▫ Social conditions would deteriorate with increased use ▫ Solitude potentially impacted indefinitely for 45 days per year or more if developments constructed
Vegetation	▫ 136 acres revegetated ▫ Conditions maintained through limitations on motorized access, visitor use, wood gathering, fire suppression actions and grazing use monitoring ▫ Transitory impacts from special projects and emergency law enforcement activities	▫ Same as under Alternative A except acreage revegetated is reduced to 134	▫ Same as under alternatives A and B except acreage revegetated is increased to 141 and no transitory impacts from special projects	▫ Vegetative condition would deteriorate slightly from indiscriminate visitor use, continued unauthorized vehicle use and grazing ▫ Short-term damage from approved emergency and law enforcement activities
Livestock Grazing	▫ Option of maintaining five earthen stock tanks lost, but generally not impacted	▫ Option of maintaining five earthen stock tanks lost, but generally not impacted	▫ Reduced ability to control livestock	▫ Long-term maintenance policy regarding four earthen stock tanks and 11 fences undetermined

Table 15 -- Draft Maricopa Complex Wilderness Management Plan Environmental Assessment -- Impact Comparison (page three)				
Element	*Alternative A -- Proposed Action*	*Alternative B -- Enhanced Uses*	*Alternative C -- Naturalness*	*Alternative D -- No Action*
Wildlife	▫ Positive impacts to populations ▫ More reliable waters provided, thus reducing need for water hauling	▫ Enhanced conditions for wildlife through addition of four catchments ▫ Other impacts same as under Alternative A	▫ Populations may decline and distributions may change with removal of catchments	▫ Conditions may deteriorate with increased, unmanaged visitor use
Administration and Costs	▫ Increased level of administrative activities; 244 workmonths and $163,000 estimated implementation costs over 10 years ▫ No significant impact on fire suppression activities ▫ Campfire ban slightly reduces human-caused fire probability	▫ Increased level of administrative activities; 370 workmonths and $255,000 estimated implementation costs over 10 years ▫ Others same as under Alternative A	▫ Increased level of administrative activities to implement 200 workmonths and $137,000 implementation costs over 10 years ▫ Others same as under Alternative A	▫ Occasional high levels of staff time to respond to case-by-case situations ▫ No change to fire suppression actions ▫ Possible slight increase in human-caused fires

Finding of No Significant Impact/ Decision Record

Maricopa Complex Wilderness Management Plan

Sierra Estrella Wilderness
North Maricopa Mountains Wilderness
South Maricopa Mountains Wilderness
Table Top Wilderness

Environmental Assessment No. AZ 026-94-20

Case File Numbers:
AZA 25486
AZA 25487
AZA 25489
AZA 25490

Decision: It is my decision to approve the Maricopa Complex Wilderness Management Plan. The plan establishes management direction for the Sierra Estrella, North Maricopa Mountains, South Maricopa Mountains and Table Top wildernesses for a 10-year period.

Finding of No Significant Impact: Based on the analysis of potential environmental impacts contained in the accompanying environmental assessment, I have determined that impacts are not expected to be significant; therefore, an environmental impact statement is not required.

Rationale for Decision: The plan provides for continued maintenance of wilderness values, rehabilitation of existing disturbances and maintenance of the current condition of flora and fauna presently using these areas. Routine monitoring and yearly evaluations provide for modifications to the plan if necessary.

During a 45-day public review period, eight written comments were received on the draft Maricopa Complex Wilderness Management Plan. A total of 16 public comments were also recorded during two public meetings hosted during the comment period. These comments resulted in changes to the text of the plan and environmental assessment as documented in Part VIII of the plan. Most notable are: the addition of a management action to disallow the construction of any livestock-watering facilities within the wilderness; the allowance for additional mechanization related to wildlife management activities; and changes to the Naturalness Alternative and associated impact analysis in the Environmental Assessment. Also, mistakes in arithmetic and grammar were corrected and current data added where available.

Other Alternatives Considered: A visitor use and wildlife enhancement alternative, a naturalness enhancement alternative and a no action alternative were considered.

Mitigation/Stipulations: The modification of existing catchments, construction and maintenance of new catchments, operation of the Butterfield Well and maintenance of range developments will be scheduled when visitor use is expected to be low, e.g., on weekdays, not during weekends or holidays.

More than one incident of authorized use of mechanized transport and mechanized/motorized equipment planned within a reasonably similar timeframe will be combined whenever possible.

Temporary notices will be posted in the Phoenix District BLM Public Room and at public access points and trailheads to inform visitors of the schedule and purposes of overflights, development repair, operation, modifications or new construction.

