

ENVIRONMENTAL ASSESSMENT

**MARIJILDA, HAWK HOLLOW, WHITE STREAKS AND SHINGLE MILL ALLOTMENT
MANAGEMENT PLANS**

Safford Ranger District
USDA Forest Service
Graham County, Arizona

08/17/2000

FOREWORD

The Council on Environmental Quality regulations (40 CFR Parts 1500 to 1508) outline the procedures the Forest Service uses to comply with the National Environmental Policy Act, commonly referred to as "NEPA". These regulations define an environmental assessment as a "concise public document" that "shall include brief discussions" of the need for the proposal, alternatives to the proposal, discussion of environmental effects based on the substantive issues, and a listing of agencies and persons consulted (40 CFR 1508.9). In order to meet the intent of the regulations with respect to "concise" and "brief", the text of this environmental assessment will contain references to the contents of the analysis record whenever possible. References to analysis record documents will be contained in parentheses following the conclusions abstracted from a particular document. For example, a reference "(Doc. 23, page 6)" would mean that a specific passage in the environmental assessment is linked to analysis record Document 23, page 6. A complete index to the analysis record contents is contained in the environmental assessment as Appendix A.

The Code of Federal Regulations (CFR) contains guidance concerning public review of environmental assessments. This guidance can be found at 36 CFR Part 215. These regulations prescribe a 30-day comment period for public review of this document (36 CFR 215.6.a). The 30-day comment period begins on the first day after publication of a notice of environmental assessment availability in the appropriate newspaper. The District Ranger must consider all comments received by the close of business on the 30th day of the comment period (36 CFR 215.6.c.2). The District Ranger's response will be written and added to the appendix of the environmental assessment. A copy of the written response will be forwarded to all who commented on the environmental assessment, with a copy of the final decision notice.

When the final project decision is made, the 36 CFR 215 regulations also provide an administrative appeal process to further review agency decisions. The final decision notice mailed to persons who have expressed an interest in this project will contain information on filing an appeal should you choose to do so. Decisions made at the Coronado National Forest level will be reviewed by the Regional Forester of the Forest Service Southwestern Regional Office in Albuquerque, New Mexico (36 CFR 215.12). Unless waived in a specific case, it is the position of the Department of Agriculture that any filing for Federal judicial review of a decision subject to review under the 36 CFR 215 regulations is premature and inappropriate unless the plaintiff has first sought to invoke and exhaust the procedures available under these regulations (36 CFR 215.20). When NEPA is completed relative to issuance of permits (e.g., special use, grazing, etc.), permittees may choose to appeal under the regulations listed at 36 CFR 251, Subpart C. Permittees must select which administrative review regulation they will opt to use, because they can not use both for the same appealed decision.

ENVIRONMENTAL ASSESSMENT

MARIJILDA/HAWK HOLLOW/WHITE STREAKS/SHINGLE MILL ALLOTMENT MANAGEMENT PLANS USDA FOREST SERVICE SAFFORD RANGER DISTRICT

SECTION 1 - PROJECT SCOPE

A. Introduction & Background

This environmental assessment describes a Forest Service proposal to authorize grazing on, and issue grazing permits and develop allotment management plans (AMPs) for, the Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments. All four allotments are located within the Pinaleno Ecosystem Management Area, Safford Ranger District, Coronado National Forest (Map 1). The purpose of this report is to describe the proposal and alternatives to the proposal, solicit comments on the proposal and alternatives, and disclose the effects of implementation of the proposal and alternatives. Final decisions on all four allotments are expected by September 2000. Federal actions such as authorization of grazing, issuance of term grazing permits and approval of allotment management plans must be analyzed to determine potential environmental consequences (National Environmental Policy Act of 1969).

B. Purpose and Need for Action

The purpose of the proposed action is to authorize livestock grazing on the Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments for a 10-year period, and provide long-term management direction through Allotment Management Plans (AMPs) for each allotment. Authorization is needed now for a variety of reasons. Generically, these include:

- Where consistent with other multiple-use goals and objectives there is Congressional intent to allow grazing on suitable lands (Multiple-Use Sustained Yield Act of 1960, Wilderness Act of 1964, Forest and Rangeland Renewable Resource Planning Act of 1974, Federal Land Policy and Management Act of 1976, National Forest Management Act of 1976).
- It is Forest Service policy to make forage available to qualified livestock operators from lands suitable for grazing consistent with land management plans (Forest Service Manual 2203.1).
- It is Forest Service policy to continue contributions to the economic and social well-being of people by providing opportunities for economic diversity and by promoting stability for communities that depend on range resources for their livelihood (FSM 2202.1).
- By regulation, forage-producing lands will be managed for livestock grazing where consistent with land management plans (36 CFR 222.2(c)).

- The Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments contain lands suitable for domestic livestock grazing in the Coronado Forest Plan and continued domestic livestock grazing is consistent with the goals, objectives, standards and guidelines of the Forest Plan (Forest Plan pages 9-11, 27-86).

Authorization for a 10-year period is required by law (Federal Land Policy and Management Act Sec. 402.a & b.3).

In addition, there are specific conditions on the Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments that require authorization (Docs. 29, 60), including:

- Changed resource conditions (Biological Opinions regarding threatened and endangered species [all allotments]; proposed critical habitat for Mexican spotted owl [all allotments])
- An opportunity to change numbers or season of use to coordinate with grazing on adjoining (off-Forest) pastures (Marijilda Allotment)
- Changes in numbers and season of use to reflect additional pasture acreage and coordinate with off-Forest grazing (Hawk Hollow Allotment)
- Large areas "not capable" for grazing that are included within allotment boundaries (all allotments)
- Need for additional improvements (Shingle Mill Allotment).

This Environmental Assessment (EA) analyzes the effects of proposed grazing authorizations and management practices to be included in AMPs, as well as alternatives to the proposal. The EA describes the existing and desired conditions of the affected environment within the allotments, and proposed management practices that will resolve discrepancies between the two. Management practices that are approved will be incorporated into an AMP for each allotment. Current knowledge regarding existing and desired conditions, and potential management practices, is described in the following sections.

Existing Condition:

NOTE - Acreage figures and classifications reported here may differ from the Scoping Report of April 14, 1999 (Doc. 35). This difference is a result of the site-specific analysis at the project level, and updating of data in the Geographic Information System (GIS). Classification of acres that are capable for grazing is based only on slope. Slopes of 40% or steeper are classified as "not capable". The slope analysis was accomplished using the Digital Elevation Model with a 19-acre resolution.

Marijilda: Located on the northeastern side of the Pinaleno Mountains, the Marijilda Allotment contains 14,044 acres, of which 4474 are classified as capable for livestock grazing. Areas classified as "not capable" primarily consist of steep slopes in the upper elevations of the allotment (Map 2). The current grazing permit (Doc. 20), for 30 cattle yearlong (Cow/Calf=360 Animal Months), will expire in 2008. There are seven pastures, two of which (Powderhouse and Recreation) are used together. Three of the pastures (Upper Deadman, Lower Deadman, and Deadman Trap) are used one year and the other four are used the following year (Upper Marijilda, Rincon, Powder House, and Recreation). The permittee has grazing operations on adjacent state and private land. This situation presents the opportunity to coordinate grazing over the whole operational land base in order to improve management (Doc. 60).

Vegetation consists of desert grassland (28%), broadleaf woodland (26%), transitional coniferous forest (23%), mixed coniferous forest (20%) and deciduous riparian woodland (2%). There is also a small

amount of coniferous forest within the allotment. (Tables 1a & b summarize the vegetation types for each allotment under the existing condition and the proposed action considered in this EA; Map 3 presents their distribution.)

The Pinaleño Mountains are home to a diverse assemblage of animal species due to the variability of available habitat that occurs over a limited geographic area (Doc. 61). The area supports a variety of species that either use the area seasonally or are found there year round. Typical mammals include Coues whitetail deer (*Odocoileus virginianus couesi*), western spotted skunk (*Spilogale gracilis leucoparia*), black bear (*Ursus americanus amblyceps*), striped skunk (*Mephitis mephitis*), ringtail (*Bassariscus astutus arizonensis*), coati (*Nasua nasua*), Mexican woodrat (*Neotoma mexicanus*), and rock squirrel (*Spermophilus variegatus*). The area is likely to be used for foraging by a variety of bat species such as fringed myotis (*Myotis thysanoides*), big brown bat (*Eptesicus fuscus*), and hoary bat (*Lasiurus cinereus*).

Typical avifauna of the area includes songbirds such as black-chinned sparrow (*Spizella atrogularis*), bushtit (*Psaltiriparus minimus*), Bewick's wren (*Thryomanes bewickii*), Gray-breasted jay (*Aphelocoma ultramarina*), bridled titmouse (*Parus wollweberi*), and blue-gray gnatcatcher (*Poliophtila caerulea*). Raptors such as red-tailed hawk (*Buteo jamaicensis*), great-horned owl (*Bubo virginianus*) may also use the area for foraging or possibly nesting with Swainson's hawk (*Buteo swainsoni*) present in the summer.

Reptile species that may occur in the area include Arizona black rattlesnake (*Crotalis viridis cerberus*), Yarrow's spiny lizard (*Sceloporus jarrovi*), many-lined skink (*Eumeces callicephalus*), and striped plateau lizard (*Sceloporus virgatus*).

Threatened, endangered, or proposed species included in the analysis of the area are the lesser long-nosed bat (*Leptonictorys curasoae yerbabuena*), the Mexican spotted owl (*Strix occidentalis lucida*), Northern aplomado falcon, (*Falco femoralis septentrionalis*), Chiricahua leopard frog (*Rana chiricahuensis*). Twenty-one Forest Service sensitive species will be analyzed in the Biological Assessment and Evaluation (in preparation) of the Preferred Alternative.

Catclaw is increasing on the allotment, and a burn occurred in 1999 to reduce the occurrence of undesirable brush species (Docs. 29, 33). The condition of the Marijilda Creek riparian area is degraded below the Lebanon Ditch as a result of removal of water (Docs. 6, 29). There is no permanent flow below the diversion. Some agaves are present, in low density. Invasive exotic plants are present and consist of sweet resin bush (*Euryops* sp.), tamarisk (*Tamarix* sp.) and karoo bush (*Pentzia* sp.). *Euryops* has become established on a 10-12 acre area of the allotment. Tamarisk spread is facilitated by the Lebanon Ditch diversion. Management alternatives for these invasive exotics will be considered in a separate analysis.

Historically, the flatter portions of the allotment were subjected to heavy grazing which resulted in poor range condition. In 1960, the Marijilda allotment was reported to be in poor condition throughout. At that time, the numbers were reduced through a non-use agreement from 100 cattle yearlong (1200 Animal Months [AMs] Cow/Calf [C/C]) to 125 cattle for six months, winter use (750 AMs C/C). This management led to improved conditions. However, in 1965 the permittee indicated that he could not operate on a six-month basis and the permit was changed to 75 cattle year-long (900 C/C AMs), and an additional pasture (Powderhouse) was added. Yearlong use and poor management led to deteriorating

conditions, and in 1974, 2315 acres were reported to be in Poor or Very Poor condition. In 1977, the permit was changed to 200 cattle for six months (150 term, 50 temporary), winter use (1200 AMs C/C). In 1978 the permit was transferred to a new permittee for 150 cattle for six months winter use (900 AMs C/C) but under an AMP actual use was 75 head yearlong. In 1982, the permit was put into non-use status. From 1982 to 1992, the allotment was used intermittently as a swing allotment for the Gillespie and Grant Creek Allotments to facilitate prescribed burning operations on those allotments (Coronado National Forest 2200 files; Marijilda Allotment folder). In 1992, a new (current) permit was issued for 30 cattle (360 AMs, C/C) year-long. The current permit (Doc. 20) continued those permitted numbers.

Under current management, the seven pastures are divided into two units, one with three pastures and one with four. In any given year, one unit is not grazed. Cattle are rotated through the pastures within the unit that is being grazed in order to control utilization (Doc. 54). Utilization limits are 50% in upland key areas and 40% in riparian key areas (Doc. 58). Actual use, measured in 1999 was found to be up to 19% in upland key areas, and minimal in riparian key areas (Doc. 46). Since 1975, both watershed and range condition have improved, although the catclaw and invasive exotics continue to have a negative effect on range condition ratings. Range conditions are displayed in Tables 4a & b, and Map 4.

Improvements on the Marijilda Allotment consist of 16.2 miles of fence, 7 corrals, 9 water sources, and one mile of pipeline. The addition of 0.5 mile of pipeline with one water trough was suggested as a way to improve cattle distribution and utilization in the Rincon Pasture (Map 5; Docs. 29, 47, 49).

Hawk Hollow: Located north of the Marijilda Allotment on the northeastern face of the Pinaleno Mountains, the Hawk Hollow Allotment consists of 3181 acres, of which 1277 are considered capable for grazing. Areas classified as "not capable" primarily consist of steep slopes in the upper elevations of the allotment (Map 2). The current grazing permit for 20 cattle, 11/1 through 5/31, will expire in 2002 (Doc. 2). There are two pastures.

Vegetation consists of Southwestern desert grassland (79%), broadleaf woodland (18%), deciduous riparian (3%), and a small amount of transitional coniferous forest, with much chaparral and good riparian habitat above the reservoir on Frye Mesa. Hillsides contain many agaves. There are areas of thick catclaw and mesquite. Frye Mesa has a noxious weed problem, with *Euryops* having invaded most of the mesa. (Although most of this area is off-Forest.) A significant portion of the allotment is over 6500 feet in elevation, and is not capable rangeland, suggesting a need to revise the allotment boundary.

The description of typical wildlife species found in the Hawk Hollow is identical to that described for the Marijilda allotment in the previous section.

Historically, the Hawk Hollow allotment contained 1212 acres of which 913 were capable rangeland. Flatter portions of the allotment were subjected to heavy grazing use which resulted in poor range conditions. A major factor contributing to the overgrazing was trespass caused by the lack of a forest boundary fence. In 1959, 86% of the allotment was in "fair" condition, and 14% was in "poor" condition. Historic permitted numbers were around 32 cattle for 6 months (10/1 – 3/31) (192 AMs, C/C). Production and Utilization Studies in 1982, 1984 and 1985 determined that proper stocking was 130 AMs, 180 AMs and 168 AMs, respectively. In 1992, the numbers were changed to 20 cattle for 7 months (140 AMs, C/C, 11/1 to 5/31). In 1999, the Cave Canyon pasture (formerly part of the Marijilda Allotment) was incorporated into the allotment, increasing total acres to 3181 and capable acres to 1277. This resulted in additional capacity of 364 acres (Coronado National Forest 2200 files; Hawk Hollow

Allotment folder). Cattle are managed in a two-pasture rest-rotation. Utilization limits are set at 50% in upland key areas and 40% in riparian key areas (Doc. 57). Actual use measured in 1999 was up to 5% (Doc. 26). The catclaw, mesquite and *Euryops* continue to have a negative effect on range condition ratings. Range condition is displayed in Tables 4c & d and Map 4.

Improvements on the Hawk Hollow Allotment consist of 8.8 miles of fence, 2 corrals, 2 water sources, and 1.5 miles of pipeline (Map 5). No construction or reconstruction of improvements is necessary.

White Streaks: Located adjacent to the Hawk Hollow Allotment in the Pinaleno Mountains, the White Streaks Allotment consists of 4653 acres, of which 1721 are classified as capable for grazing. Areas classified as "not capable" primarily consist of steep slopes in the upper elevations of the allotment (Map 2). The current grazing permit expires in 2008 (Doc. 4). There are two pastures, grazed by 38 cattle between November 1 and April 30 (or 228 AMs, C/C).

Vegetation on the allotment consists of Southwestern desert grassland (56%), broadleaf woodland (24%), mixed coniferous forest (6%), transitional coniferous forest (12%), and deciduous riparian woodland (2%). Drainages are small, rocky and very steep. Ash Creek is perennial. The Ash Creek riparian area is fenced, but a diversion dam and pipeline for the Cluff Ponds at about the 5000-foot level essentially dries up the lower riparian area for at least a portion of the year. The diversion significantly reduces riparian obligate vegetation and canopy cover, while increasing temperatures. Above the diversion, trout (rainbow, brown, possibly a few brook trout and possibly some stray Apache trout) are present year-round. The presence of the Cluff Ponds diversion also complicates access to the allotment; breaks in the waterline cause erosion of the access road (Docs. 5, 12, 29).

The description of typical wildlife species found in the White Streaks allotment is identical to that described for the Marijilda allotment in a previous section.

This allotment was used as a community allotment until 1992. Management of community allotments is difficult, and the rangeland vegetation condition reflected inadequate management. Most of the areas adjacent to the Forest boundary were historically in poor condition. The Forest boundary was not fenced until 1937. Prior to 1975, the permitted use averaged 29 cattle yearlong, however, wild cattle were reported in the area as late as the 1960's. In 1978 the permit was changed to seasonal use, with 58 cattle permitted from 11/1 to 4/30. The change in season of use helped to improve conditions, but management was still lacking. In 1992, the permit was changed to a single permittee, with 38 cattle from 11/1 to 4/30 (228 AMs cow/calf; Coronado National Forest 2200 files, White Streaks Allotment folder). The current permit (Doc. 4) continues these numbers. Utilization limits are set at 50% in upland key areas and 40% in riparian key areas (Doc. 56). Actual use measured in uplands 1999 was 22% (Doc. 26). Overall management of livestock grazing since the 1970s, and especially since 1992, has helped improve range condition. Range condition is displayed in Tables 4e & f, and Map 4.

Improvements on the White Streaks Allotment consist of 4.8 miles of fence, 2 corrals and 3 water sources (Map 5). No construction or reconstruction of improvements is necessary.

Shingle Mill: Located adjacent to the White Streaks Allotment on the north face of the Pinaleno Mountains, the Shingle Mill Allotment consists of 34,024 acres, about 16,666 of which are classified as capable for livestock grazing. Areas classified as "not capable" primarily consist of steep slopes in the upper elevations of the allotment (Map 2). The current grazing permit expires in 2008 (Doc. 4). There

are six pastures: Shingle Mill, Upper Tripp, Lower Tripp, Nuttall/Carter, Taylor and a horse pasture. Current permitted numbers are "...not more than 990 AMs" (typically 120 cattle for 6 months, November 1 through April 30, plus 25 horses for ten months). Five additional horses are permitted through a private land permit.

Elevations within the allotment range from 4000 to 9000 feet. Vegetation on the allotment includes broadleaf woodland (42%), desert grassland (30%), transitional coniferous forest (17%), mixed conifer (6%) and coniferous woodland (5%). Agaves are present at lower elevations. There are seven major drainages: Tripp Canyon, Little Righthand Canyon, North Taylor Canyon, Carter Canyon, Nuttall Canyon, Lefthand Canyon and Shingle Mill Canyon. Most have perennial or almost perennial flow in the upper elevations, but are usually intermittent in the lower country. Riparian areas are little-used by livestock because of the rockiness of the terrain.

The description of typical wildlife species found in the Shingle Mill allotment is identical to that described for the Marijilda allotment in a previous section.

This allotment was heavily over-grazed historically. All of the use prior to 1937 was "on/off" because there was no Forest boundary fence, and there were reported to be lots of wild cattle using the allotment. The Forest Boundary was fenced in 1936 and 1937, although reports of large numbers of wild cattle continued into the late 1960s. Permitted use between 1937 and 1955 averaged around 4952 AMs, cow/calf (equates to 413 cattle yearlong although much of the use was seasonal), and there was often more than one permittee. In 1956, this number was reduced to around 3960 AMs cow/calf (330 cattle yearlong). In 1963, the permit was reduced to 290 cattle yearlong, and in 1967 the carrying capacity was determined to be 220 cattle yearlong. 1984, the permit was for 200 cattle plus 10 horses yearlong (2520 AMs). The cattle were managed in a four-pasture, two-herd rest rotation (each pasture gets alternate growing season rest) and the horses stayed in the Horse pasture. In 1998 the permit was reduced to "...not more than 990 AMs". The cattle are located in Lower Tripp and Taylor pastures and the horses in Shingle Mill or combined Nuttall/Carter in alternate years (Coronado National Forest 2200 files; Marijilda Allotment folder). Forage utilization is limited to 40% in upland and riparian key areas (Doc. 55). Actual use measured in 1999 was found to be up to 60% (in Key Area 4; other Key Areas ranged from 5 to 15 %; Doc. 30). Range condition is displayed in Tables 4g & h, and Map 4.

Improvements on the Shingle Mill Allotment consist of 37.9 miles of fence, 12 corrals, 18 water sources and 4 miles of pipeline. About 1.5 miles of additional fence is needed in the Tripp Canyon pasture to improve the distribution of cattle (Map 5; Doc. 29). No other construction or reconstruction of improvements is necessary.

TABLE 1a – ALLOTMENT VEGETATION ACREAGES, EXISTING CONDITION

Veg Type	Marijilda		Hawk Hollow		White Streaks		Shingle Mill	
	Capable	Not Capable	Capable	Not Capable	Capable	Not Capable	Capable	Not Capable
Desert Grassland	2820	1030	1169	1340	1481	1110	7559	2543
Broadleaf Woodland (Evergreen)	926	2735	14	554	59	1065	6950	7573
Coniferous Woodland	0	0	0	0	0	0	856	845
Coniferous Forest (Transition)	345	2922	0	2	45	499	1216	4580
Coniferous Forest (Mixed Conifer)	157	2718	0	0	19	251	85	1817
Coniferous Forest (Spruce-Fir)	41	25	0	0	0	0	0	0
Deciduous Riparian	185	140	94	8	117	7	0	0
Total	4474	9570	1277	1904	1721	2932	16666	17358

TABLE 1b – ALLOTMENT VEGETATION ACREAGES, PROPOSED ACTION

Veg Type	Marijilda		Hawk Hollow		White Streaks		Shingle Mill	
	Capable	Not Capable	Capable	Not Capable	Capable	Not Capable	Capable	Not Capable
Desert Grassland	2818	1019	1169	1326	1481	1111	7515	2467
Broadleaf Woodland (Evergreen)	897	2375	1	364	51	669	5582	3731
Coniferous Woodland	0	0	0	0	0	0	685	325
Coniferous Forest (Transition)	226	1007	0	0	36	19	122	50
Coniferous Forest (Mixed Conifer)	0	24	0	0	0	0	0	0
Coniferous Forest (Spruce-Fir)	0	0	0	0	0	0	0	0
Deciduous Riparian	185	140	94	8	117	7	0	0
Total	4126	4565	1264	1698	1685	1806	13904	6573

Desired Condition:

All allotments: The desired condition is to permit grazing in accordance with up-to-date AMPs for all four allotments. The AMPs will be based on the best information available and will support the following objectives:

1. Permittee responsibilities for achieving the AMP objectives are clearly stated.
2. Livestock stocking is consistent with capacity.
3. Key areas accurately represent forage utilization on the allotment.
4. Satisfactory soil conditions and fair or better range conditions are maintained.
5. Where possible, management is coordinated with adjacent lands to improve conditions over all.
6. Range improvements are functional and support permitted livestock numbers and distribution.
7. The likelihood of adverse effects to threatened, endangered, proposed or sensitive species is reduced, and habitat is improved.

C. Proposed Action

In the Scoping Report (Doc. 35) of April 13, 1999, the Safford Ranger District proposed to issue new 10-year term grazing permits for the Marijilda, White Streaks, Hawk Hollow and Shingle Mill Allotments, and to develop AMPs for each allotment. The following is a description of proposed management practices for the allotments, as contained in the Scoping Report:

Marijilda Allotment:

- Issue a 10-year term grazing permit for the allotment.
- Adjust the administrative boundary of the allotment to eliminate steep, upper-elevation areas "not capable" for grazing.
- Maintain the existing pastures and rotation systems (30 cattle year-long are rotated through seven pastures, using a deferred rest rotation system).
- Limit forage utilization to 50% in upland areas and 40% in riparian areas.
- Maintain existing range improvements.
- Reconstruct one mile of fence to maintain proper cattle distribution.
- Add 0.5 mile of pipeline and one water trough to improve cattle distribution.
- Use annual operating instructions to coordinate with burn plans and noxious weed treatments.

Hawk Hollow Allotment:

- Issue a 10-year term grazing permit for the allotment.
- Adjust the administrative boundary of the allotment to eliminate steep, upper-elevation areas "not capable" for grazing.
- Adjust the permit numbers to reflect addition of Cave Canyon Pasture and coordinate with off-Forest permit (33 head for 5 months, November 1-March31).
- Limit the forage utilization to 50% in upland areas and 40% in riparian areas.
- Maintain existing range improvements.

- Use annual operating instructions to coordinate grazing with weed eradication.
- Reconstruct Cave Canyon Pasture fence to maintain proper cattle distribution.
- Construct Ash Creek riparian exclosure fence to protect riparian habitat.

White Streaks Allotment:

- Issue a 10-year term grazing permit for the allotment.
- Adjust the administrative boundary of the allotment to eliminate steep, upper-elevation areas "not capable" for grazing.
- Limit the forage utilization to 50% in upland areas and 40% in riparian areas.
- Maintain the existing pastures and grazing systems (two pastures, grazed by 38 cattle for six months during the winter dormant season, November 1-April 30).
- Maintain existing range improvements.

Shingle Mill Allotment:

- Issue a 10-year term grazing permit for the allotment.
- Adjust the administrative boundary of the allotment to eliminate steep, upper-elevation areas "not capable" for grazing.
- Continue the current permitted numbers (990 animal months annually) but coordinate use with off-Forest permits. The cattle are located in Lower Tripp and Taylor pastures and the horses in Shingle Mill or combined Nuttall/Carter in alternate years (typically 115 cattle for 6 months, November 1 - April 30; plus 20 horses for 10 months), and continue a private land permit for 5 horses year-long.
- Limit the forage utilization to 40% in both upland and riparian areas.
- Maintain existing pastures.
- Maintain existing range improvements.
- Construct 1.5 miles of fence in the Lower Tripp Pasture to create a new pasture and improve cattle distribution.

D. Decision to be Made

The Safford District Ranger will decide whether or not to authorize grazing on the Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments. The District Ranger may decide to select the No Action alternative, defer action, or select an action alternative for each of the allotments. If a decision is made to authorize grazing, the Ranger will also decide which management practices and mitigation measures will be prescribed in the AMPs, including permitted number of animals and season of use, livestock facilities to be constructed, allowable utilization standards, and monitoring actions to be employed.

E. Planning Issues

On January 25 & 26, 1999, a Coronado National Forest interdisciplinary team met with Safford District staff to discuss the four allotments (Doc. 29). After discussing the allotments, a proposed action was developed along with needed mitigation measures that will eliminate the potential for significant environmental effects. Public scoping was conducted by means of a Scoping Report mailed to

potentially interested parties on April 13, 1999 and requesting a response by May 14, 1999 (Docs. 35-37). Based on corrected data and the responses to the Scoping Report (Docs. 38, 40-42, 62), Issue 3 was revised to include the economic returns of the alternatives, and a fourth issue was added. The revised list of issues includes:

1. Effects to threatened, endangered, or sensitive species or their habitat. Species of concern are the lesser long-nosed bat, American peregrine falcon, Mexican spotted owl, and northern goshawk.
2. Effects to wildlife from construction of a water trough on the Marijilda Allotment.
3. Effects to economic viability of permittee operations, and returns to the local economy.
4. Effects on heritage resources from construction of a pipeline and water trough on the Marijilda Allotment.

F. Measures (Evaluation Criteria)

1. Threatened and endangered species

Lesser long-nosed bat: Narrative, describing effects by alternative, as identified through a Biological Assessment and Evaluation.

American peregrine falcon: Narrative, describing effects by alternative, as identified through a Biological Assessment and Evaluation.

Mexican spotted owl: Acres of Protected Activity Centers subjected to grazing.

Northern goshawk: Narrative, describing effects by alternative, as identified through a Biological Assessment and Evaluation.

2. Effects to wildlife from replacement of water storage

New water developments will include wildlife access and escape ramps.

3. Economic viability of permittee operations and returns to the local economy

Economic narrative and tables, addressing relative costs and returns of alternatives.

4. Effects to heritage resources in the Marijilda Allotment.

Narrative applying the effect criteria of 36 CFR 800.5.

5. Effects to air, vegetation and wildlife

These standard evaluation criteria are discussed in narrative or table form.

G. Project Location/Analysis Area

The location includes all or part of:

Marijilda Allotment:

T. 8 S., R. 24 E., sections 13, 23-26, 35, 36

T. 8 S., R. 25 E., sections 16-22, 27-35

T. 9 S., R. 24 E., sections 1, 2, 12

T. 9 S., R. 25 E., sections 4-6

Hawk Hollow Allotment:

T. 7 S., R. 24 E., section 35
T. 8 S., R. 24 E., sections 2, 11, 14, 15
T. 8 S., R. 25 E., sections 7, 18

White Streaks Allotment:

T. 7 S., R. 24 E., sections 33-35
T. 8 S., R. 24 E., sections 2-4, 9-11, 15, 16, 20-22

Shingle Mill Allotment

T. 7 S., R. 22 E., sections 23, 26, 34, 35
T. 7 S., R. 23 E., sections 19, 25-36
T. 7 S., R. 24 E., sections 31-33
T. 8 S., R. 22 E., sections 1-3, 10-15, 24
T. 8 S., R. 22 E., sections 1-18, 21-24
T. 8 S., R. 22 E., sections 4-9, 16-21

Past, present and foreseeable future projects that may produce cumulative effects in the area are:

Historic grazing impacts.
Prescribed fire in Marijilda Allotment
Treatment of invasive exotic plants in Marijilda and Hawk Hollow Allotments.
Water diversions in Marijilda and White Streaks Allotments.

The interdisciplinary analysis determined that there was no incremental impact from the proposed action or other alternatives when added to other past, present, or reasonably foreseeable future actions.

H. Further NEPA Analysis Needed

This environmental assessment documents the site-specific project-level analysis that will support the decision to be made (see item D., above). No additional NEPA analysis will be needed to implement this project. This NEPA analysis is tiered to the analysis and documentation completed for the Coronado Land and Resource Management Plan in 1986. While this environmental assessment discloses the environmental effects for issuance of 10-year term permits and preparation of AMPs for four grazing allotments, separate decision notices will be issued for each allotment.

SECTION 2 - ALTERNATIVES

A. Alternative Development

The Proposed Action was developed based on a review of the existing and desired conditions on the allotment, and sought to resolve discrepancies between the two. Two alternatives to the proposed actions

were developed for the Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments. One of these alternatives (No Action/No Grazing) discontinues livestock use of the allotments. The second alternative (Continue Current Management) continues the current management of the allotments. The Current Management alternative plans for maintenance of existing structures, but does not provide for new structures, changes in allotment boundaries, or alterations to permitted numbers or grazing seasons.

An opportunity to coordinate grazing management with adjacent state and private land, combined with the identification of additional effects from construction of a pipeline and trough (Docs. 60, 61) led to a third alternative to the proposed action for the Marijilda Allotment (Alternative 4). This alternative will coordinate grazing schedules with adjacent state and private land, effectively changing the grazing schedule from yearlong to seasonal (variable seasons), increasing growing season rest and management flexibility. It also omits construction of the pipeline and trough to serve the Rincon Pasture.

Three actions described in the Scoping Report (Doc. 35: reconstruction of one mile of fence in the Marijilda Allotment; reconstruction of the Cave Canyon Pasture and construction of the Ash Creek riparian enclosure in the Hawk Hollow Allotment) were removed from this analysis. Fence reconstructions and the Ash Creek enclosure were separated from this analysis because of the limited scope of the actions and a pressing need to correct conditions that could lead to resource deterioration. Finally, two changes were made to the proposed action to correct errors in the original description (cattle are rotated through seven pastures in the Marijilda Allotment each year, not through five; changed number of cattle in Shingle Mill Allotment).

B. Alternatives Dropped from Detailed Study

The three alternatives considered in detail (four in the case of the Marijilda Allotment) constitute the legally required range of alternatives and a feasible means of reconciling existing and desired conditions. No alternatives considered by the Interdisciplinary Team were dropped from detailed analysis.

C. Alternatives Considered in Detail:

1. Objectives Common to Alternatives: In addition to the objectives outlined in the *Desired Condition* (Section 1, Part B), the following objectives are also common to all alternatives:

Implement Forest Service policy concerning availability of forage on National Forest System lands.
Avoid or minimize adverse effects to threatened, endangered or Forest Service sensitive species.
Avoid adverse effects to heritage resources.

2. Alternative Mitigation/Monitoring

- **Grazing** - Implement the following Best Management Practices for grazing: Annually prepare an operating plan with the permittees to allow for current allotment conditions; make periodic field checks to identify needed adjustments in season of use and livestock numbers including stock counts, forage utilization, assessment of rangeland to verify soil and vegetative condition and trend; and use necessary techniques to achieve proper distribution, or lessen the impact on areas which are sensitive or which would naturally be overused, including riding and herding to shift

livestock locations, using salt or supplemental feed, range improvements, prescribed burning, trail construction or seeding, or prevention of intensive livestock grazing or concentrated livestock use on soils that have low bearing strength and are wet.

- Fences – all new or reconstructed fences will be constructed to “wildlife-friendly” standards.
- Water – all new or reconstructed water developments will provide for wildlife ingress & egress.
- Key monitoring areas will be established in each pasture. Measurement of utilization will be conducted as needed to ascertain when a grazed pasture has reached its utilization objective.
- Submit data as to the U.S. Fish and Wildlife Service as agreed to through consultation with the Service.

3. Alternative Descriptions

The following alternatives were approved by the District Ranger to address the substantive issues defined during scoping. The alternatives considered in detail are described below:

Alternative 1: No Grazing (No Action): Under this alternative, use of the grazing allotments by domestic livestock would be discontinued. No term grazing permit would be issued. All existing structural improvements including water developments would remain in place but would not be maintained. Periodic monitoring of structural improvements (at least once every ten years) will be used to determine whether removal or maintenance is needed. Removal or maintenance would be authorized by a separate decision.

Alternative 2: Continue Current Management: The **Marijilda Allotment** contains 14,047 acres, of which 4476 are classified as capable for livestock grazing. The grazing permit expires in 2008. There are seven pastures. Permitted numbers are 30 cattle, yearlong (equivalent to 360 cow/calf animal months). Under current management, the seven pastures are divided into two units, one with three pastures and one with four. In any given year, one unit is not grazed. Cattle are rotated through the pastures within the unit that is being grazed in order to control utilization. Annual Operating Instructions limit forage utilization to 50% in key upland areas and 40% in key riparian areas. Improvements on the Marijilda Allotment consist of 16.2 miles of fence, 7 corrals, 9 water sources and one mile of pipeline.

The **Hawk Hollow Allotment** consists of 3181 acres, of which 1277 are considered capable for grazing. The grazing permit expires in 2002. There are two pastures. Permitted cattle numbers are 20 cattle for 7 months (140 cow/calf animal months). The grazing season is from November 1 to May 31. Annual Operating Instructions limit forage utilization to 50% in key upland areas and 40% in key riparian areas. Improvements on the Hawk Hollow Allotment consist of 8.8 miles of fence, 2 corrals, 2 water sources and 1.5 miles of pipeline.

The **White Streaks Allotment** consists of 4653 acres, of which 1721 are classified as capable for grazing. The grazing permit expires in 2008. There are two pastures, grazed by 38 cattle between November 1 and April 30 (equivalent to 228 cow/calf animal months). Annual operating instructions limit forage utilization to 50% in key upland vegetation areas and 40% in key riparian areas. Improvements on the White Streaks Allotment consist of 4.8 miles of fence, 2 corrals and 3 water sources.