Whenever possible, water will be pumped via a hose lay from a portable water source outside the wilderness to Butterfield Well storage tanks rather than transporting and operating a generator in the wilderness for three days.

No saguaro or species of agave will be removed as a result of any ground-disturbing activity associated with this plan.

Contact with desert tortoise will be avoided when possible during surface-disturbing activities proposed in this plan. If contact cannot be avoided, affected animals will be temporarily relocated to adjacent and undisturbed habitat using accepted Arizona Game and Fish Department protocol.

Recommended by: John R. Christens — 4-27-95
Area Manager, Lower Gila Resource Area — Date

Recommended by: [signature] — 4-27-95
District Manager, Phoenix District — Date

Approved by: [signature] — 4-21-95
State Director, Arizona — Date

Part XI -- Appendices

APPENDIX A

Wilderness Values and Other Facts About the Maricopa Complex Wildernesses				
	Sierra Estrella	**North Maricopa**	**South Maricopa**	**Table Top**
WILDERNESS VALUES §				
Acreage	14,400	63,200	60,100	34,400
Solitude	Good	Outstanding	Outstanding	Outstanding
Overall primitive recreation	Outstanding	Outstanding	Outstanding	Outstanding
Hunting	Limited	Good	Good	Good
Rock climbing	Challenging	--	--	--
Rock collecting	Good	--	--	--
Hiking	Challenging	Outstanding	Outstanding	Outstanding
Day hiking	Good	Outstanding	Outstanding	Outstanding
Camping	Limited	Good	Outstanding	Good
Horseback riding	Limited	Good	Outstanding	Good
Sightseeing	Good	Good	Outstanding	Outstanding
Backpacking	Limited	Outstanding	Outstanding	Outstanding
SUPPLEMENTAL VALUES				
Photography	Good	Good	Moderate	Good
Observing wildlife	Good	Good	Moderate	Good
Bighorn sheep habitat (estimated population)	9,830 acres (26-40)	39,280 acres (200, combined with South Maricopas)	42,800 acres (200, combined with North Maricopas)	22,780 acres (51)
Desert tortoise habitat (category) ¥	14,317 acres (2)	55,616 acres (1) 7,411 acres (2)	59,463 acres (1) 272 acres (2)	34,108 acres (2)
T&E plant habitat	None, presently	None, presently	None, presently	None, presently
Cultural resources	Present	Present	None identified	Present
INTRUSIONS				
Military flights	Occasional	Occasional	Occasional	Often
Noise	High: private aircraft, sailplanes	Moderate: aircraft, trains	Low: Interstate 8, trains	High: military aircraft routes

Wilderness Values and Other Facts About the Maricopa Complex Wildernesses (page two)				
	Sierra Estrella	**North Maricopa**	**South Maricopa**	**Table Top**
INTRUSIONS (continued)				
Visual	N&W: urban, smog, farms	N&W: Highway 85, farms, infrastructure; S&W: Mobile Rd., railroad	N: Mobile Rd., railroad; S:I-8; E: farms	N: I-8, infrastructure, farms
Former vehicle ways	9 miles	32 miles	32 miles	22 miles
OHV	None	Moderate to high	Low	Low to moderate
ACCEPTED USES				
Mining	No claims	No claims	No claims	No claims
Wildlife facilities	2 slick rock catchments	2 apron-type catchments, 1 well	2 apron-type catchments	2 apron-type catchments
Wildlife water hauling ¤	Yes (helicopter)	Yes (truck)	Yes (truck)	Yes (truck)
Proposed upgrades of existing wildlife drinkers †	No	Yes (2)	Yes (2)	Yes (2)
Wildlife census flights ¤	Yes	Yes	Yes	Yes
Grazing allotments	Beloat	Hazen, Beloat, Conley, Bighorn	Bighorn, Lower Vekol, Conley	Table Top, Vekol, South Vekol
Motorized/ mechanized accepted uses in interim livestock operation plans ¤, ¶	Up to 10 days/year, plus 1 week every 5 years	Up to 10 days/year	Up to 10 days/year	2 to 3 days once every 2 to 3 years, plus up to 3 days once every 5 years
Livestock facilities	1 fence (1 mile)	5 fences (5.75 miles); 1 earthen tank	4 fences (3.25 miles); 2 earthen tanks	3 fences (5 miles); 2 earthen tanks
OTHER FACTS				
Air quality	Fair (near Phoenix)	Good	Good	Good
Access	Poor	Excellent	Fair	Good
Subsurface mineral estate (other than federal)	800 acres (est.) state of Arizona	2,880 acres state of Arizona	None	None
Inholdings	640 acres state of Arizona	None	None	None