The **Shingle Mill Allotment** consists of 34,024 acres, about 16,666 of which are classified as capable for livestock grazing. The grazing permit expires in 2008. There are six pastures. The allotment is grazed for "...not more than 990 AMs" on a yearlong basis. Annual operating instructions limit forage utilization to 40% in both upland and riparian areas. Improvements on the Shingle Mill Allotment consist of 37.9 miles of fence, 12 corrals, 18 water sources and 4 miles of pipeline.

Alternative 3. Proposed Action:

Marijilda Allotment:

- Issue a 10-year term grazing permit for the allotment.
- Adjust the administrative boundary of the allotment to eliminate steep, upper-elevation areas "not capable" for grazing.
- Maintain the existing pastures and rotation systems (360 cow/calf animal months rotated through seven pastures, using a deferred rest rotation system).
- Limit the forage utilization to 50% in upland key areas and 40% in riparian key areas.
- Maintain the existing range improvements.
- Add 0.5 mile of pipeline and one water trough to improve cattle distribution.
- Use annual operating instructions to coordinate with burn plans and noxious weed treatments.

Hawk Hollow Allotment:

- Issue a 10-year term grazing permit for the allotment.
- Adjust the administrative boundary of the allotment to eliminate steep, upper-elevation areas "not capable" for grazing.
- Adjust the permit numbers and season of use to reflect addition of Cave Canyon Pasture and coordinate with off-Forest permit (from 140 cow/calf animal months November 1-May 31 to 165 cow/calf animal months, November 1-March 31).
- Limit the forage utilization to 50% in upland key areas and 40% in riparian key areas.
- Maintain the existing range improvements.
- Use annual operating instructions to coordinate grazing with noxious weed eradication.

White Streaks Allotment:

- Issue a 10-year term grazing permit for the allotment.
- Adjust the administrative boundary of the allotment to eliminate steep, upper-elevation areas "not capable" for grazing.
- Limit the forage utilization to 50% in upland key areas and 40% in riparian key areas.
- Maintain the existing pastures and grazing systems (two pastures, grazed by 38 cattle for six months during the winter dormant season, November 1-April 30 [228 cow/calf animal months]).
- Maintain the existing range improvements.

Shingle Mill Allotment:

- Issue a 10-year term grazing permit for the allotment.
- Adjust the administrative boundary of the allotment to eliminate steep, upper-elevation areas “not capable” for grazing.
- Continue the current permitted numbers (990 cow/calf animal months) but coordinate use with off-Forest permits (120 cattle for 6 months, November 1 - April 30; plus 25 horses for 10 months), and continue a private land permit for 5 horses yearlong.
- Limit the forage utilization to 40% in both upland and riparian key areas.
- Maintain the existing pastures, except as described below.
- Maintain the existing range improvements.
- Construct 1.5 miles of fence in the Lower Tripp Pasture to create a new pasture and improve cattle distribution.

Alternative 4. Coordinated Resource Management; Marijilda Allotment: This alternative applies only to the Marijilda Allotment, and changes the grazing schedule and number of animal months permitted on that allotment. Under this alternative, the proposal for the Marijilda Allotment is to:

- Issue a 10-year term grazing permit for the allotment.
- Adjust the administrative boundary of the allotment to eliminate steep, upper-elevation areas “not capable” for grazing.
- Maintain the existing pastures.
- Change the season of use from yearlong to variable season use (see Table 4.C for a projection of use and rest by pasture).
- Change permitted animal months to a range of between 343 and 441 cow/calf animal months (49 cattle from 7 to 9 months, variable season).
- Limit the forage utilization to 50% in upland key areas and 40% in riparian key areas.
- Maintain the existing range improvements.
- Use annual operating instructions to coordinate with burn plans and noxious weed treatments.

The following tables are included to facilitate comparisons of the alternatives using selected descriptive parameters:

**TABLE 2a – SELECTED DESCRIPTIVE ALLOTMENT CHARACTERISTICS BY
ALTERNATIVE, MARIJILDA ALLOTMENT**

Descriptive Parameter	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action (Alt. 3)	Coordinated Resource Management/Preferred Alternative (Alt. 4; Marijilda only)
Season of use	None	Year-long	Year-long	Variable season, from 7 to 9 months
Utilization	0%	50% Upland 40% Riparian areas	50% Upland 40% Riparian areas	50% Upland 40% Riparian areas
Permitted # (Cow/Calf Animal Months)	0	360	360	343 – 441
Boundary change	No	No	Yes	Yes
Total acres within boundary	14,044	14,044	8693	8693
Acres capable for grazing within boundary	4474	4474	4126	4126

**TABLE 2b – SELECTED DESCRIPTIVE ALLOTMENT CHARACTERISTICS BY
ALTERNATIVE, HAWK HOLLOW ALLOTMENT**

Descriptive Parameter	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Season of use	None	11/1-5/31	11/1-3/31
Utilization (non-growing season)	0%	50% Upland 40% Riparian	50% Upland 40% Riparian areas
Permitted # (Cow/Calf Animal Months)	0	140	165
Boundary change	No	No	Yes
Total acres within boundary	3181	3181	2962
Acres capable for grazing within boundary	1277	1277	1264

**TABLE 2c – SELECTED DESCRIPTIVE ALLOTMENT CHARACTERISTICS BY
ALTERNATIVE, WHITE STREAKS ALLOTMENT**

Descriptive Parameter	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Season of use	None	11/1-4/30	11/1-4/30
Utilization (non-growing season)	0%	50% Upland 40% Riparian	50% Upland 40% Riparian areas
Permitted # (Cow/Calf Animal Months)	0	228	228
Boundary change	No	No	Yes
Total acres within boundary	4653	4653	3491
Acres capable for grazing within boundary	1721	1721	1685

**TABLE 2d – SELECTED DESCRIPTIVE ALLOTMENT CHARACTERISTICS BY
ALTERNATIVE, SHINGLE MILL ALLOTMENT**

Descriptive Parameter	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Season of use	None	Year-long	10 months (25 horses) 11/1-4/30 (115 cattle)
Utilization	0%	40% Upland 40% Riparian	40% Upland 40% Riparian
Permitted # (Animal Months)	0	300 horse 690 cow/calf	300 horse 690 cow/calf
Boundary change	No	No	Yes
Total acres within boundary	34,024	34,024	20,477
Acres capable for grazing within boundary	16,666	16,666	13,904

Table 3 below provides a comparison of planned improvements (rehabilitation activities and range improvements) associated with each alternative:

TABLE 3a – PLANNED IMPROVEMENTS BY ALTERNATIVE, MARIJILDA ALLOTMENT

Improvement Description	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action (Alt. 3)	Coordinated Resource Management/Preferred Alternative (Alt. 4; Marijilda only)
N/A	N	N	Construct 0.5 mile of pipeline and 1 trough	N

**TABLE 3b – PLANNED IMPROVEMENTS BY ALTERNATIVE, HAWK HOLLOW
ALLOTMENT**

Improvement Description	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
N/A	N	N	N

**TABLE 3c – PLANNED IMPROVEMENTS BY ALTERNATIVE, WHITE STREAKS
ALLOTMENT**

Improvement Description	No Action/No Grazing (Alt 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
N/A	N	N	N

TABLE 3d – PLANNED IMPROVEMENTS BY ALTERNATIVE, SHINGLE MILL ALLOTMENT

Improvement Description	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Construct Tripp Canyon pasture fence, 1.5 mi.	N	N	Y

D. Preferred Alternative Identification

As a result of this environmental analysis, **the Agency’s preferred alternative for the Marijilda Allotment is Alternative 4, Coordinated Resource Management. The Agency’s Preferred Alternative for the Hawk Hollow, White Streaks and Shingle Mill Allotments is Alternative 3, the Proposed Action.**

Alternative 4 (Marijilda Allotment) and Alternative 3 (remaining allotments) implement Forest Service policy concerning livestock forage, while minimizing detrimental effects to threatened or endangered species, other wildlife, heritage resources and the economic viability of permittee operations. Allotment boundaries are adjusted to eliminate high elevation areas “not capable” for grazing. A fence is constructed in the Shingle Mill Allotment to improve the distribution of cattle. Grazing improvements are not constructed in lesser long-nosed bat or peregrine falcon habitat, and provision is made for wildlife when maintaining water developments. Grazing improvements are not constructed in the Marijilda Canyon Prehistoric Archaeological District. Economic impacts to permittees are the same or more favorable than current management, and provide economic returns that are not generated if the No Action/No Grazing alternative is selected.

SECTION 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

A. Introduction

This section shows the present condition (that is, the affected environment) within the Marijilda, Hawk Hollow, White Streaks and Shingle Mill allotment areas and the changes that can be expected from implementing the action alternatives or taking no action at this time. The no action alternative sets the environmental base line for comparing the effects of the action alternatives.

The major issues (see Section 1) define the scope of environmental concern for this project. The environmental effects (changes from present base line condition) that are described in this section reflect the identified major issues. Issue numbers are shown in brackets after each subheading to cross reference issues with the impact discussions that follow. Some of the environmental effects are confined to this action and the project area. Others are cumulative with environmental effects from other actions and cover an issue area beyond the project area. Cumulative effects are discussed for each major issue when they occur.

B. Vegetation

Grazing by domestic livestock for 10 years may impact vegetation by changing the mix of species in the plant community being grazed (vegetation composition); by changing the density and frequency of perennial forage plants (forage frequency); and by changing the vigor of the grazed plants. These three vegetation effects are combined into four vegetation condition classes that reflect the relative effects of grazing on vegetation. In addition to vegetation condition classes, the vegetation trend is also displayed to show whether vegetation conditions are improving or declining. Tables 4a through 4b, and 4d through 4i below display the range vegetation condition and trend for the proposed action and alternatives at the end of the permit period for each allotment. Only the condition within the proposed boundary is displayed in the following tables. This is the area that has been and will be affected by management activities. Map 4 displays the existing range condition and trend. These analyses summarize the discussion in Doc. 59.

**TABLE 4a: - EXISTING AND PROJECTED UPLAND RANGELAND VEGETATION
CONDITION AND TREND, MARIJILDA ALLOTMENT, PERCENTAGE OF ACRES
CAPABLE FOR GRAZING**

Condition Class: Percent of Allotment	Exist. Cond.	No Action/No Grazing (Alternative 1)	Current Management (Alternative 2)	Proposed Action (Alternative 3)	Coordinated Resource Management/ Preferred Alternative (Alternative 4; Marijilda only)
HIGH	0	0	0	0	0
MODERATELY HIGH					
<i>Upward Trend</i>	24	39	34	34	37
MODERATELY LOW					
<i>Upward Trend</i>	73	58	63	63	60
LOW					
<i>Static Trend</i>	3	3	3	3	3

**TABLE 4b: - EXISTING AND PROJECTED UPLAND RANGELAND VEGETATION
CONDITION AND TREND, MARIJILDA ALLOTMENT, PERCENTAGE OF ACRES NOT
CAPABLE FOR GRAZING**

Condition Class: Percent of Allotment	Exist. Cond.	No Action/No Grazing (Alternative 1)	Current Management (Alternative 2)	Proposed Action (Alternative 3)	Coordinated Resource Management/ Preferred Alternative (Alternative 4; Marijilda only)
HIGH	0	0	0	0	0
MODERATELY HIGH					
<i>Static Trend</i>	78	78	78	78	78
MODERATELY LOW					
<i>Static Trend</i>	22	22	22	22	22
LOW	0	0	0	0	0

Existing Condition, Marijilda Allotment: Currently, capable acres in the desert grassland vegetation type are classified in moderately low ("fair") rangeland condition with an upward trend. The rating reflects a high percentage of undesirable shrubs in the vegetation community. Approximately 300 acres along the Forest Boundary are in low condition with a static trend. This area was heavily used by people and livestock in prehistoric and historic times (see Section 1.B of this assessment; also Doc. 62). It has essentially undergone a type conversion and is now dominated by mesquite and prickly pear cactus. The trend is rated as static because it is unlikely that conditions here will change without some type of manipulation. Capable acres in the broadleaf woodland are rated as moderately high ("good") with an upward trend. Capable acres in the coniferous forest (transition) type are rated in moderately low condition with an upward trend. Lack of fire as a natural disturbance has resulted in the area becoming choked with small trees with little understory remaining. The upward trend is indicated by recent fires in the area. The trend for the rest of the capable acres is upward based on considerable improvement over the last 20 years, and the use of prescribed burning to reduce shrubs.

Twenty-two percent of the not-capable acres are also in the coniferous forest vegetation type and are in moderately low condition. The not-capable acres in the woodland type are in moderately high ("good") condition. The trend for the not-capable acres is classified as static because there is minimal management activity taking place. Because of the presence of shrubby species, it is unlikely that high ("excellent") condition will be achieved in any of these areas within the planning period. Significant reductions of the shrub component will not occur with the moderate levels of grazing proposed, or even with removal of grazing livestock. Shrubby species can only be reduced using more intensive management than is proposed here, i.e. prescribed fire.

Grazing Effects, Marijilda Allotment: The No Action/No Grazing Alternative (Alternative 1) will have no effects from livestock grazing. Because of historic grazing impacts and fire suppression, it is unlikely that high conditions will be achieved within the project period. The most dramatic improvements are expected with the use of fire. This management option may be more difficult to implement if the No Action/No Grazing Alternative is chosen because of reduced funding opportunities and a more restrictive purpose and need for prescribed fire.

Under current management (Alternative 2), there are seven pastures, two of which (Powderhouse and Recreation) are used together. Three of the pastures (Upper Deadman, Lower Deadman, and Deadman Trap) are used one year and the other four are used the following year (Upper Marijilda, Rincon, Powder House, and Recreation). Thirty cattle (cow/calf) are permitted yearlong (360 AMs). This management has been in place since 1992. Prior to 1992 the allotment was used intermittently for 10 years, and the condition of the vegetation improved. This improvement has continued with the current management. The relative rate of improvement under intermittent grazing versus grazing under current management is difficult to assess because of the moderate current level of grazing and the additional effects of weather and fire on vegetation condition.

Under Alternative 3 (Proposed Action), the proposed boundary change will reduce the number of capable acres within the allotment from 4474 to 4126. This reduction will have little impact on grazing management because the areas excluded are not very accessible to cattle. (The determination of capable acres is strictly based on slope.)

Alternative 4 (Preferred Alternative) will change the boundary and coordinate management with adjoining state and private land. This will change the use period from yearlong to seasonal and allow longer rest periods in all areas. Permitted cow/calf animal months will vary from 343 to 441 (49 cattle for a period of 7 to 9 months per year). A four year projection would be as follows: Year 1, 441 AMs; year 2, 343 AMs; year 3, 392 AMs and; year four, 343 AMs. The effects of the increase in animal months will be more than offset by the beneficial effects of longer rest periods. The following table summarizes a projected four-year grazing schedule in terms of total and growing season rest.

TABLE 4c - ALTERNATIVE 4, MARIJILDA ALLOTMENT, FOUR-YEAR PROJECTION OF USE AND REST BY PASTURE

Pasture Name	Total months of use over a four year period	Total months of rest over a four year period	Spring growing season rest (April through June)	Summer growing season rest (July through August)
Rincon	15	33	Every year	Every year
Upper Marijilda	3	45	Every year	Every year
Powderhouse	5	43	Every year	3 out of 4 years
Lower Deadman	4	44	Every year	3 out of 4 years
Deadman Trap	2	46	3 out of 4 years	Every year
Upper Deadman	4 ½	43 ½	3 out of 4 years	3 out of 4 years

Alternatives 2, 3 and 4 limit forage utilization in upland key areas to 50%. This utilization rate is consistent with the LRMP. Under alternatives 2 and 3, each pasture is rested every other year. Under alternative 4, all pastures are either winter use only, or used in spring or summer only once every four years, and except for the Rincon Pasture (winter use only), all pastures are rested every other year. The low stocking rate ensures that the 50% limit in key areas can be met even in dry years. Under Alternatives 2, 3 and 4 vegetation conditions will continue to improve. Although the improvement rates for all four alternatives will be similar, listed in order of greatest to least they are 1, 4, 3 and 2. Effects of grazing will be most obvious in concentration areas, around water sources and cattle bed grounds.

In terms of cumulative effects related to planned projects in the area, improvement will be more dramatic than depicted in Tables 4a and 4b if the use of prescribed fire continues. Grazing as proposed under Alternatives 2, 3 and 4 will not interfere with the treatment of noxious weeds within the allotment. Removal of water from the area by the Lebanon Ditch will continue to inhibit riparian area development

below the point of removal, however, the limited amount of grazing proposed under Alternatives 2, 3 and 4 will not significantly exacerbate that effect.

Grazing Effects, Hawk Hollow Allotment: Tables 4d & e, below, display the existing and predicted vegetation condition and trend for the proposed action and alternatives for the Hawk Hollow Allotment at the end of the permit period. The predictions are made with the assumption that grazing is the only factor affecting rangeland vegetation condition. Table 4d displays percentage of acres capable for grazing, table 4e applies to acres not capable for grazing. A short discussion follows.