Wilderness Values and Other Facts About the Maricopa Complex Wildernesses (page three)				
	Sierra Estrella	**North Maricopa**	**South Maricopa**	**Table Top**
OTHER FACTS (continued)				
Visitor days/year usage	100	400	150	700 to 800
Projected visitor days/year §	--	3,700	1,900	3,000
Cherrystems	1 (1 mile)	6 (10 miles)	2 (4 miles)	2 (2.25 miles)
Future uses which may affect wilderness values	Urban expansion of Rainbow Valley; Maricopa oil refinery	Utility corridor (NE); Butterfield interpretive plans (SE); paving county road (S); Maricopa oil refinery	Rural expansion, WAATS activity, Maricopa oil refinery	WAATS, related military routes; Maricopa oil refinery
Hiking trails	Quartz Peak (2.5 miles)	None	None	Table Top (4.5 miles)

§ *U.S. Department of the Interior, 1987b and 1989.*
¥ *Category refers to types of desert tortoise habitat (see Glossary for detailed description of categories).*
¤ *U.S. Department of the Interior, 1991c and 1994a.*
† *U.S. Department of the Interior, 1990a.*
¶ *U.S. Department of the Interior, 1991a and 1992.*
‡ *U.S. Department of the Interior, 1994a.*

APPENDIX B

Wildlife and Livestock Developments Within the Maricopa Complex Wildernesses			
Development	*Project number*	*Location*	*Condition*
Sierra Estrella Wilderness			
Butterfly Mountain Tank	808	T. 2 S., R. 1 E., sec. 26, NW¼SE¼	Functional
Montezuma Tank	814	T. 3 S., R. 1 E., sec. 1, SE¼SW¼	Functional
Gap Fence	4743	T. 3 S., R. 1 E., sec. 4; T. 2 S., R. 1 E., sec. 33	Functional
North Maricopa Mountains Wilderness			
Maricopa Mountains Catchment No. 3	445	T. 4 S., R. 3 W., sec. 3, SE¼SE¼	Functional
Maricopa Mountains Catchment No. 12	454	T. 4 S., R. 2 W., sec. 17, SE¼NE¼	Functional
Butterfield Well	--	T. 4 S., R. 3 W., sec. 36, NW¼SW¼	Nonfunctional
Beloat West Fence	0712	T. 3 S., R. 3 W., secs. 22, 27	Functional
Beloat Fence	0321	T. 4 S., R. 3 W., secs. 2, 3, 4	Functional
Butterfield Fence (3 gaps)	0308	T. 4 S., R. 2 W., secs. 17, 18, 28	Functional
Hazen Fence	1248	T. 4 S., R. 3 W., secs. 19, 30; T. 4 S., R. 4 W., sec. 24	Partially functional
Unnamed gap fence	--	T. 3 S., R. 3 W., secs. 5, 6	Nonfunctional
Unnamed tank	--	T. 4 S., R. 4 W., sec. 24, NE¼NW¼	Nonfunctional
South Maricopa Mountains Wilderness			
Maricopa Mountains Catchment No. 13	707	T. 6 S., R. 1 W., sec. 16, NE¼NE¼	Functional
Maricopa Mountains Catchment No. 14	708	T. 6 S., R. 2 W., sec. 12, SW¼NE¼	Functional
Bighorn Reservoir	3516	T. 6 S., R. 1 W., sec. 21, NE¼SE¼	Nonfunctional
Conley-Bender Fence No. 3	4346	T. 5 S., R. 2 W., sec.21	Functional
Unnamed gap fence	--	T. 5 S., R. 1 W., secs. 32 and 33	Partially functional

Wildlife and Livestock Developments Within the Maricopa Complex Wildernesses (page two)			
Development	*Project number*	*Location*	*Condition*
South Maricopa Mountains Wilderness (continued)			
Conley Pasture Fence	1977	T. 5 S., R. 1 E., sec. 6; T. 5 S., R. 1 W., sec. 1	Functional
Pasture 3 Fence	4357	T. 6 S., R. 1 W., sec. 31	Partially functional
Unnamed Tank	--	T. 6 S., R. 2 W., sec. 26	Nonfunctional
Table Top Wilderness			
Table Top Mountains Catchment No. 1	554	T. 7 S., R. 3 E., sec. 30, NW¼NW¼	Functional
Table Top Mountains Catchment No. 4	705	T. 8 S., R. 2 E., sec. 8, NE¼NE¼	Functional
Jake Tank	2082	T. 8 S., R. 2 E., sec. 6, NW¼SW¼	Nonfunctional
Malpi Tank	0486	T. 7 S., R. 3 E., sec. 28, SE¼NW¼	Nonfunctional
District Boundary Fence No. 1	0093	T. 7 S., R. 2 E., sec.21	Partially functional
District Boundary Fence No. 5	0333	T. 7 S., R. 2 E., secs. 31, 32, 33	Partially functional
Table Top Fence	0353	T. 8 S., R. 2 E., sec. 14	Partially functional