TABLE 4d: - EXISTING AND PROJECTED UPLAND RANGELAND VEGETATION CONDITION AND TREND, HAWK HOLLOW ALLOTMENT, PERCENTAGE OF ACRES CAPABLE FOR GRAZING

Condition Class	Existing Condition	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
HIGH	0	0	0	0
MODERATELY HIGH				
<i>Upward Trend</i>	3	18	11	13
MODERATELY LOW				
<i>Upward Trend</i>	97	82	89	87
LOW	0	0	0	0

TABLE 4e: - EXISTING AND PROJECTED UPLAND RANGELAND VEGETATION CONDITION AND TREND, HAWK HOLLOW ALLOTMENT, PERCENTAGE OF ACRES NOT CAPABLE FOR GRAZING

Condition Class	Existing Condition	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
HIGH	0	0	0	0
MODERATELY HIGH				
<i>Static Trend</i>	100	100	100	100
MODERATELY LOW	0	0	0	0
LOW	0	0	0	0

The Hawk Hollow allotment is in moderately high ("good") condition in oak woodland areas with greater than 15% slope and in moderately low ("fair") condition in oak woodland areas with less than 15% slope and in desert grassland areas. The moderately low rating in the grassland reflects a high percentage of undesirable shrubs in the plant community. The trend for the capable acres is upward based on considerable improvement over the last 20 years. The trend for the not capable acres is classified as static.

The No Action/No Grazing Alternative (Alternative 1) will have no effects from grazing. Conditions in the lower elevation grassland will continue to improve. Woodland sites that have been impacted by grazing will also continue to improve. However, woodland sites are probably at or near a steady state

and will not change much in the absence of fire. Alternative 2 proposes grazing 20 cattle for seven months (11/1 to 5/31) and Alternative 3 proposes grazing 33 cattle for 5 months (11/1 to 3/31). Winter only grazing is a good strategy for warm-season native grasses since they will only be grazed in the dormant season. Because the condition of the rangeland vegetation under current management is improving, this improvement is expected to continue with Alternatives 2 and 3, although probably at a slower rate than with Alternative 1. Because of the shorter season of use, Alternative 3 will lead to improved conditions at a faster rate than Alternative 2. Alternative 3 also proposes a change in boundary that results in a reduction of capable acres from 1277 to 1264, however, this will not change predicted grazing effects.

In terms of cumulative effects related to planned projects in the area, improvement will be more dramatic than depicted in Tables 4d and 4e if fire use is implemented. Grazing as proposed under Alternatives 2 and 3 will not interfere with the treatment of noxious weeds within the allotment.

Grazing Effects, White Streaks Allotment: Tables 4f & g, below, display the existing and predicted vegetation condition and trend for the proposed action and alternatives for the White Streaks Allotment at the end of the permit period. Predictions are made with the assumption that grazing is the only effect. Table 4f displays percentage of acres capable for grazing, Table 4g applies to acres not capable for grazing. A short discussion follows.

**TABLE 4f: - EXISTING AND PROJECTED UPLAND RANGELAND VEGETATION
CONDITION AND TREND, WHITE STREAKS ALLOTMENT, PERCENTAGE OF ACRES
CAPABLE FOR GRAZING**

Condition Class	Existing Condition	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
HIGH	0	0	0	
MODERATELY HIGH				
<i>Upward Trend</i>	6	21	16	16
<i>Static Trend</i>	5	5	5	5
MODERATELY LOW				
<i>Upward Trend</i>	77	74	79	79
LOW				
<i>Upward Trend</i>	12	0	0	0

**TABLE 4g: - EXISTING AND PROJECTED UPLAND RANGELAND VEGETATION
CONDITION AND TREND, WHITE STREAKS ALLOTMENT, PERCENTAGE OF ACRES
NOT CAPABLE FOR GRAZING**

Condition Class	Existing Condition	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
HIGH	0	0	0	0
MODERATELY HIGH				
<i>Static Trend</i>	99	99	99	99
MODERATELY LOW				
<i>Static Trend</i>	1	1	1	1
LOW	0	0	0	0

The White Streaks allotment is in moderately high ("good") condition in broadleaf woodland areas and in moderately low ("fair") condition in desert grassland areas with slopes greater than 15%. Most of the desert grassland areas along the boundary with less than 15% slope are in low ("poor") condition. One percent of the not-capable acres are coniferous forest (transition) vegetation. These acres are in moderately low ("fair") condition because of lack of fire. The trend for the capable acres is upward based on improvement over the last 20 years and management changes since 1992. The trend for the not capable acres is classified as static.

The No Action/No Grazing Alternative (Alternative 1) will have no effects from grazing. Under this alternative, conditions in the lower elevation grassland will continue to improve. Woodland sites that have been impacted by grazing will also continue to improve. However, woodland sites are probably at or near a steady state and will not change much in the absence of fire. Alternatives 2 and 3 propose winter only grazing at a moderate level. Winter only grazing is a good strategy for warm season native grasses since they will only be grazed in the dormant season. Because the condition of the rangeland vegetation under current management is improving, this improvement is expected to continue with Alternatives 2 and 3, although probably at a slower rate than with Alternative 1. Alternative 3 will reduce the size of the allotment overall, and reduce the number of capable acres from 1721 to 1685. The effects from grazing under Alternative 3 are the same as for Alternative 2.

In terms of cumulative effects related to planned projects in the area, improvement will be more dramatic than depicted in Tables 4f and 4g if the use of prescribed fire continues. Grazing as proposed under Alternatives 2 and 3 will not interfere with the treatment of noxious weeds within the allotment. Removal of water from Ash Creek below the dam will continue to inhibit riparian area development below the point of removal, however, the limited amount of grazing proposed under Alternatives 2 and 3 will not significantly exacerbate that effect.

Grazing Effects, Shingle Mill Allotment: Tables 4h & i, below, display the existing and predicted vegetation condition and trend for the proposed action and alternatives for the Shingle Mill Allotment at the end of the permit period. Predictions are made with the assumption that grazing is the only effect. Table 4h displays percentage of acres capable for grazing, Table 4i applies to acres not capable for grazing. A short discussion follows.

**TABLE 4h: - EXISTING AND PROJECTED UPLAND RANGELAND VEGETATION
CONDITION AND TREND, SHINGLE MILL ALLOTMENT, PERCENTAGE OF ACRES
CAPABLE FOR GRAZING**

Condition Class: Percent of Allotment	Exist. Cond.	No Action/No Grazing (Alternative 1)	Current Management (Alternative 2)	Proposed Action (Alternative 3)
HIGH	0	0	0	0
MODERATELY HIGH				
<i>Upward Trend</i>		15	10	10
<i>Static Trend</i>	38	38	38	38
MODERATELY LOW				
<i>Upward Trend</i>	57	47	52	52
LOW				
<i>Upward Trend</i>	5	0	0	0

**TABLE 4i: - EXISTING AND PROJECTED UPLAND RANGELAND VEGETATION
CONDITION AND TREND, SHINGLE MILL ALLOTMENT, PERCENTAGE OF ACRES NOT
CAPABLE FOR GRAZING**

Condition Class: Percent of Allotment	Exist. Cond.	No Action/No Grazing (Alternative 1)	Current Management (Alternative 2)	Proposed Action (Alternative 3)
HIGH	0	0	0	0
MODERATELY HIGH				
<i>Static Trend</i>	89	89	89	89
MODERATELY LOW				
<i>Static Trend</i>	11	11	11	11
LOW	0	0	0	0

The Shingle Mill allotment is in moderately high ("good") condition in broadleaf woodland areas and in moderately low ("fair") condition in most of the desert grassland areas. Some of the desert grassland areas along the Forest boundary are in low ("poor") condition. This condition is believed to be an artifact of the historic overuse. The trend for the capable acres is upward based on some improvement over the last 20 years, and a substantial reduction in permitted numbers in 1998.

Most of the not-capable acres are in moderately high ("good") condition. These areas are broadleaf evergreen woodland and coniferous woodland. One percent of the not-capable acres are in moderately low condition. This is the coniferous forest (transition) type, and the lower rating reflects over-dense thickets of trees with little understory vegetation. The trend for the not capable acres is classified as static.

The No Action/No Grazing Alternative (Alternative 1) will have no effects from grazing. Under this alternative, conditions in the lower elevation grassland will continue to improve. Woodland sites that have been impacted by grazing will also continue to improve. However, woodland sites are probably at or near a steady state and will not change much in the absence of fire.

Alternatives 2 and 3 propose winter only grazing by cattle in two pastures, Tripp and Taylor, at a moderate level. Up to 30 horses will graze for 10 months a year, alternating between the other two pastures, Nuttall and Shinglemill, with only one pasture grazed each year. There are differences in effects from grazing by horses compared with grazing by cattle. Horses tend to graze only grasses and distribute themselves more widely than cattle. The current low stocking rate for horses and cattle will allow flexibility in management under a variety of weather conditions.

Alternative 3 will reduce the size of the allotment overall, and reduce the number of capable acres from 16,666 to 13,904. This reduction is not expected to affect the grazing management because most of the excluded acres are inaccessible to cattle. (The capability determination is based strictly on slope.) Alternative 3 also adds a division fence to Tripp pasture. This will provide more management control for areas that are currently in low condition.

Because the condition of the rangeland vegetation under current management is improving, this improvement is expected to continue with Alternatives 2 and 3. Although the improvement rates for all three alternatives will be similar, listed in order of greatest to least they are 1, 3 and 2. Effects of grazing will be most obvious in concentration areas, around water sources and cattle bed grounds.

In terms of cumulative effects related to possible future planned projects in the area, improvement will be more dramatic than depicted in Tables 4h and 4i if fire use is implemented.

Riparian Area Condition

In 1998, all of the major canyons in the project area were surveyed and evaluated against criteria of true riparian systems. Those found to meet the criteria were further evaluated for functionality using the RASES (Riparian Areas Survey and Evaluation System) and/or the PFC (Proper Functioning Condition) methods.

Affected Environment, Riparian Areas, Marijilda Allotment: Marijilda Canyon is mapped as a deciduous riparian area and the entire canyon is designated as Management Area 7 (riparian vegetation emphasis) in the Coronado Forest Land Management Plan. There is a diversion dam located approximately ¾ mile west of the Forest boundary. In 1998, the channel was evaluated above and below the dam using the RASES and PFC methods. Above the dam, the main influences were the dam itself (raising of the water table) and also recreation. Livestock use was minimal to moderate. The area above the dam was found to have good vegetative vigor and diversity. Ground and canopy cover were found to be high and there was a sufficient amount of coarse and woody debris to dissipate energy in frequent flow events. There was some compaction from heavy foot traffic, but erosion was minimal. The PFC rating was Functional At Risk (low risk, attributed to moderate to heavy recreational use; Doc. 7).

Below the dam, the primary influence was the lack of water due to diversion at the dam. There are few riparian obligate species. The channel below the dam was rated Non-Functional because of lack of water according to PFC (Doc. 6).

Deadman Canyon is not mapped as a deciduous riparian area but does support some riparian obligate species. It was evaluated in 1998 with the RASES and PFC methods. A comparison with a 1992 RASES evaluation showed a decrease in alders with no apparent reason, but overall static trend, and good health and vigor. A PFC rating of Functional At Risk was assigned because of low reproduction in desirable species, and lower diversity of species than expected. The area showed minimal impacts from grazing, and moderate ATV and hiking use (Doc. 11).

Gibson Creek is also not mapped as a deciduous riparian area, but supports riparian obligate species. It was evaluated using the RASES method. It was found to have excellent composition, diversity and vigor. Influences from any kind of use, including livestock, were minimal (Doc. 8).

Grazing Effects: Riparian Areas, Marijilda Allotment: Observations revealed light to moderate use in the riparian areas in Marijilda Canyon and Deadman Canyon, and minimal use in Gibson Creek. Grazing under current management (Alternative 2) is not limiting the development of these riparian areas. Utilization of forage plants is limited to 40% in the riparian areas under Alternatives 2 (Current Management), 3 (Proposed Action), and 4 (Preferred Alternative). Also, with Alternatives 2 and 3, each pasture unit is used only every other year, so there is regularly scheduled growing season rest. Alternative 4 provides even more growing season rest than Alternatives 2 or 3. These management controls will limit the effects of grazing and other livestock impacts to the riparian area. Alternative 1 will have no impacts from livestock grazing.

Removal of water from the area by the Lebanon Ditch will continue to inhibit riparian area development below the point of removal, however, the limited amount of grazing proposed under Alternatives 2, 3 and 4 will not significantly exacerbate that effect.

Affected Environment, Riparian Areas, Hawk Hollow Allotment: Frye Creek above the dam is mapped as a deciduous riparian area. The RASES and PFC methods were used to evaluate the area in 1998 (Doc. 17). Compared to 1986 measurements, there was found to be an overall increase in numbers of most species. Vigor was excellent and age-class distribution was good. The major impact to the stream was found to be a recreation trail along the banks that appeared to be causing erosion. The PFC rating was Functional At Risk, with a downward trend. Risk was attributed to erosion from the trail on the banks. There was no livestock grazing in the area, as the area is difficult for livestock to access.

Grazing Effects: Riparian Areas, Hawk Hollow Allotment: The Frye Creek riparian area above the reservoir is not accessible to livestock. There will be no effects from grazing to this riparian area under any of the alternatives.

Affected Environment, Riparian Areas, White Streaks Allotment: Ash Creek Canyon is mapped as a deciduous riparian area and the entire canyon is designated as Management Area 7 (riparian vegetation emphasis) in the Coronado Forest Land Management Plan. Ash Creek was evaluated as part of the District riparian area survey in 1998. Two areas were examined, one above the dam, and one below the dam. Two methods of evaluation were used; the RASES method and also the PFC method (Docs. 5, 12). Above the dam the area is apparently benefiting from the higher water table caused by the dam. Vegetation exhibits excellent diversity and good vigor. There is a dense canopy cover and moderate ground cover. Woody debris in the channel is abundant. Erosion was not evident. Livestock grazing influences were none, to slight. The channel is not very accessible to cattle, and the area surrounding it is fenced as a riparian pasture to further control livestock use. The PFC rating was Functional (Doc. 12).

Below the dam, vegetation vigor was fair and composition was good. Canopy cover was light and ground cover was low. Ash Creek was found to be Functional at Risk, with risk described as "slight" with an upward trend. Diversion of water at the dam was identified as being the primary negative influence, with historic overgrazing also a negative influence. Observed livestock use was minimal (Doc. 5).

Grazing Effects: Ash Creek Riparian Area, White Streaks Allotment: Grazing under current management is not limiting the development of a riparian area above Ash Creek dam. This is consistent with findings reported in Leonard et. al. (1997; see bibliography in Doc. 59) that dormant season use resulted in an increase of both the shrub and herbaceous (grasses and forbs) components and no effects to bank characteristics. Below the dam, lack of water was the main factor limiting development of a properly functioning riparian area.

The proposed grazing under Alternative 2 and 3 will not limit the functionality of the riparian area above the dam, as the area is included in a riparian pasture and access is limited by natural boundaries. Alternative 1 will have no effects from grazing. The area below the dam will not develop the characteristics of a riparian area under any of the alternatives unless diversion of water is discontinued.

Removal of water from the area below the dam will continue to inhibit riparian area development below the point of removal, however, the limited amount of grazing proposed under Alternatives 2 and 3 will not significantly exacerbate that effect.

Affected Environment, Riparian Areas, Shingle Mill Allotment: No areas within the Shingle Mill Allotment are mapped as deciduous riparian areas or designated as Management Area 7 (riparian vegetation emphasis) in the Coronado Land Management Plan.

Nuttall Canyon was evaluated in 1998 using the RASES and PFC methods (Doc. 13). Comparison with a 1992 evaluation indicated an increase in vegetative density. Vegetation composition, diversity and vigor were found to be excellent with an abundance of willow (*Salix exigua*). The PFC assessment found the channel to be Functional-At Risk with an upward trend. The risk was attributed to high flow indicators throughout the channel. Livestock use was moderate, but was not found to be threatening the system.

Carter Canyon was evaluated in 1998 using the RASES method (Doc. 10). Comparisons with 1992 photos indicate an increase in canopy cover. Overall vigor and diversity are good as is size and age class distribution. No negative impacts were observed and the site is considered to be in an upward trend.

Grazing Effects: Riparian Areas, Shingle Mill Allotment: Grazing under current management is not limiting the development of a riparian areas in Nuttall and Carter Canyons. The proposed grazing under Alternatives 2 and 3 will not limit the functionality of the riparian areas within the Shingle Mill Allotment. Alternative 1 will have no effects from grazing.

C. Soils

These analyses summarize the discussion in Doc. 59. Domestic livestock grazing affects soil functions that are important to maintenance of long-term productivity. Specifically, the soil's ability to accept, hold and release water is affected by physical compaction and trampling. The nutrient recycling function of the soil is affected by removal of vegetation that impacts above-ground nutrient inputs into the

system. Finally, the soil's resistance to erosion is affected by changes in plant density and protective litter.

A soil condition rating system is used to measure the relative effects of livestock grazing on these critical soil functions. Map 6 displays the existing soil conditions; Tables 5a through 5h display the existing soil condition ratings and those anticipated at the end of the permit period for each allotment as a result of implementing the proposed action and alternatives. This report is based on a soil condition assessment that was made for the entire Pinaleno EMA in 1998. The assessment used the Region 3 General Ecosystem Survey (1:250,000 scale) further broken down into several slope and vegetation classes, and rated as satisfactory, unsatisfactory or unsuited. Since then, Regional standards for Soil Condition have changed. A new condition class, impaired, has been added and the unsuited category has been dropped (FSM 2509.18 Soil Management, R-3 Supplement No. 2509.18-99-1, effective October 20, 1999). In 1999, ratings were adjusted to reflect site-specific information, and to reflect the new standards. Information about slope, vegetation community and soil properties was used as a basis for ratings. This rating will be referred to as Soil Quality to differentiate it from the 1998 rating.

NOTE: - Acreage figures and classifications reported here may differ from the Scoping Report of April 14, 1999. This difference is a result of the site-specific analysis at the project level.

Marijilda Allotment

Affected Environment, Soil Quality, Marijilda Allotment: Tables 5a and 5b below display the existing soil condition for capable and not-capable acres respectively. The predicted condition for the proposed action and alternatives at the end of proposed grazing permit period are also displayed. Only the condition within the proposed boundary is displayed in the following tables. This is the area that has been and will be affected by management activities. These predictions assume that grazing is the only effect on soil condition. A discussion of grazing effects follows.