APPENDIX C

Plant Species Distribution in the Maricopa Complex Wildernesses						
Biome Subdivision *	*Lower Colorado River Valley*			*Arizona Upland*		
Landscape Type	*Plains/ lower bajadas*	*Washes/ drainage-ways*	*Upper bajadas/ hills*	*Lower bajadas*	*Washes/ drainage-ways*	*Upper bajadas/ mountains*
Creosotebush *(Larrea tridentata)*	▫	▫	▫	▫	▫	▫
White bursage *(Ambrosia dumosa)*	▫			▫		
Ocotillo *(Fouquieria splendens)*	▫		▫	▫		▫
Brittlebush *(Encelia farinosa)*	▫		▫			▫
Foothill paloverde *(Cercidium microphyllum)*	▫		▫	▫		▫
Saguaro *(Carnegiea gigantea)*	▫		▫	▫		▫
Wooly plantain *(Plantago insularis)*	▫		▫	▫		
Rigid spiny berb *(Chorizanthe rigida)*	▫		▫	▫		
Big galleta *(Hilaria rigida)*	▫ **			▫	▫	▫
Silver cholla *(Opuntia echinocarpa)*	▫		▫			
Teddy bear cholla *(Opuntia bigelovii)*	▫		▫	▫		▫
Triangle leaf goldeneye *(Viguiera deltoides)*				▫		▫
Bush penstemon *(Keckiella antirrhinoides)*						▫
Arizona yucca *(Yucca arizonica)*	▫		▫			▫
Fourwing saltbush *(Atriplex canescens)*	▫	▫	▫	▫	▫	▫
Broom snakeweed *(Gutierrezia sarothrae)*				▫		▫
Night-blooming cereus *(Peniocereus transmontanus* var. *greggii)*	▫					
Englemann hedgehog *(Echinocereus engelmanii)*	▫		▫	▫		▫
Compass barrel cactus *(Ferocactus acanthodes)*	▫		▫	▫		▫
Mesquite *(Prosopis velutinus)*		▫		▫	▫	▫

Plant Species Distribution in the Maricopa Complex Wildernesses (page two)						
Biome Subdivision *	*Lower Colorado River Valley*			*Arizona Upland*		
Landscape Type	*Plains/ lower bajadas*	*Washes/ drainage-ways*	*Upper bajadas/ hills*	*Lower bajadas*	*Washes/ drainage-ways*	*Upper bajadas/ mountains*
Ironwood *(Olneya tesota)*	▫	▫	▫	▫	▫	▫
Blue paloverde *(Cercidium floridum)*	▫	▫		▫	▫	
Desert lavender *(Hyptis emoryi)*		▫	▫		▫	
Rosemallow *(Hibiscus denudatus)*			▫			▫
Smoke tree *(Psorothamnus spinosa)*		▫				
Brickell bush *(Brickellia atractyloides)*			▫			▫
Desert willow *(Chilopsis linearis)*		▫			▫	
Chuparosa *(Justicia californica)*		▫				
(Encelia frutescens)		▫				
Desert honeysuckle *(Anisacanthus thurberi)*		▫				
Rush broom *(Bebbia juncea)*		▫			▫	
Canyon ragweed *(Ambrosia ambrosiodes)*		▫			▫	
Globemallow *(Sphaeralcea* spp.)	▫ **	▫		▫		▫
Catclaw acacia *(Acacia greggii)*		▫	▫	▫	▫	▫
Burrobrush *(Hymenoclea salsola* var. *pentlepsis)*		▫			▫	
Ragged rock flower *(Crossosoma bigelovii)*						▫
Anderson thornbush *(Lycium andersonii)*		▫	▫		▫	▫
Graythorn *(Ziziphus obtusifolia)*		▫			▫	▫
Desert broom *(Baccharis sarothroides)*		▫			▫	
Triangleleaf bursage *(Ambrosia deltoidea)*			▫	▫		▫
Red brome *(Bromus rubens)*	▫	▫	▫	▫	▫	▫
Bush muhly *(Muhlenbergia porteri)*				▫	▫	▫

Plant Species Distribution in the Maricopa Complex Wildernesses (page three)						
Biome Subdivision *	*Lower Colorado River Valley*			*Arizona Upland*		
Landscape Type	*Plains/ lower bajadas*	*Washes/ drainage-ways*	*Upper bajadas/ hills*	*Lower bajadas*	*Washes/ drainage-ways*	*Upper bajadas/ mountains*
Tobosa *(Hilaria mutica)*			▫	▫		▫
Crucifixion thorn *(Canotia holacantha)*						▫
Whitethorn acacia *(Acacia constricta)*			▫	▫	▫	▫
San Felipe dogweed *(Dyssodia porophylloides)*			▫			▫
Yerba del venado *(Porophyllum gracile)*			▫	▫		▫
Limber bush *(Jatropha cardiophylla)* ***						▫
Jojoba *(Simmondsia chinensis)*						▫
Desert mescal *(Agave desertii)*						▫
Little-leafed ratany *(Krameria parvifolia)*	▫		▫	▫		▫
White ratany *(Krameria grayi)*	▫		▫	▫	▫	
Desert hackberry *(Celtis pallida)*		▫	▫		▫	▫
Fairy feather duster *(Calliandra eriophylla)*						▫
Shrubby buckwheat *(Eriogonum wrightii)*						▫
Flat top buckwheat *(E. fasciculatum)*						▫
Paperflower *(Psilostrophe cooperi)*				▫		▫
Desert zinnia *(Zinnia acerosa)*	▫			▫		▫
Wire lettuce *(Stephanomeria pauciflora)*				▫		▫
Desert Christmas cactus *(Opuntia leptocacaulis)*				▫		▫
(O. phaeacanta var. major)				▫		▫
Engelmann prickly pear *(O. engelmanii)*				▫		▫
Fishhook pincushion *(Mamillaria microcarpa)*						▫
Fendler hedgehog *(Echinocereus fendleri)*			▫			▫

Plant Species Distribution in the Maricopa Complex Wildernesses (page four)						
*Biome Subdivision **	*Lower Colorado River Valley*			*Arizona Upland*		
Landscape Type	*Plains/ lower bajadas*	*Washes/ drainage-ways*	*Upper bajadas/ hills*	*Lower bajadas*	*Washes/ drainage-ways*	*Upper bajadas/ mountains*
Buckhorn cholla *(O. acanthocarpa)*	▫		▫	▫		▫
Chain fruit cholla *(O. fulgida)*				▫	▫	▫
Pencil cholla *(O. arbuscula)*				▫	▫	▫
Fishhook barrel cactus *(Ferocactus wislizenii)*			▫	▫		▫
Canutillo *(Ephedra trifurca)*				▫	▫	▫
Elephant tree *(Bursera microphylla)* ****						▫
Desert olive *(Forestiera shrevei)*						▫
Mexican jumping bean *(Sapium biloculape)*					▫	
California trixis *(Trixis californica)*			▫	▫		▫
(Fagonia californica)			▫			▫
Spiny goldenbush *(Machaeranthera pinnatifida)*						▫
Bedstraw *(Galium stellatum)*						▫
Yellow felt plant *(Horsfordia newberryi)*						▫
Spice bush *(Aloysia wrightii)*						▫
Ditaxis *(Ditaxis lanceolatus)*						▫
Slender janusia *(Janusia gracilis)*						▫

* From Brown, David E., Biotic Communities of the American Southwest (1982)
** Sandy Plains in Sierra Estrella Wilderness
*** Table Top Wilderness only
**** Sierra Estrella Wilderness only

APPENDIX D

Fire Suppression Procedures for the Maricopa Complex Wildernesses

Introduction

The Maricopa Complex Wilderness fire management procedures provide for:

- a fire suppression strategy which ensures protection of wilderness resources, human safety and structures with suppression techniques resulting in the least possible evidence of human activity and
- ensuring a common understanding by Phoenix District personnel of the constraints, considerations and procedures involved with wilderness fire suppression operations.

All wildfires will be extinguished with appropriate and approved suppression actions which:

- ensure protection of wilderness resources,
- provide for protection of human safety and structures,
- result in the least possible evidence of human activity,
- minimize surface disturbance and alterations of the natural landscape,
- are consistent with wilderness management objectives and constraints,
- allow for the least possible acreage burned,
- are reasonable and prudent for the time of year, current and predicted fire weather and fire behavior and availability of fire resources and
- minimize fire suppression cost.