TABLE 5a: - SOIL QUALITY, MARIJILDA ALLOTMENT, PERCENT OF ACRES CAPABLE FOR GRAZING

Condition Class (percent of capable acres)	Exist. Cond.	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action (Alt. 3)	Coordinated Resource Management/ Preferred Alternative (Alt. 4; Marijilda only)
Alternative		1	2	3	4
Satisfactory	86	90	88	88	89
Impaired	11	7	9	9	8
Unsatisfactory	3	3	3	3	3

TABLE 5b: - SOIL QUALITY, MARIJILDA ALLOTMENT, PERCENT OF ACRES NOT CAPABLE FOR GRAZING

Condition Class (percent of not capable acres)	Exist. Cond.	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action (Alt. 3)	Coordinated Resource Management/ Preferred Alternative (Alt. 4; Marijilda only)
Alternative		1	2	3	4
Satisfactory	100	100	100	100	100
Impaired	0	0	0	0	0
Unsatisfactory	0	0	0	0	0

Grazing Effects, Marijilda Allotment: The soil quality assessment shows that 86 percent of the soils within capable acres are satisfactory, and 11 percent are impaired and 3 percent are unsatisfactory. The area of soil impairment is in the desert grassland vegetation type on slopes of less than 15%. These soils were heavily impacted by past grazing practices. The three percent of soils that are in unsatisfactory condition are in an area that has been inhabited, farmed and grazed since prehistoric times (Doc. 62). The Lebanon Ditch is a contemporary canal system that removes water from the area thereby inhibiting vegetation recovery. It is not very well maintained and could fail leading to further gully erosion. Soils in this area have been altered to the extent that the rate of recovery will be very slow. Because of heritage values in the area of unsatisfactory soils, it is unlikely that watershed restoration activities such as gully plugs will be considered in the foreseeable future.

Overall, improvement of soil quality in all of the areas is a slow process. Under current management, each pasture is rested every other year. This will allow vegetation cover to improve. Current management has resulted in improved vegetation conditions that will lead to improved soil quality. Alternative 3 changes the allotment boundary, excluding mostly not-capable areas. The effects from grazing on soil quality will be the same as for Alternative 2. Alternative 4 will decrease the amount of time that cattle are on the allotment, allowing more growing season rest. This will lead to improved soil quality at a faster rate than for Alternatives 2 or 3.

No Action/No Grazing (Alternative 1) will lead to improved soil quality, inferred by more vegetation cover, at a faster rate than for Current Management (Alternative 2), the Proposed Action (Alternative 3) or Coordinated Resource Management (Alternative 4) in some areas: cattle bed grounds, around water sources and to a lesser extent in areas that are from 0 - 15% slope. The difference in soil condition between all four of the alternatives will be insignificant in the term of the proposed grazing permit (10 years).

Soils in non-capable areas are rated as satisfactory by definition, because they have been minimally affected by management activity. There will be minimal effects from grazing to soils in non-capable areas. For this reason, soil quality is predicted to remain static for all alternatives in the absence of fire or some other form of disturbance.

Hawk Hollow Allotment

Affected Environment, Soil Quality, Hawk Hollow Allotment: Tables 5c and 5d below display the existing soil quality for capable and not-capable acres respectively. The predicted quality for the proposed action and alternatives at the end of proposed grazing permit period are also displayed. Only

the quality within the proposed boundary is displayed in the following tables. This is the area that has been and will be affected by management activities. These predictions assume that grazing is the only effect on soil quality. A discussion of grazing effects follows.

TABLE 5c: - SOIL QUALITY, HAWK HOLLOW ALLOTMENT, PERCENT OF ACRES CAPABLE FOR GRAZING

Condition Class (percent of capable acres)	Exist. Cond.	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Alternative		1	2	3
Satisfactory	89	93	91	91
Impaired	11	7	9	9
Unsatisfactory	0	0	0	0

TABLE 5d: - SOIL QUALITY, HAWK HOLLOW ALLOTMENT, PERCENT OF ACRES NOT CAPABLE FOR GRAZING

Condition Class (percent of not capable acres)	Exist. Cond.	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Alternative		1	2	3
Satisfactory	100	100	100	100
Impaired	0	0	0	0
Unsatisfactory	0	0	0	0

Grazing Effects, Hawk Hollow Allotment: The soil quality assessment for the Hawk Hollow Allotment shows that 89 percent of the soils within capable acres are in satisfactory condition and 11 percent are in impaired condition. Improvement of soil quality is a slow process. Under current management, the allotment is grazed in the dormant season only, with moderate utilization rates. This type of grazing management has the least impact to native grasses. Current management has resulted in improved vegetation conditions that will lead to improved soil condition.

No Action/No Grazing (Alternative 1) will lead to improved soil quality, inferred by more vegetation cover, at a faster rate than for Current Management (Alternative 2) or the Proposed Action (Alternative 3) in some areas: cattle bed grounds, around water sources and to a lesser extent in areas that are from 0 - 15% slope. The difference in soil quality between all three the alternatives will be immeasurable in the term of the proposed grazing permit (10 years).

Soils in non-capable areas are rated as satisfactory by definition, because they have been minimally affected by management activity. There will be minimal effects from grazing to soils in non-capable areas. For this reason, soil quality is predicted to remain static for all alternatives in the absence of fire or some other form of disturbance.

White Streaks Allotment

Affected Environment, Soil Quality, White Streaks Allotment: Tables 5e and 5f below display the existing soil quality for capable and not-capable acres respectively. Only the condition within the proposed boundary change is displayed in the following tables. This is the area that has been and will be affected by management activities. The predicted condition for the proposed action and alternatives at

the end of proposed grazing permit period are also displayed. These predictions assume that grazing is the only effect on soil quality. A discussion of grazing effects follows.

TABLE 5e: - SOIL QUALITY, WHITE STREAKS ALLOTMENT, PERCENT OF ACRES CAPABLE FOR GRAZING

Condition Class (percent of capable acres)	Exist. Cond.	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Alternative		1	2	3
Satisfactory	88	92	90	90
Impaired	12	8	10	10
Unsatisfactory	0	0	0	0

TABLE 5f: - SOIL QUALITY, WHITE STREAKS ALLOTMENT, PERCENT OF ACRES NOT CAPABLE FOR GRAZING

Condition Class (percent of not capable acres)	Exist. Cond.	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Alternative		1	2	3
Satisfactory	100%	100%	100%	100%
Impaired	0	0	0	0
Unsatisfactory	0	0	0	0

Grazing Effects, White Streaks Allotment: The soil quality assessment shows that 88% of the soils within capable acres are in satisfactory condition, and 12% are impaired. The area of soil impairment is in the desert grassland vegetation type on slopes of less than 15%. These soils were heavily impacted by past grazing practices. Improvement of soil quality is a slow process. Under current management, the allotment is grazed in the dormant season only with moderate utilization rates. This type of grazing management has the least impact to native grasses. Current management has resulted in improved vegetation conditions that will lead to improved soil quality.

The No Action/No Grazing alternative will lead to improved soil quality, inferred by more vegetation cover, at a faster rate than for Current Management in some areas; cattle bed grounds, around water sources and to a lesser extent in areas that are from 0 - 15% slope. The difference in soil quality between both of the alternatives will not be measurable at slopes greater than 15% in the term of the proposed grazing permit (10 years).

Soils in non-capable areas are rated as satisfactory by definition, because they have been minimally affected by management activity. There will be minimal effects from grazing to soils in non-capable areas. For this reason, soil quality is predicted to remain static for all alternatives in the absence of fire or some other form of disturbance.

Shingle Mill Allotment

Affected Environment, Soil Quality, Shingle Mill Allotment: Tables 5g and 5h below display the existing soil quality for capable and not-capable acres respectively. Only the condition within the proposed boundary change is displayed in the following tables. This is the area that has been and will be affected by management activities. The predicted condition for the proposed action and alternatives at the end of

proposed grazing permit period are also displayed. These predictions assume that grazing is the only effect on soil quality. A discussion of grazing effects follows.

TABLE 5g: - SOIL QUALITY, SHINGLE MILL ALLOTMENT, PERCENT OF ACRES CAPABLE FOR GRAZING

Condition Class (percent of capable acres)	Exist. Cond.	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Alternative		1	2	3
Satisfactory	83	87	85	85
Impaired	12	13	15	15
Unsatisfactory	5	0	0	0

TABLE 5h: - SOIL QUALITY, SHINGLE MILL ALLOTMENT, PERCENT OF ACRES NOT CAPABLE FOR GRAZING

Condition Class (percent of not capable acres)	Exist. Cond.	No Action/No Grazing (Alt. 1)	Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Alternative		1	2	3
Satisfactory	100	100	100	100
Impaired	0	0	0	0
Unsatisfactory	0	0	0	0

Grazing Effects, Shingle Mill Allotment: The soil quality assessment shows that 83% of the soils within capable acres are satisfactory, 12% are impaired and 5% unsatisfactory. The area of soil impairment is in the desert grassland vegetation type on slopes of less than 15%. The unsatisfactory soils are in areas that have very low vegetation biomass, and are rated as low range condition. These soils were heavily impacted by past grazing practices. Improvement of soil quality is a slow process. Under current management, half of the allotment is grazed in the dormant season only, and the other half is rested every other year. Utilization rates are moderate. This type of grazing management will benefit native grasses. Current management has resulted in improved vegetation conditions that will lead to improved soil quality.

The No Action/No Grazing alternative will lead to improved soil condition, inferred by more vegetation cover, at a faster rate than for Current Management or the Proposed Action in some areas; cattle bed grounds, around water sources and to a lesser extent in areas that are from 0 - 15% slope. The Proposed Action includes a fence (Tripp pasture) that will help further control livestock use in an area of unsatisfactory soil quality, which makes it more conducive to soil improvement than Current Management. The difference in soil quality between all of the alternatives will be slight at slopes greater than 15% in the term of the proposed grazing permit (10 years).

Soils in non-capable areas are rated as satisfactory by definition, because they have been minimally affected by management activity. There will be minimal effects from grazing to soils in non-capable areas. For this reason, soil quality is predicted to remain static for all alternatives in the absence of fire or some other form of disturbance.

Soil Management General Discussion, Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments: All soils must be managed to maintain or improve long-term productivity. This can be accomplished by implementing the following Best Management Practices: Annually prepare an operating plan with the permittee to allow for current allotment conditions; make periodic field checks to identify needed adjustments in season of use and livestock numbers including stock counts, forage utilization, assessment of rangeland to verify soil and vegetative condition and trend; and use necessary techniques to achieve proper distribution, or lessen the impact on areas which are sensitive or which would naturally be overused including riding and herding to shift livestock locations, using salt or supplement feed, range improvements, prescribed burning, trail construction, or seeding, or prevention of intensive livestock grazing or concentrated livestock use on soils that have low bearing strength and are wet.

D. Water

Lower Gila River Watershed: The following discussion is based on Document 59: The Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments are all within the Lower Gila River 5th Code Watershed. This watershed is about 1,700,000 acres in size, of which 158,153 acres (9%) are National Forest. The combined acreage for all four allotments in this watershed is currently 55,905 acres (or 3%). If the Preferred Alternatives are implemented for all four allotments, the combined acreage will be 35,623 acres (or 2%).

The City of Safford and numerous small towns are within this watershed. Land uses on private land are those associated agriculture and rural development. Uses on Federal and State lands are primarily grazing and recreation.

No tests have been made within the project area to determine water quality parameters that may be affected by watershed condition. However, none of the downstream waters are listed in the 1998 Arizona Department of Water Quality Assessment as "water quality limited". This means that the project area is contributing to a high quality system.

Grazing Effects, Water Quality: Livestock use is identified as a source of concern for water contamination in Arizona where appropriate management of cattle is lacking. Implementation of Best Management Practices (BMPs) will be effective in managing cattle grazing to maintain or improve water quality. See FSH 2509.22 and Doc. 3 for appropriate BMPs. Because soil conditions are satisfactory over much of the project area, and areas with soil impairment or where soils are unsatisfactory are improving under current management, it is not expected that the proposed grazing under Alternative 2, Alternative 3, or Alternative 4 (Marijilda Allotment only) will be detrimental to the quality of downstream water.

E. Air

The project area is not located in an air quality non-attainment area for any air quality constituent. This means that air quality is excellent. The project is not located in a Class I Wilderness Area (Doc. 59).

Grazing Effects, Air Quality: There will be no measurable effects to air quality under Alternative 1, Alternative 2, Alternative 3 for any of the four allotments, or Alternative 4 (Marijilda Allotment only).

F. Wildlife (Issues 1 & 2)

Threatened, Endangered, Proposed, and Sensitive Species

Federally listed species included in this analysis are in part derived from the list of species analyzed for these four grazing allotments in the Biological Assessment (BA) of on-going and long-term grazing on the Coronado National Forest (USDA 1998). The preliminary analysis available at the time of the Scoping Report included some special status species. During the analysis phase, the list has been expanded and some species dropped based on professional judgment and available information.

In the previously mentioned on-going grazing BA determinations of “may affect, not likely to adversely affect” were made for the Aplomado falcon and “may affect, likely to adversely effect” for the lesser long-nosed bat for these four allotments. For the remaining 28 species of plants and animals, the determination was either “no effect” or it was determined that neither the species nor its habitat are present on the allotment. The site-specific specialist report and the related Biological Assessment and Evaluation prepared for this analysis (Doc. 61; the BA/E for the Preferred Alternative is in preparation) made determinations that vary from the programmatic determinations in the on-going grazing BA. The new determinations are based on more complete available information regarding potential effects of livestock grazing on threatened and endangered species.

Recently, the Region 3 Regional Forester's Sensitive Species List was revised and includes many more species than the 1988 Regional Forester's list. The Safford District Biologist reviewed the 1999 species list and identified the species that are known or suspected to occur in the Pinaleno Mountains (Table 6). It should be noted here that the American peregrine falcon has recently been de-listed by the U.S. Fish and Wildlife Service (Fed. Reg. Vol. 64, No. 164). It will still be included as a Forest Service Sensitive species at least through the mandatory five-year monitoring period associated with the de-listing process.

TABLE 6 – SPECIAL STATUS SPECIES CONSIDERED IN THE ANALYSIS OF THE MARIJILDA, HAWK HOLLOW, SHINGLE MILL, AND WHITE STREAKS ALLOTMENTS

Common Name	Scientific Name	Status
Plants		
Catalina beardtongue	<i>Penstemon discolor</i>	Sensitive
Arivaipa sage	<i>Salvia amissa</i>	Sensitive
Hawk-weed	<i>Hieracium rusbyi</i>	Sensitive
White-flowered cinquefoil	<i>Potentilla albiflora</i>	Sensitive
Mexican saber daisy	<i>Machaeranthera mexicana</i>	Sensitive
Arizona alum root	<i>Heuchera glomerulata</i>	Sensitive
Pinaleno Jacob's ladder	<i>Polemonium flavum</i>	Sensitive
Bigelow thoroughwort	<i>Eupatorium bigelovii</i>	Sensitive
Birds		
Northern aplomado falcon	<i>Falco femoralis septentrionalis</i>	Endangered
Mexican spotted owl	<i>Strix occidentalis lucida</i>	Threatened
American peregrine falcon	<i>F. peregrinus</i>	Sensitive
Northern goshawk	<i>Accipiter gentilis</i>	Sensitive
Mammals		
Lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuena</i>	Endangered
Mt. Graham pocket gopher	<i>Thomomys umbrinus grahamensis</i>	Sensitive
Reptiles		

Giant spotted whiptail	<i>Cnemidophorus burti stictogrammus</i>	Sensitive
Twin-spotted rattlesnake	<i>Crotalis pricei</i>	Sensitive
Mexican gartersnake	<i>Thamnophis eques</i>	Sensitive
Amphibians		
Lowland leopard frog	<i>Rana yavapaiensis</i>	Sensitive
Insects		
Pinaleno monkey grasshopper	<i>Eumorsea pinaleno</i>	Sensitive
Gastropods		
Clark Peak Talussnail	<i>Sonorella christenseni</i>	Sensitive
Mimic Talussnail	<i>Sonorella imitator</i>	Sensitive
Pinaleno Mountainsnail	<i>Oreohelix grahamensis</i>	Sensitive
Pinaleno Talussnail	<i>Sonorella grahamensis</i>	Sensitive
Wet Canyon Talussnail	<i>Sonorella macrophallus</i>	Sensitive

Environmental Effects:

No Action: Implementation of the no action alternative would mean the removal of livestock from the four allotments within two years of the decision. All existing structural improvements including water developments would remain in place but would not be maintained. Cattle-related localized impacts to vegetation and soils in concentration areas would be eliminated. Watershed, soil, and vegetation condition would improve at a faster rate than the action alternative. Waters would not be maintained and so would eventually be unavailable to wildlife. The reduced water availability would not affect any threatened, endangered or proposed species.

Continue Current Management: Very little difference is expected between the effects of current management as compared to the no action alternative except recovery of livestock concentration areas will be slower and structural improvements such as water developments will be maintained under current management and will therefore be available to wildlife.

Threatened and Endangered Species: Effects of current management on threatened, endangered, proposed (TEP), and sensitive species are analyzed in a Biological Assessment and Evaluation, currently in preparation, that will include formal determinations of effect for the Preferred Alternative. The table below represents preliminary findings for the four alternatives considered in detail, as discussed in the specialist report (Doc. 61). The BA/E will abstract the findings relevant to the Preferred Alternative. Below the tables are narrative summaries based on the wildlife specialist report.