The fact that a wildfire occurs in a wilderness is not in itself a emergency. An emergency exists when:

- a wildfire burning inside a wilderness boundary threatens human life or property or
- there is a definite potential for a wildfire to exceed suppression efforts, burn beyond the wilderness boundary and endanger human life, property, managed resources or the public welfare.

Surface disturbance in wilderness from suppression actions must be rehabilitated to as natural a state as possible.

An escaped fire situation analysis will be prepared to govern all wildfires escaping initial attack.

Suppression facilities, support vehicles and improvements, i.e., temporary fire camps, helispots, staging areas and other sites used for fire suppression activities, must be outside the wilderness, except those that are the minimum necessary to protect life, property, public welfare and wilderness objectives.

Due to the surface disturbance involved and adverse impacts on wilderness values and esthetics, fireline constructed with motorized equipment will be used as a last resort.

Within the constraints defined by this guidance, initial attack suppression actions will be determined by the Initial Attack Incident Commander and Resource Advisor, if available.

The District Manager and Area Manager will be informed immediately of all wildfires that occur in or threaten wilderness. The Area Manager is the approving official for all requests for motorized vehicle use in wilderness.

Operating Procedures

Detection

Fire detection methods will have the least permanent impact on wilderness values, such as aircraft overflights. Aerial detection flights should attempt to maintain the Federal Aviation Administration airspace advisory of 2,000 feet above ground level over wilderness.

Initial Attack Procedures

Establish ground or aerial reconnaissance and determine:

- fire location, size, rate of spread and behavior,

- current and probable fuels, weather and topography, including any natural barriers and
- any threats to life, property or sensitive wilderness resources.

Send the Initial Attack Incident Commander to the fire.

Inform the District Manager and Area Manager of the fire.

Send the Resource Advisor to the fire.

Determine/respond with the appropriate initial attack force.

Take actions to control the fire during initial attack.

Complete an escaped fire situation analysis if the fire escapes initial attack.

Escaped Fire Situation Analysis

An escaped fire situation analysis will be immediately prepared for any fire that escapes initial attack. Any fire with flame lengths greater than six feet or a perimeter increasing faster than 18 chains (1,200 feet) per hour will be considered to have escaped initial attack; an escaped fire situation analysis will be prepared immediately. The escaped fire situation analysis will be completed to determine the management strategy for the fire. The analysis will be completed by the District Fire Management Officer, Area Manager, Incident Commander and Resource Advisor.

Approval Matrix

The following is the minimum level of authority for approving the use of motorized and mechanized equipment in the Maricopa Complex. Note the special exceptions described below.

Equipment	Approval
Portable radio repeaters	Area Manager
Temporary weather stations	Area Manager
Chainsaws	Area Manager
Portable pumps	Area Manager
Initial attack aircraft/smokejumpers	Area Manager
Retardant airtankers	Area Manager
Helicopters	Area Manager
Aerial ignition systems	Area Manager
Construction of new helispots	Area Manager
Spike Camps	Area Manager
Fire engines	Area Manager
Support vehicles	Area Manager
Motorized earthmoving equipment	Area Manager
Base camps	Area Manager

Note exceptional conditions described in the following section under which the Incident Commander may assume some authority.

Exceptions

In special or emergency cases involving the health and safety of wilderness visitors or the protection of wilderness values, aircraft and motorized vehicles and mechanized equipment may be used. In these situations, the Incident Commander should order the resources needed and notify the appropriate line manager immediately.

The use of power tools (e.g., chainsaws, pumps) and aircraft in fire reconnaissance below 2,000 feet above ground level, and in building and holding firelines (e.g., retardant tankers, helicopters with buckets) is pre-approved under the following situations to facilitate effective initial attack efforts and to minimize the need to locate line managers on short notice.

- If flame lengths exceed four feet or
- if perimeter growth exceeds 12 chains (800 feet) per hour in grass fuels or one chain (66 feet) per hour in brush/shrub fuels.

The use of these tools will be immediately reported by the Incident Commander to the Area Manager through the District Fire Management Officer.

Tactical Considerations

Planning

- Emphasize the BLM minimum tool policy.
- Evaluate suppression tactics during each planning and strategy session to ensure that they meet wilderness objectives.
- Include the BLM Wilderness Resource Advisor and other affected agency representatives in all planning and strategy sessions.
- Emphasize the need to protect habitat for sensitive species, including federally listed threatened and endangered species.
- Allow logs and snags to burn rather then be

sawed or felled.

- Assess and request early in the incident the need for an archaeologist or additional resource advisors.

Line Construction and Holding

- When smoke or flames are not visible or the perimeter is not threatening to spread, no scratchline will be constructed.
- Use natural barriers as much as possible in fireline construction. Locate firelines to take advantage of natural barriers, rock outcroppings, trails, streams, etc.
- Firelines will be no wider than absolutely necessary to stop the spread of the fire.
- Place the fireline as close to the fire as possible.
- Limbing of trees along the fireline will be done only as necessary for suppression efforts or for firefighter safety.
- If unburned material is left within the fireline, all such material will be felt/tested with bare hands to assure that no sparks or glowing embers remain.
- Burning snags or trees will only be felled when they may fall across the fireline or endanger firefighters. They will be allowed to burn naturally, if possible.
- Spot fires will be flagged and/or signed from a main fire.
- A flagged line from the fire to the nearest road or trail will be left for checking purposes. This line will be removed by the person checking the fire.
- Single engine airtankers with the capacity of 350 to 400 gallons of water, foam or fugitive fire retardant have been very effective in light to moderate fuels. Consider the use of this fire suppression resource in both initial attack and mop up.

Logistics

- Use the long line or remote hook in lieu of constructing new helispots to deliver and retrieve gear. Emphasize the use of natural openings.
- Emphasize mule pack strings to re-supply fire crews.
- Emphasize the use of coyote tactics.
- Consider the use of rappelling operations.
- Crews will stay on the existing trails whenever possible.
- Wilderness base camps and spike camps are discouraged; if possible, place them outside the wilderness. Evaluate the location and need of spike camps daily.
- If base camps or spike camps are approved for use in wilderness:
  - utilize low impact "no trace" camping techniques, site selection and site use,
  - use existing campsites, if available,
  - if existing campsites are not available, select a campsite unlikely to be observed by visitors,
  - select impact-resistant sites such as rocky or sandy soils,
  - change camp location if ground vegetation in or around the camp shows signs of excessive use,
  - do minimal disturbance to the land in preparing sleeping and cooking areas,
  - do not clear vegetation or dig trenches for sleeping areas,
  - toilet sites should be a minimum of 200 feet from any water source; holes must be dug six to eight inches deep,
  - select alternate travel routes between camp and the fire if trail wear becomes excessive and
  - restore the campsite area to as natural a condition as possible.

Documentation

A post-fire report shall be completed on all wilderness fires and suppression actions within two weeks after the fire by the Area Manager, Incident Commander and Fire Management Officer. Copies of this report will be filed in the appropriate wilderness file.

As a minimum, the report describing motorized vehicle use shall contain:

- the name, number and date of the fire,
- the resource area and wilderness,
- the names of the Incident Commander, Wilderness Resource Advisor and Area Manager,
- a description of use of the motorized vehicle (i.e., fire engine, truck, grader, tractor/dozer, backhoe or similar vehicle),

the date it was used, the specific reason for its use and the nature of the emergency,

- a description of the wilderness fire suppression action taken,
- the specific location and description of the work done,
- rehabilitation action planned and completed to restore the work area to as natural an appearance as possible,
- the date the request was made for use of the motorized vehicle and the date the request was approved by the Area Manager,
- the date the State Director was informed of the fire and mechanized use,
- rationale for actions which may have long-term impacts on wilderness values and
- any other significant information.

Rehabilitation

- Emphasize to all fire personnel the need to remove all signs of human activity.
- Pack out all garbage.
- Fill in deep, wide firelines and trenches.
- Waterbar as necessary to prevent erosion.
- Ensure that stumps from trees and large brush are cut flush with the ground.
- Any trees or large brush that were cut during fireline construction should be scattered to appear natural.
- Restore helicopter landing sites.
- Cover and fill in latrine sites.

APPENDIX E

Glossary

Accepted uses (formerly known as **Nonconforming uses**): Uses allowed by the Wilderness Act of 1964 that were in existence prior to wilderness designation and not necessarily compatible with preserving wilderness values, e.g., livestock grazing and range or wildlife development maintenance.

Base camp (regarding firefighting activities): That location at which primary firefighting logistics functions are coordinated and administered.

Base camp (regarding recreational activities): A temporary staging location which serves as the primary loading and unloading point for the wilderness visitor or outfitter and its clients.

Cherrystem road: A dead-end road extending into and surrounded by a wilderness but not within its boundaries.

Closest individual plant: A technique for estimating the number of plants in an area by measuring the distance from a random point along a transect to the nearest plant.