TABLE 7a – SUMMARY OF EFFECTS ON THREATENED, ENDANGERED & PROPOSED SPECIES FOR THE MARIJILDA ALLOTMENT

Species	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action (Alt. 3)	Proposed Action/Preferred Alternative (Alt. 4; Marijilda only)
Lesser long-nosed bat	NE	NE	NE	NE
Aplomado falcon	NE	NE	NE	NE
Mexican Spotted Owl	NE	NE	NE	NE
Chiricahua Leopard Frog	NJ	NJ	NJ	NJ

NE=No Effect

NJ=Not Likely to Jeopardize

TABLE 7b – SUMMARY OF EFFECTS ON THREATENED, ENDANGERED & PROPOSED SPECIES FOR THE HAWK HOLLOW ALLOTMENT

Species	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Lesser long-nosed bat	NE	NE	NE
Aplomado falcon	NE	NE	NE
Mexican Spotted Owl	NE	NE	NE
Chiricahua Leopard Frog	NJ	NJ	NJ

NE=No Effect

NJ=Not Likely to Jeopardize

TABLE 7c – SUMMARY OF EFFECTS ON THREATENED, ENDANGERED & PROPOSED SPECIES FOR THE SHINGLE MILL ALLOTMENT

Species	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Lesser long-nosed bat	NE	NE	NE
Aplomado falcon	NE	NE	NE
Mexican Spotted Owl	NE	NE	NE
Chiricahua Leopard Frog	NJ	NJ	NJ

NE=No Effect

NJ=Not Likely to Jeopardize

TABLE 7d – SUMMARY OF EFFECTS ON THREATENED, ENDANGERED & PROPOSED SPECIES FOR THE WHITE STREAKS ALLOTMENT

Species	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Lesser long-nosed bat	NE	NE	NE
Aplomado falcon	NE	NE	NE
Mexican Spotted Owl	NE	NE	NE
Chiricahua Leopard Frog	NJ	NJ	NJ

NE=No Effect

NJ= Not Likely to Jeopardize

The effects determinations for the lesser long-nosed bat are different from those made at the programmatic level. The programmatic BA made effects determinations that were appropriately conservative for that level of analysis. The determinations were based on the Guidance Criteria for determining effects to Threatened and Endangered species. Site-specific analysis is able to take into consideration specific habitat conditions and species distribution that provides a more full description of potential effects to T&E species. The Biological Assessment (in preparation) indicates that the proposed action/preferred alternative will have No Effect on the lesser long-nosed bat. This determination is based on the lack of occurrence of the species in the project area and lack of evidence indicating a livestock-related loss of bat food resources.

The US Fish & Wildlife Service states (see Doc. 61) that only one lesser long-nosed bat record is known from the entire Pinaleno Ecosystem Management Area and that “all available information suggests that this area receives only incidental use by lesser long-nosed bats.” The Pinaleno Mountains do support populations of Palmer’s agave, one of the primary food plants for this species. Evidence suggests that existing agave populations on the Coronado National Forest are stable and are not limited by management activities such as livestock grazing. The supposition of widespread damage to agave stalks from livestock is not supported by scientific literature, although wildlife species such as deer are known to utilize agave stalks. Agave populations are apparently thriving at this point in history due to conditions that favor them as well as the reduction in utilization by human activities. Fires are known to result in short term reduction in older agaves, but also stimulate vegetative reproduction. Available literature supports the notion that agaves, like other succulent species, increase in the presence of moderate to heavy herbivory of more palatable grass species (McClaran and Van Devender 1995; see bibliography in Document 61).

The preliminary determination of “No Effect” for the Northern Aplomado falcon are based on the lack of sufficient suitable habitat on the allotments and the lack of occurrence of the species. Additionally, off-Forest low elevation habitat on the north and east flanks of the Pinaleno EMA is currently not suitable for this species.

The preliminary determination of “No Effect” to the Mexican spotted owl is based on the lack of evidence of livestock related negative effects to MSO habitat. The four allotments currently include all or parts of 12 MSO Protected Activity Centers (PACs) and habitat that may qualify as “restricted” in the higher elevations and on steep slopes. The proposed action will administratively redraw the allotment boundaries to exclude most of the steep, higher elevation areas. This will result in exclusion of all but

portions of four PACs from within allotment boundaries as well as the removal of most of the habitat that may be considered "restricted" by the MSO Recovery Plan. Two PACs occur in Gibson Canyon in the Marijilda allotment, one each in Nuttall and Johns Canyons in the Shingle Mill allotment. All of the lower Gibson PAC will still be located in an allotment, but only small portions (less than 10%) of the other PACs will still be located within allotments. The portions of these PACs that will remain represent steep, high elevation areas that cattle are unlikely to access (Doc. 61) and where there are no gathering or concentration areas. Approximately half of the lower Gibson Canyon PAC is considered capable rangeland. This PAC is located in Upper Marijilda pasture. This pasture is used in conjunction with two other pastures as a unit through which the herd will be rotated every other year. Additionally, use will be deferred so that cattle are not in the same portion of the unit at the same time period in subsequent years. This will ensure that the cattle are present in the pasture which includes the PAC for only a portion of the growing season of every other year. Given the proposed numbers of cattle (30 head, cow/calf) and the limited presence of cattle every other year, there will be no effect from the proposed action on MSO in the Marijilda allotment. Similarly, there will be no effect to MSO in the other PAC's since the proposed actions will be during winter only and only very small portions of PAC's will remain within the allotment boundaries.

Potential effects of Alternative 2 will be similar even though allotment boundaries will not be redrawn. The redrawing of the allotment boundaries will not result in new fence construction; instead it is a recognition of use patterns by livestock. Livestock use of difficult terrain such as the steep slopes and rocky drainages, while not unheard of, is still quite rare. For this reason, slopes greater than 40% are considered "not capable" for livestock grazing. The majority of the terrain included in the PAC's is not capable land and much of the capable lands are actually isolated polygons of capable areas surrounded by steep slopes. Such isolated polygons are effectively included in the non-capable grazing lands.

The preliminary determination of "not likely to jeopardize" the proposed Chiricahua leopard frog is based on the lack of occurrence of the species in the Pinaleno Mountains.

Sensitive Species: The potential effects of the proposed action on Forest Service Sensitive species are summarized in the following table. Where possible the effects discussion below the table will consider the effects by groups in the interest of saving space. A more detailed discussion of potential effects to Forest Service Sensitive Species will be included in the Biological Assessment and Evaluation currently in preparation for the preferred alternative.

TABLE 7e – SUMMARY OF EFFECTS ON FOREST SERVICE SENSITIVE SPECIES FOR MARIJILDA, HAWK HOLLOW, SHINGLE MILL, AND WHITE STREAKS ALLOTMENTS

Common Name	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action (Alt. 3)	Proposed Action/Preferred Alternative (Alt. 4; Marijilda Only)
Plants				
Catalina beardtongue	NI	NI	NI	NI
Arivaipa sage	NI	NI	NI	NI
Hawk-weed	NI	NI	NI	NI
White-flowered cinquefoil	NI	NI	NI	NI
Mexican saber daisy	NI	NI	NI	NI
Arizona alum root	NI	NI	NI	NI
Pinaleno Jacob's ladder	NI	NI	NI	NI
Bigelow thoroughwort	NI	NI	NI	NI
Birds				
American peregreine falcon	NI	NI	NI	NI
Northern goshawk	NI	NI	NI	NI
Mammals				
Mt. Graham pocket gopher	NI	NI	NI	NI
Reptiles				
Giant spotted whiptail	NI	NI	NI	NI
Twin-spotted rattlesnake	NI	NI	NI	NI
Mexican gartersnake	NI	NI	NI	NI
Amphibians				
Lowland leopard frog	NI	NI	NI	NI
Insects				
Pinaleno monkey grasshopper	NI	NI	NI	NI
Gastropods				
Clark Peak Talussnail	NI	NI	NI	NI
Mimic Talussnail	NI	NI	NI	NI
Pinaleno Mountainsnail	NI	NI	NI	NI
Pinaleno Talussnail	NI	NI	NI	NI
Wet Canyon Talussnail	NI	NI	NI	NI

NI=No Impact

Of the eight species of plants considered in this analysis, herbarium accession records had been gathered for all except Catalina beardtongue and Aravaipa sage. Information as to habitat needs was obtained from Kearney and Peebles (1964; see bibliography in Doc. 61). In addition to herbarium accessions,

occurrence data were obtained from Arizona Game and Fish Heritage Data Management System (HDMS) and District records. The determination of "No Impact" to these species was made either because the species habitat does not occur on the allotments, or if it does occur it is an area that is unlikely to be affected by livestock. For instance, Kearney and Peebles (op. cit.) indicate that Aravaipa sage is found at elevations ranging from 1,500 to 3000 ft. The four allotments analyzed here do not include lands below 3,000 ft. In another instance, Santa Catalina Mountains beardtongue is found growing in cracks in granitic rock outcrops. Cattle do not graze on rock outcrops and so will have no impact on this species.

As noted above the American peregrine falcon was recently de-listed and has entered into a five year de-listing period. The approach of the Forest Service will be to continue to consider it to be a Sensitive species and will continue to manage it in a manner to avoid impacts to the species. Since the elimination of organochloride pesticides in the United States, the bird has increased and the remaining threat involves disturbance of nesting pairs. Peregrine falcons nest on cliffs and are known from an area near the boundary of White Streaks and Hawk Hollow allotments. Since these two allotments are proposed for winter use (i.e. outside of the breeding season) there will be no effect from either current management or the preferred alternative.

No Northern goshawk Post-fledging Family Areas are within the existing or proposed allotment boundaries, so implementation of any of the action alternatives or the no action alternative will result in no impacts to this species.

The Pinaleno Mountains pocket gopher is found primarily in meadows where there are deep enough soils for it to burrow. In the Pinaleno Mountains this species is found from approximately 5700 ft. up to the highest elevations. The best habitat on the mountain occurs at elevations above about 8,500 feet where the slopes tend to be less extreme and meadows supporting deep soils occur. These areas are not included in the allotments. Neither the no action alternative, preferred alternative, nor continuation of current management will impact this species.

A determination of no impact to the sensitive reptiles is based on the lack of known occurrence, or lack of habitat, or if habitat does occur on the allotments, it is unlikely to be affected by any of the alternatives included in this analysis.

Lowland leopard frog is known from Marijilda Canyon. The specialist reports concerning riparian areas (Docs. 5-17) indicate that riparian areas including Marijilda Canyon were not limited by livestock grazing, which suggests that neither the Preferred Alternative nor the Current Management alternative would result in adverse effects to riparian areas in any of the allotments. Neither the Preferred Alternative, Continue Current Management, nor the No Action/No Grazing Alternative will impact lowland leopard frog.

The sensitive gastropods included in the analysis will not be impacted by any of the alternatives since they occur at higher elevations, wet slopes, or talus slopes. Such habitats do not occur on the allotments or, if within the allotment boundary, are in areas that are inaccessible by livestock. Similarly, the Pinaleno monkey grasshopper will not be impacted by any of the alternatives since it is known from spruce-fir habitat at elevations above the allotments.

Other Wildlife Species

A description of the kinds of wildlife species that may be found within the allotments was included in Section 1.B above. This description included both game and non-game species, but was not an exhaustive list of the diversity that occurs there. The diversity of the Pinaleno EMA is great, due to the variety of habitat and topography. The area includes a great number of resident vertebrate and invertebrate species and is important seasonally to migratory species (Doc. 61).

Environmental Effects:

Potential effects to other wildlife species in the allotments such as mule deer and whitetail deer include the potential for reduction in habitat quality. Most critical to these large mammals are fawning areas, food, and water sources. Fawning areas must have adequate hiding cover to be effective, particularly in mid-summer when fawns are small. Managed grazing of low numbers of cattle typically will not reduce hiding cover in the first few months of a fawn's life. Climatic factors may limit the production of range grasses and so the quality of fawning areas will vary from year to year.

Construction of certain range improvements may have an effect on a variety of wildlife species. Construction of fences that are not wildlife friendly may affect movements of large wildlife species or limit their access to water. Drinkers associated with water developments can have an adverse effect on a large variety of small wildlife species. The lack of access and egress ramps frequently results in drowning of a variety of small mammals, birds and reptiles.

Potential effects to a large number of other types of wildlife species relate to condition of the riparian areas. The existing condition section identified riparian habitat that is currently in degraded condition as a result of water removal by the Lebanon Ditch. The proposed action for these allotments is intended to limit livestock impacts to riparian species; resolution of the Lebanon Ditch effects is beyond the scope of livestock management.

The range vegetation report suggests that an increase in shrub species has occurred in the area as a result of past heavy grazing and prolonged periods where winter precipitation was greater than summer. In general, wildlife species diversity of shrub-invaded grassland and woodland habitat is less than areas with fewer shrubs. In particular, the composition of the bird community has probably shifted as the shrubby species have become more prevalent. It is likely that fewer grassland sparrows and their allies are present in the desert grassland now compared to before the increase in snakeweed and burrowweed. The absence of livestock on the winter use allotments (e.g. Shingle Mill, Hawk Hollow, and White Streaks) during the summer growing season will allow grasses to grow and produce seed with minimal disturbance, which should, in-turn, result in a stabilization of shrub populations. The proposed action on the Marijilda allotment provides for adequate pasture rest to maintain the wildlife habitat that exists and will limit livestock impacts to riparian vegetation. Continuation of current management should result in positive effects to avifauna and a variety of other wildlife in the area.

Past, present, and foreseeable future projects or actions that have or will contribute cumulative effects in the area include historic heavy grazing, prescribed and natural fires, invasive exotic plants, and water diversions. These occurrences have contributed incrementally to effects that have changed ecological conditions of the area. The proposed action alternatives, because they are designed to implement properly managed grazing will not contribute effects that would further adversely change the ecological

conditions of the analysis area. The proposed actions will not preclude future projects designed to eliminate invasive exotic plants or those designed to return fire to a more natural role in the ecosystem. Therefore, the proposed action alternatives will not contribute adversely to the existing level of cumulative effects in the area.

G. Other Effects

Economic Viability of Permittee Operations, and Returns to the Local Economy (Issue 3)

Affected Environment: Livestock has impacts on local and regional economies as well as on the ranching operation. Economic impacts generally can be expressed as employment (number of jobs), government receipts, and revenue sharing (payments in lieu of taxes) to counties. Specific economic effects to permittees are mostly dependant on market fluctuations in the price of cattle, which makes quantification of the specific economic effects to the permittee for any alternative nearly impossible. However, the tracking of overall government receipts can serve as an indicator of permittee income trends.

The value of employment opportunities is calculated at the rate of 1.14 jobs per 100 animal unit years. This represents the total jobs supported by the activity throughout Arizona and New Mexico, including local area employment. Government receipts are calculated based on the 1999 grazing fee of \$1.35 per head month (Forest Service Manual, Interim Directive 2230-99-2). Payments to counties are calculated at 25% of total government receipts.

Environmental Effects: Tables 8a through 8d summarize the improvement costs associated with each alternative, and are based on Document 49. Map 5 shows existing and proposed improvements. No Action/No Grazing and Continue Current Management require no investment; the Proposed Action requires the most investment, and the Preferred Alternative requires an amount between the two. The Hawk Hollow and White Streaks Allotment, where no further improvements are planned, have no investment costs under any alternative. Costs for construction and maintenance of range improvements are typically borne by the permittee, but in some cases the government shares the costs, usually on a 50/50 basis.

Tables 9a through 9d show the economic differences between alternatives based on the permitted numbers and proposed improvements depicted in Tables 3a through 3d, above. These calculations were completed to facilitate a relative comparison of alternatives. The dollar amounts are "per year;" actual use of the allotments will cause actual numbers to vary from year to year.

TABLE 8a – COST OF PLANNED IMPROVEMENTS BY ALTERNATIVE, MARIJILDA ALLOTMENT

Improvement Description	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action (Alt. 3)	Coordinated Resource Management/ Preferred Alternative (Alt. 4; Marijllda only)
N/A	\$0	\$0	\$2,000	\$0

TABLE 8b – COST OF PLANNED IMPROVEMENTS BY ALTERNATIVE, HAWK HOLLOW ALLOTMENT

Improvement Description	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
N/A	\$0	\$0	\$0

TABLE 8c – COST OF PLANNED IMPROVEMENTS BY ALTERNATIVE, WHITE STREAKS ALLOTMENT

Improvement Description	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
N/A	\$0	\$0	\$0

TABLE 8d – COST OF PLANNED IMPROVEMENTS BY ALTERNATIVE, SHINGLE MILL ALLOTMENT

Improvement Description	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Construct Tripp Canyon pasture fence (2 mi.)	\$0	\$0	\$10,500

TABLE 9a - ECONOMIC EFFECTS, MARIJILDA ALLOTMENT

Economic Effect	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action (Alt. 3)	Coordinated Resource Management/Preferred Alternative (Alt. 4; Marijilda only)
Number of jobs	0	0.3	0.3	0.3-0.4
Government receipts	\$0	\$486	\$486	\$463-555
Payments to counties	\$0	\$122*	\$122	\$116-139

TABLE 9b - ECONOMIC EFFECTS, HAWK HOLLOW ALLOTMENT

Economic Effect	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Number of jobs	0	0.2	0.2
Government receipts	\$0	\$223	\$223
Payments to counties	\$0	\$56*	\$56

TABLE 9c - ECONOMIC EFFECTS, WHITE STREAKS ALLOTMENT

Economic Effect	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Number of jobs	0	0.2	0.2
Government receipts	\$0	\$308	\$308
Payments to counties	\$0	\$77*	\$77

TABLE 9d - ECONOMIC EFFECTS, SHINGLE MILL ALLOTMENT

Economic Effect	No Action/No Grazing (Alt. 1)	Continue Current Management (Alt. 2)	Proposed Action/Preferred Alternative (Alt. 3)
Number of jobs	0	0.9	0.9
Government receipts	\$0	\$1,337	\$1,337
Payments to counties	\$0	\$334*	\$334

*Total payments to Graham County, resulting from National Forest grazing, were \$55,481 in 1997 (Carol Boyd, Coronado National Forest Range Specialist, personal communication, November 29, 1999.)