Cole browse method: A method of estimating the amount of browsing of a key species. The method provides data on age and form classes, availability and hedging, estimated utilization and growth and use indices for the shrub component of the plant community.

Commercial: For profit, attempted profit, salary, increase in business or financial standing or for support of activities from amounts received or services rendered in connection with the permitted activities.

Coyote tactics: A fireline construction technique involving self-sufficient crews building firelines until the end of a shift, remaining overnight at or near that point and beginning again on the next shift.

Desert tortoise habitat categories: Habitat areas delineated by BLM district managers as per the Strategy for Desert Tortoise Habitat Management on Public Lands in Arizona (USDI, 1990). Category criteria include importance of the habitat to maintaining viable populations, resolvability of conflicts, tortoise density and population status (stable, increasing or decreasing). The category determines the management goal for the habitat. The goals of Category I are to maintain stable, viable populations and protect existing tortoise habitat values, increasing the populations, where possible. The goals of Category II are to maintain stable, viable populations and halt further declines in tortoise habitat values.

Ecosystem: The organisms of a particular habitat together with the physical environment in which they live; a dynamic complex of plant and animal communities and their associated non-living environment.

Ephemeral forage: Plants consumed by domestic livestock and native wildlife which complete a life cycle and die in one year or less. Germination and growth of these plants does not occur consistently each year but is determined by several weather and soil conditions, e.g., timing and amount of precipitation, temperature, winds, soil types and depths, etc.

Former vehicle ways: Vehicle routes established and maintained solely by the passage of motor vehicles prior to wilderness designation or by vehicular access after designation where approved as per 43 CFR 8560.

Fire retardant: Any substance except plain water that by chemical or physical action reduces flammability of fuels or slows their combustion rate.

Fugitive fire retardant: That which contains a colorizing agent designed to fade rapidly following application in order to minimize its visual impacts.

Grazed class method: A method of estimating the level of grazing use of key grass or grass-like plant species along a transect using photo guides. These estimates reflect the herbage removed and remaining.

Hobbling: The act of binding two of the legs of a stock animal together to restrict its movements.

Interim operations plans: Written documents which authorize the use of certain types of mechanized transport and mechanized/motorized equipment under certain conditions. They serve as interim approval of the activities until a wilderness management plan is completed. The documents receive public review similar to that of the wilderness management plan. They typically address activities associated with wildlife, livestock and wild horse and burro management within the wilderness.

Key species: (1) Those plant species which must, because of their importance, be considered in a management program or (2) plant species whose use as forage serves as an indicator of changes in a vegetative community, an important component which, if overused, will significantly harm watershed conditions, grazing capacity or other resources.

Key forage species method: A method of estimating foraging by categorizing the amount of use at each sample location into one of six utilization classes. Observations are made of the appearance of the rangeland and especially the key species along a transect which traverses a study area.

Mechanized transport: Any device for transporting personnel or material with wheels, tracks, skids or by flotation for traveling over land, water or snow and propelled by a nonliving power source contained or carried on or within the device.

Motor vehicle: Any vehicle which is self-propelled or any vehicle which is propelled by electric power obtained from batteries.

Motorized/mechanized equipment: Any machine activated by a nonliving power source except small battery-powered, hand-carried devices such as flashlights, shavers, Geiger counters and cameras.

Non-profit: Not conducted or maintained for the purpose of making a valuable return or net income.

Perennial/Ephemeral: A classification of grazing allotment on which livestock are permitted to graze both perennial and ephemeral (annual) vegetation.

Rappelling: The act of descending from a helicopter by means of a rope passed over the climber's body in a specific manner.

Key plant species density: The average number of individuals of a key plant species per area sampled.

Social encounter: An interaction between one or more persons and their associated pack stock which occurs within a distance which a person would normally acknowledge another person. It is not just the sight or sound of an individual or individuals at a greater distance.

Special event: An organized recreational activity which occurs infrequently, e.g., a fund-raising horseback ride for a charitable or non-profit institution or organization.

Spike camp (regarding recreational activities): The location where the outfitter, pack animals and clients spend the night within a wilderness.

Spike camp (regarding firefighting activities): A fire camp with minimum facilities established along a fireline for the subsistence and equipping of firefighters.

WAATS (Western Army National Guard Aviation Training Site): A training facility proposed for south-central Arizona to be used by the Army National Guard primarily for helicopter flight training.

Waterlot fence: A fence surrounding an earthen livestock water reservoir which serves as a livestock gathering and holding device but can also be closed to stop livestock from drinking from the reservoir.

APPENDIX F

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