Implementation of the No Action/No Grazing Alternative would result in a slight loss of jobs, government receipts, payments to Graham County and permittee income compared to the Continue Current Management, Proposed Action and Preferred Alternatives.

Heritage Resources (Issue 4)

Affected Environment: Heritage resources (formerly called "cultural resources") include archaeological and historical sites, and properties important to maintaining the traditional beliefs and lifeways of social groups ("traditional cultural properties"). The Pinaleno Ecosystem Management Area (EMA) has a long history. Remains of the prehistoric Archaic, Hohokam, Mogollon, and Anasazi cultures have been found within the EMA. Historically, the Chiricahua and Western Apache used the Pinalenos. In the 1870's, Mormon pioneers settled the nearby Gila Valley. Today, the area is of interest to the Hopi Tribe (Docs. 41, 50), Pueblo of Zuni, Western Apache (primarily San Carlos Apache and White Mountain Apache), Chiricahua Apache (Fort Sill Chiricahua and Mescalero Apache), Tohono O'odham, and the descendants of the nineteenth-century settlers. The Pinaleno EMA includes the *Dzil nchaa si'an* traditional cultural property, a place of ongoing historical, cultural and religious significance to the Western Apache (Docs. 48, 51). The Marijilda Allotment includes the Marijilda Canyon Prehistoric Archaeological District, a National Register-listed heritage property consisting of 16 prehistoric archaeological sites (Doc. 62).

Grazing Effect, Heritage Resources: The alternatives considered in this Environmental Assessment either reduce (No Action/No Grazing, Alt. 1), maintain (Continue Current Management, Alt. 2; Proposed Action/Preferred Alternative), Alt. 3) or slightly increase (Coordinated Resource Management/Preferred Alternative, Alt. 4 [Marijilda only]) grazing levels within the Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments. Grazing that maintains rangeland in satisfactory condition has little effect on heritage resources. All alternatives considered in this analysis improve the percentage of capable rangeland in satisfactory condition, with No Action/No Grazing producing the greatest improvement, Coordinated Range Management/Preferred Alternative (Alt. 4; Marijilda Allotment only) the next greatest, and Continue Current Management and the Proposed Action/Preferred Alternatives (Hawk Hollow, White Streaks and Shingle Mill Allotments) the least improvement (Tables 4a & b; 4d-i).

Concentration of livestock on archaeological and historical sites can result in damage to artifacts and structures, and alteration of the spatial relationships between artifacts. The latter impact can compromise the ability of the remains to provide historical information. For this reason, the addition of a pipeline and water trough in the Marijilda Allotment was not included in Alternative 4, as the improvements (which

are included in Alternative 3) would be located within the Marijilda Canyon Prehistoric Archaeological District, and would likely have an adverse effect (Docs. 62). The improvement proposed in Alternatives 3 and 4 (construct 1.5 miles of fence in the Tripp Canyon Pasture, Shingle Mill Allotment) has been surveyed and has been determined to have "no adverse effect (Docs. 32, 39)."

The Cultural Preservation Office of the Hopi Tribe (Doc. 41) commented that livestock grazing can cause adverse impacts on archaeological sites and ethnobotanical plants such as tobacco, and asked whether the allotments would be surveyed, and how the allotments would be managed to avoid impacts to the sites. The letter also inquired how the allotments would be managed to avoid impacts to native plants, such as tobacco. The Tribe also pointed out the need for intensive traditional cultural property studies and ethnohistorical research, in order to fully identify Hopi interests and needs. Survey and grazing impact issues are discussed in the preceding paragraphs. Allotments will be managed to maintain or increase threatened, endangered or sensitive species, which are native, and to maintain or increase acres of upland vegetation in satisfactory condition (see Tables 4a & b, 4d-i). While it might be expected that No Action/No Grazing (Alternative 1) would be more beneficial to the growth of plants of interest to the Hopi, this is not necessarily the case. For example, tobacco is a disturbance species on local rangelands, and would be favored by grazing levels that would be detrimental to other native plants (Mima Falk, Coronado National Forest Botanist, personal communication, 1999). Overall, there is no significant difference in the effects of the alternatives considered on native plants. With regard to ethnohistorical research, the Forest has undertaken a preliminary study, and is negotiating a Memorandum of Understanding with the Hopi Tribe that, among its provisions, recognizes the need for financial support of research on traditional use issues (Doc. 50).

The Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments include lands that fall within the *Dzil nchaa si'an* traditional cultural property. A Determination of Eligibility for the National Register of Historic Places is in preparation. The preliminary conclusion is that Mt. Graham is eligible for the National Register because of its past and current associations with the cultural practices and traditions of the Western Apache (Patricia M. Spoerl, personal communication, June 2000; also see Docs. 48 & 51). In a response to the Scoping Report (Doc. 42), the San Carlos Apache Elder's Cultural Advisory Council stated "These allotments are in areas of great traditional cultural significance to Apaches. We still utilize some of these areas for traditional cultural practices. We ask that you design the plans to have a minimum impact on the vegetation, particularly on new Emory Oak growth." Potential changes in vegetation condition are described in section 3.B.

From the standpoint of traditional Western Apache, No Action/No Grazing (Alternative 1) is likely to have qualitatively lesser impacts than Continue Current Management, as there is less manipulation of the environment (by cattle, or through maintenance of range improvements). Such manipulation is viewed as a physical wound when vegetation and earth are disturbed. The Proposed Action would have the highest level of impact, as its involve the addition of improvements to the Marijilda and Shingle Mill Allotments. The Preferred Alternative would have slightly less impact, since a proposed waterline and trough in the Marijilda Allotment would not be constructed. Since the allotments have been grazed at higher intensities in the past, and the *Dzil nchaa si'an* property retains its significance to the Western Apache, none of the alternatives is expected to compromise attributes of the property that may make it eligible for the National Register.

There would be no cumulative adverse effects from other foreseeable actions (see section 1.G and Doc. 62). Determinations of "no adverse effect" have been prepared and submitted to the Arizona State Historic Preservation Officer (Docs. 32, 39, 62).

H. National Forest Management Act Findings

The Coronado Land and Resources Management Plan became effective on August 4, 1986. Forest planning is currently guided by the Code of Federal Regulations (CFR) at 36 CFR 219. The planning regulations state that projects implemented after the LRMP is in place must be "consistent with the plan" (36 CFR 219.10.e). The Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotment projects have been deemed consistent with the long-term goals and objectives listed on pages 9-11 of the current Coronado LRMP. The LRMP identified the Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments as suitable for grazing, and the area was included in Management Area 4 (LRMP, pages 62-66). Other NFMA consistency findings relate to the management of suitable timberlands. The allotment does not contain any suitable timberlands; therefore, the other NFMA consistency check requirements do not apply.

SECTION 4 - LIST OF PREPARERS

The following individuals contributed to the completion of this project analysis:

Name	Contribution
Jerry Conner, Core Team Leader	Analysis team leader, reviewer/editor for Environmental Assessment
Jennifer Ruyle, Range and Soils Specialist	Analysis team member; specialist input on range conditions, soil, riparian, water and air resources
Jim McDonald, Planning Specialist	Analysis team member; specialist input on heritage resources; writer/editor for Environmental Assessment
Josh Taiz, Wildlife Biologist	Analysis team member; specialist input on wildlife (incl. Biological Assessment for TE&S species)
Chuck Duncan, Safford District Range Staff	Coordinated with permittees, provided resource data
Kathy Makansi, Archaeologist	Specialist input on heritage resources
Ron Senn, Planning Staff Officer	Overall management of Environmental Assessment process
Carol Boyd, Rangeland Management Specialist	Provided economic data and input on range management
Carrie Templin, Safford District Public Affairs Specialist	Provided input on recreation use
Genice Froehlich, Safford District Wildlife Biologist	Specialist input on wildlife and fish

OTHER CONTRIBUTORS

Name	Contribution
Joan Scott, Arizona Game & Fish Dept.	Participated with analysis team; provided comments on utilization

SECTION 5 - CONSULTATION WITH OTHERS

Public participation in the Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotment planning effort has occurred throughout the analysis process. A general scoping letter was mailed on April 13, 1999 to 85 individuals and organizations. Responses were received from April 19 to June 18. The responses did not result in the identification of additional planning issues. A 30-day comment period will be provided for public review of this Environmental Assessment.

Appendix A - Project Record Index

Doc #	Date	Author		Addressee		Contents
1				File		Allotment Summary Sheet: Hawk Hollow Allotment
2	11/23/1992	Kvale	Richard	Permittee		Term Grazing Permit: Hawk Hollow Allotment
3	07/22/1997	Arizona	State of	File		Grazing Best Management Practices for Water Quality
4	04/16/1998	Asmus	George	Bryce	Ross	Term Grazing Permit: Shingle Mill & White Streaks Allotments
5	06/06/1998	Richardson	Kim	File		Riparian Analysis: Ash Creek (below dam)
6	06/15/1998	Bruegge	Jeremy	File		Riparian Analysis: Lower Marijilda (below dam)
7	06/15/1998	Richardson	Kim	File		Riparian Analysis: Lower Marijilda (above dam)
8	06/16/1998	Richardson	Kim	File		Riparian Analysis: Gibson Creek
9	06/17/1998	Richardson	Kim	File		Riparian Analysis: Tripp Canyon
10	06/18/1998	Miller	Doug	File		Riparian Analysis: Carter Canyon
11	06/18/1998	Richardson	Kim	File		Riparian Analysis: Deadman Canyon
12	06/23/1998	Richardson	Kim	File		Riparian Analysis: Ash Creek (above dam)

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13	06/24/1998	Richardson	Kim	File		Riparian Analysis: Nuttall Canyon
14	06/25/1998	Richardson	Kim	File		Riparian Analysis: Shingle Mill Creek
15	06/25/1998	Richardson	Kim	File		Riparian Analysis: White Streaks
16	07/01/1998	Richardson	Kim	File		Riparian Analysis: North Taylor Canyon
17	07/23/1998	Bruegge	Jeremy	File		Riparian Analysis: Frye Creek
18	08/06/1998	Asmus	George	File		Allotment Summary Sheet, Shingle Mill Allotment
19	08/06/1998	Asmus	George	File		Allotment Summary Sheet, Marijilda Allotment
20	08/06/1998	Asmus	George	Post	Jimmy	Term Grazing Permit: Marijilda Allotment
21	08/21/1998	Richardson	Kim	File		Inspection Report: White Streaks Allotment
22	08/31/1998	Miller		File		Inspection Report: Hawk Hollow Allotment
23	09/11/1998	Asmus	George	File		Allotment Summary Sheet, White Streaks Allotment
24	09/30/1998	Miller/Rockhill		File		Inspection Report: Marijilda Allotment
25	11/06/1998	Asmus	George	Permittee		Annual Operating Instructions, 1998-1999, Hawk Hollow Allotment

Doc #	Date	Author		Accession		Contents
26	01/12/1999	Matthews/Dunca		File		Unit Examination Record, Hawk Hollow Allotment
27	01/25/1999	Miller/Rockhill		File		Unit Examination Record: White Streaks Allotment
28	01/25/1999	Miller/Rockhill		File		Unit Examination Record, Marijilda Allotment
29	01/26/1999	McDonald	Jim	File		Notes on Internal Scoping Meeting
30	02/02/1999	Miller	Doug	File		Unit Examination Record, Shingle Mill Allotment
31	02/09/1999	Lefevre	Robert	File		Soil Condition Rating: Hawk Hollow Allotment
32	03/08/1999	Makansi	Kathy	File		Heritage Resource Report, North Pinaleno Mountains Grazing Allotments
33	03/29/1999	Neff	James	File		Prescribed Burning Plan, Marijilda Prescribed Burn
34	03/31/1999	Froehlich	Genice	File		Agave palmeri surveys
35	04/13/1999	McDonald	Jim	File		Scoping Report: Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotment Management Plans
36	04/13/1999			File		Mailing list for Scoping Report
37	04/13/1999	Asmus	George	Interested	Party	Scoping Report transmittal letter
38	04/16/1999	Zierenberg	Nancy	Conner	Jerry	Request for economic narrative, and for documents relating to predator control

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39	04/26/1999	Spoerl	Patricia	File		Heritage Inventory Standards & Accounting Form: HRR 1999-05-022
40	05/13/1999	Scott	Joan	Conner	Jerry	Comments on Scoping Report
41	06/02/1999	Kuwanwisiwma	Keigh	McGee	John	Comments on Coronado NF Schedule of Proposed Actions
42	06/03/1999	Cassa	Jeanette	Conner	Jerry	Comments on Scoping Report
43	06/07/1999	McEuen/Morten		File		Unit Examination Record, Hawk Hollow Allotment
44	06/14/1999	Mortensen	Ron	File		Unit Examination Record, White Streaks Allotment
45	06/18/1999	Hodges	David	Conner	Jerry	Request to be added to mailing list
46	06/30/1999	Morentson	Ron	File		Unit Examination Record, Marijilda Allotment
47	08/18/1999	Duncan	Chuck	McDonald	Jim	Memo adding improvements to Proposed Action
48	07/15/1999	Apache Tribe	White Mountain	File		Resolution concerning Dzil nchaa si'an
49	08/18/1999	Duncan	Chuck	McDonald	Jim	Estimated costs of improvements
50	08/23/1999	McDonald	Jim	File		Hopi Traditional Use Overview
51	08/23/1999	McDonald	Jim	File		Western Apache Traditional Use Overview

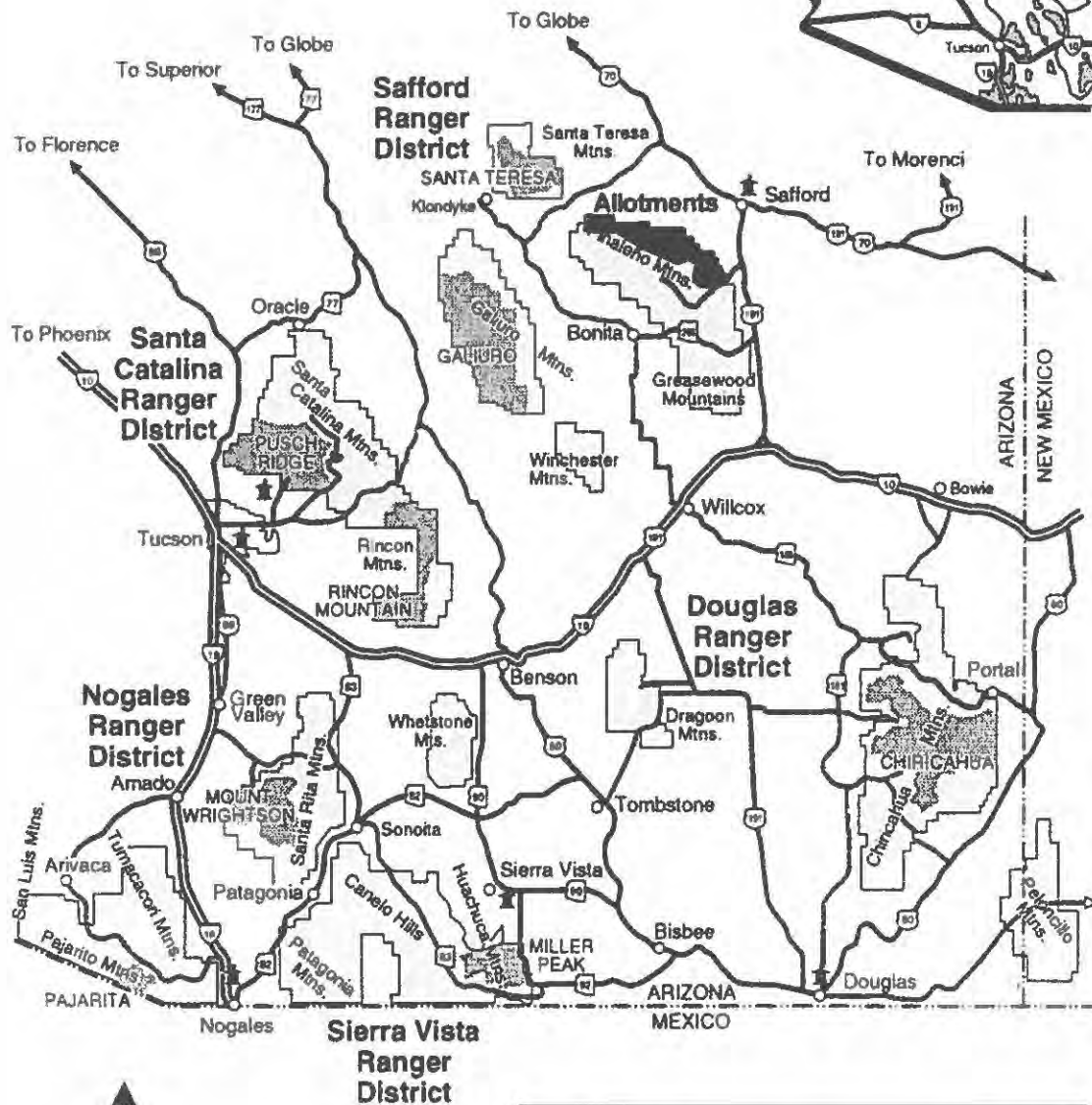
Doc #	Date	Author		Ann 83868		Contents
52	11/01/1999	Bryce	Ross	File		Management Unit Allocations; Grazing System; Shingle Mill Allotment; FS Form 2200-18
53	03/08/2000	Lefevre	Robert	McDonald	Jim	2550 Memo: Soil Conditions in Shingle Mill Allotment
54	04/13/2000	Post	Jimmy	File		Management Unit Allocations; Grazing System; Marijilda Allotment; FS Form 2200-18
55	05/16/2000	Asmus	George	Permittee		Annual Operating Instructions, 1999-2000, Shingle Mill Allotment
56	05/16/2000	Asmus	George	Permittee		Annual Operating Instructions, 1999-2000, White Streaks Allotment
57	05/16/2000	Asmus	George	Permittee		Annual Operating Instructions, 1999-2000, Hawk Hollow Allotment
58	05/16/2000	Asmus	George	Permittee		Annual Operating Instructions, 1999-2000, Marijilda Allotment
59	05/22/2000	Ruyle	Jennifer	File		1950/2210 Memo: Rangeland Vegetation, Riparian Area and Soil Condition Assessment
60	06/21/2000	Ruyle	Jennifer	File		1950/2210 Memo: Proposed Coordinated Resource Management for the Marijilda Allotment
61	07/21/2000	Taiz	Josh	File		Wildlife Specialist Report: Marijilda, Hawk Hollow, White Streaks and Shingle Mill Allotments
62	08/09/2000	McDonald	James	File		Heritage Resource Report; Marijilda Allotment Proposed Improvements
63	08/17/2000	Asmus	George	Interested	Party	Transmittal letter for Environmental Assessment
64	08/17/2000	Asmus	George	Kuwanwisiwma	Leigh	Transmittal letter for Environmental Assessment

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65	08/17/2000	Asmus	George	Cassa	Jeanette	Transmittal letter for Environmental Assessment
66	08/17/2000			File		Mailing list for Environmental Assessment
67	08/17/2000	McDonald	Jim	Interested	Party	Environmental Assessment: Marjilda, Hawk Hollow, White Streaks & Shingle Mill Allotments

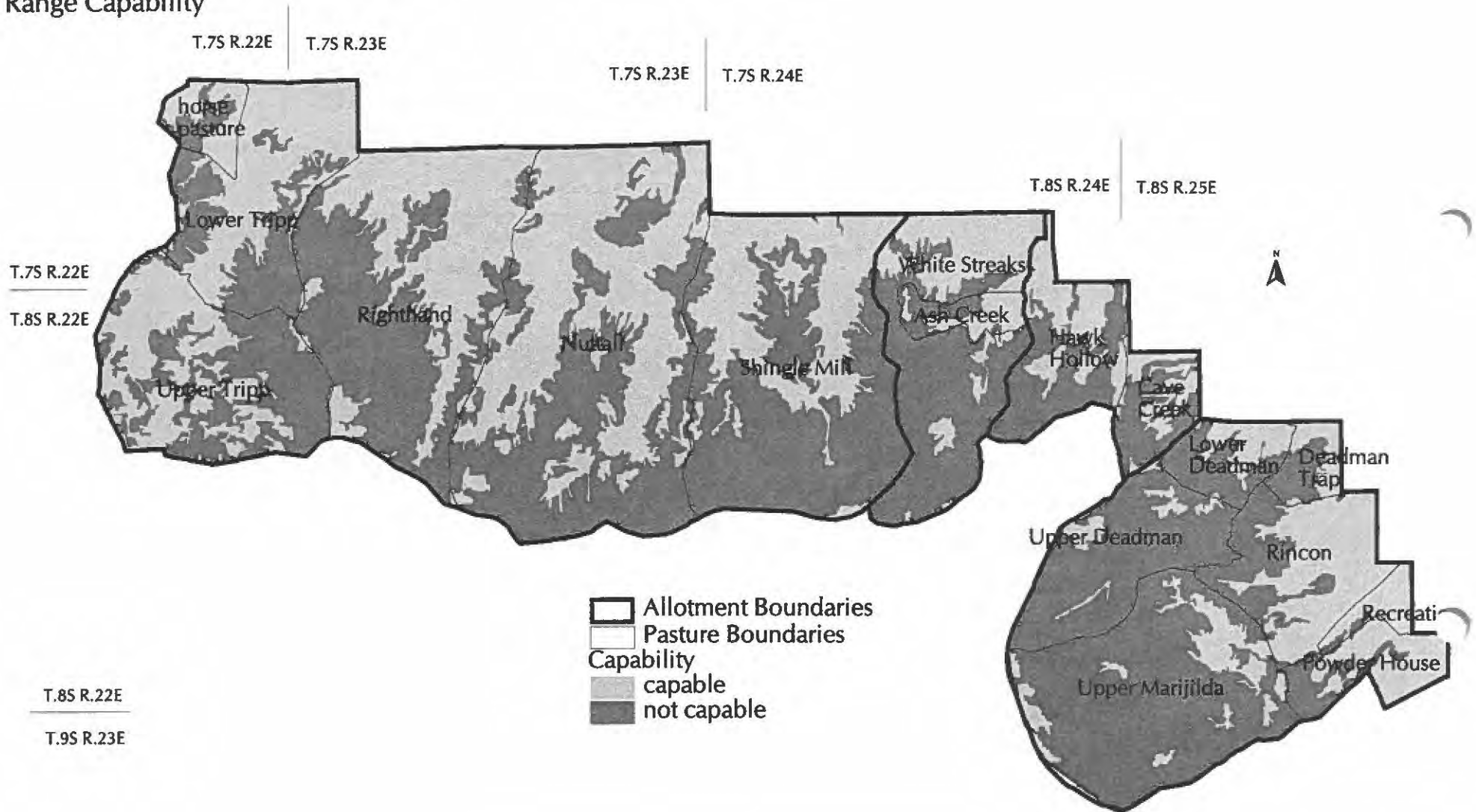
Coronado National Forest

Santa Catalina, Douglas, Nogales,
Safford, and Sierra Vista Ranger Districts

Location Map: Maricopa, Hawk Hollow,
White Streaks and Shingle Mill Allotments

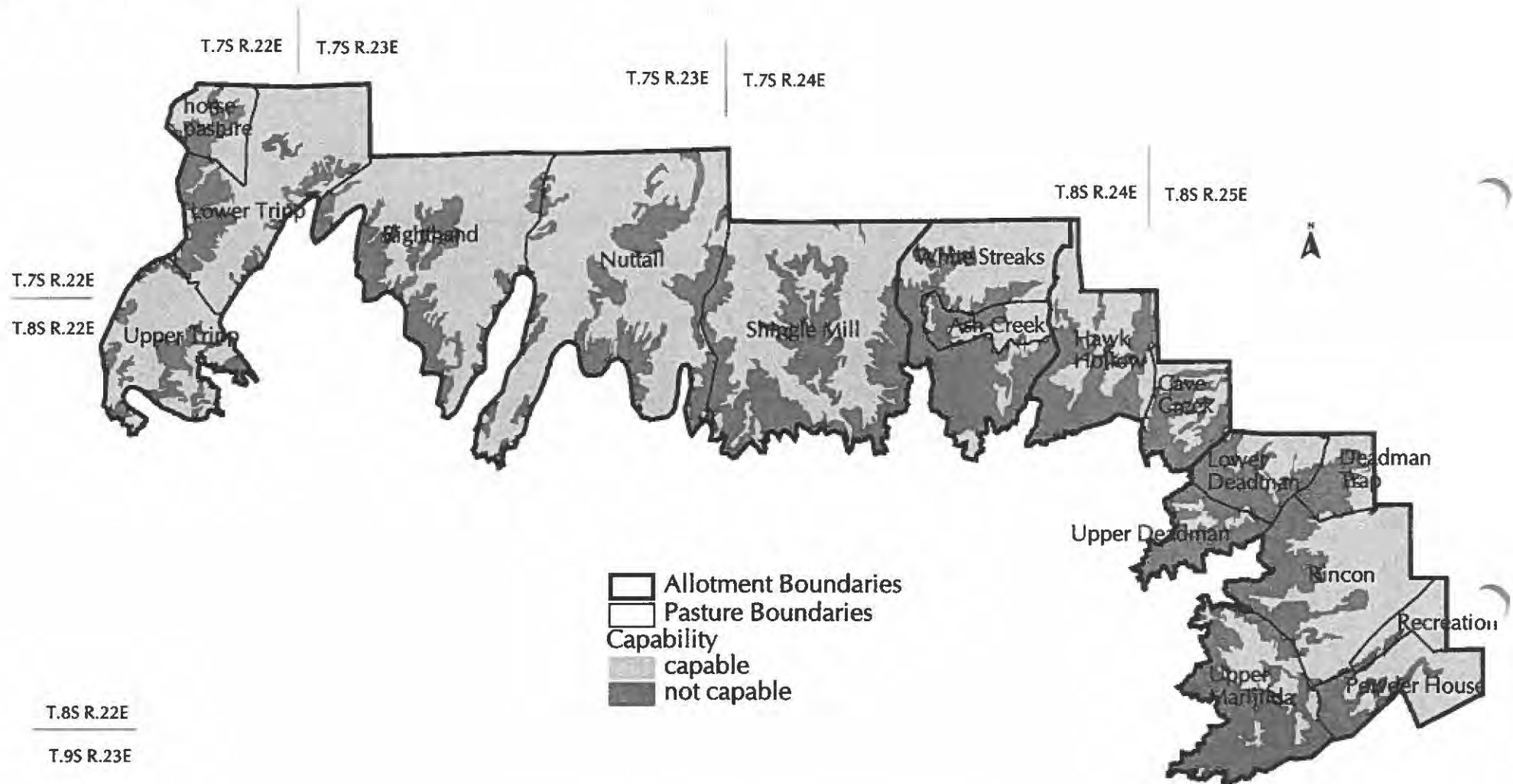


Map No. 2a
Existing Hawk Hollow, Marijilda, Shingle Mill & White Streaks Allotments
Range Capability



The USDA Forest Service uses the most current & complete data available. GIS data & products accuracy may vary. Using GIS products for purposes other than those for which they were intended may yield inaccurate or misleading results. The USDA Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. Prepared 6/23/00 tla.

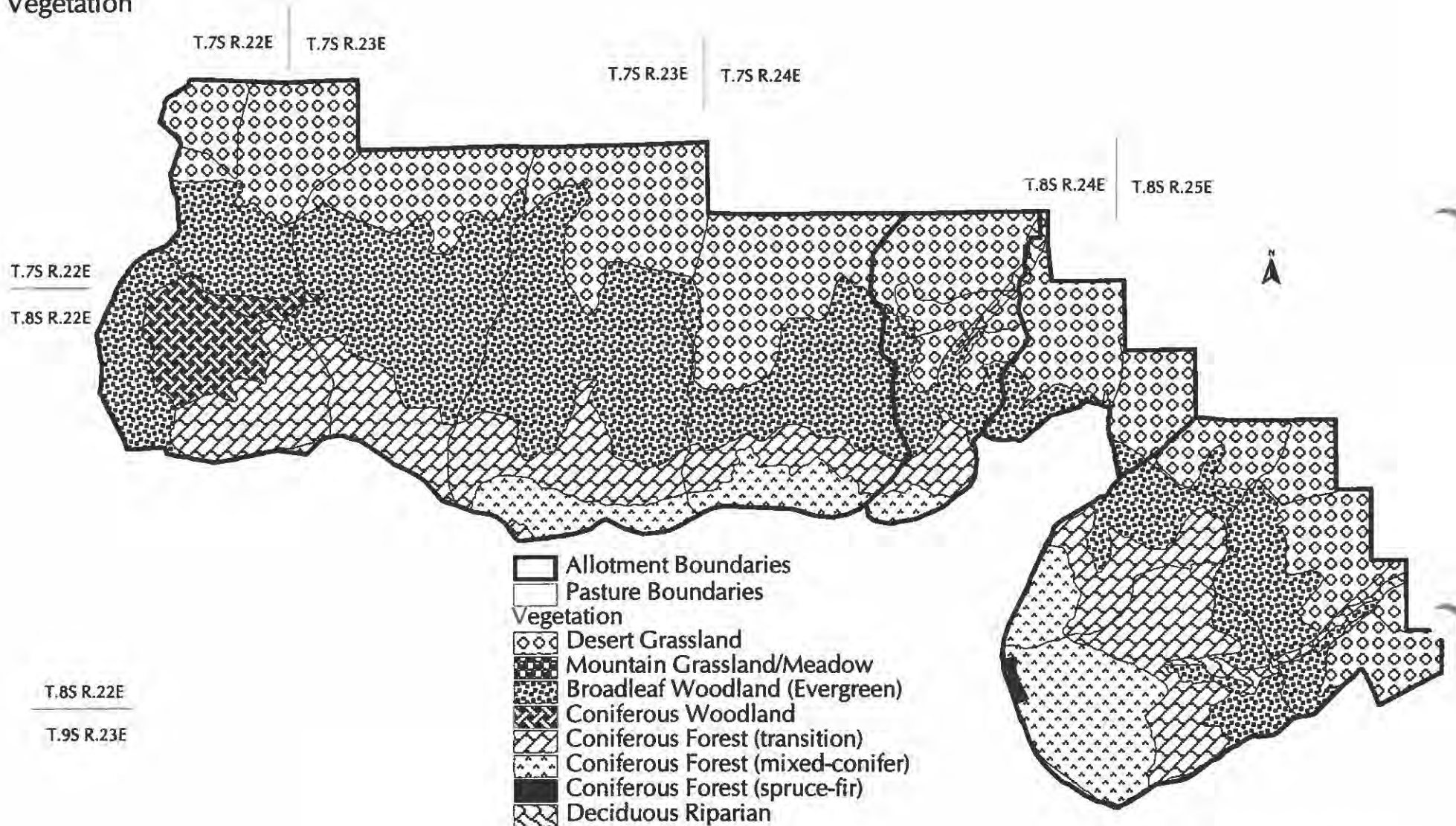
Map No. 2b
Proposed Hawk Hollow, Marijilda, Shingle Mill & White Streaks Allotments
Range Capability



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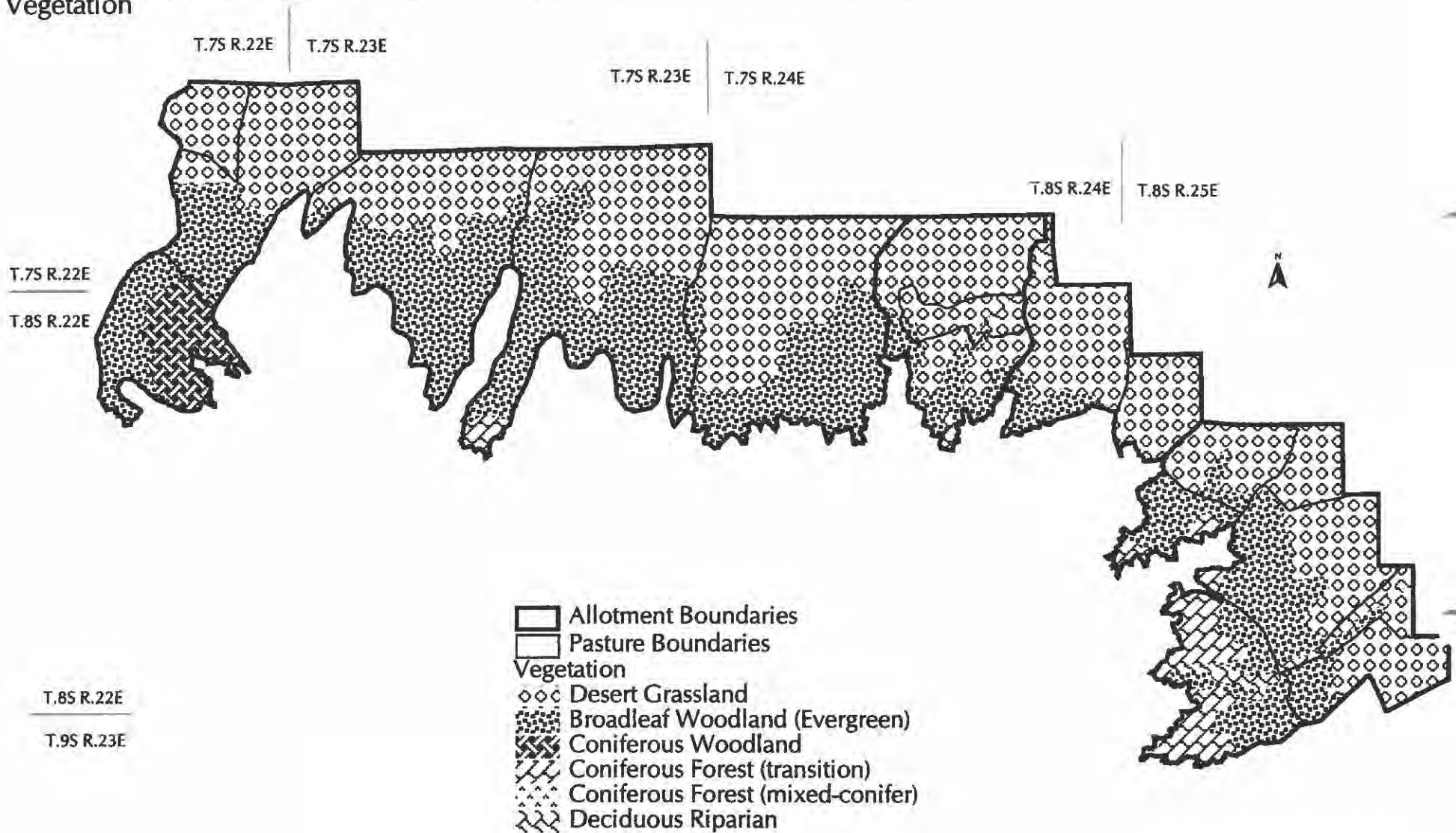
The USDA Forest Service uses the most current & complete data available. GIS data & products accuracy may vary. Using GIS products for purposes other than those for which they were intended may yield inaccurate or misleading results. The USDA Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. Prepared 6/23/00 tla.

Map No. 3a
Existing Hawk Hollow, Marijilda, Shingle Mill & White Streaks Allotments
Vegetation



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Map No. 3b
Proposed Hawk Hollow, Marijilda, Shingle Mill & White Streaks Allotments
Vegetation

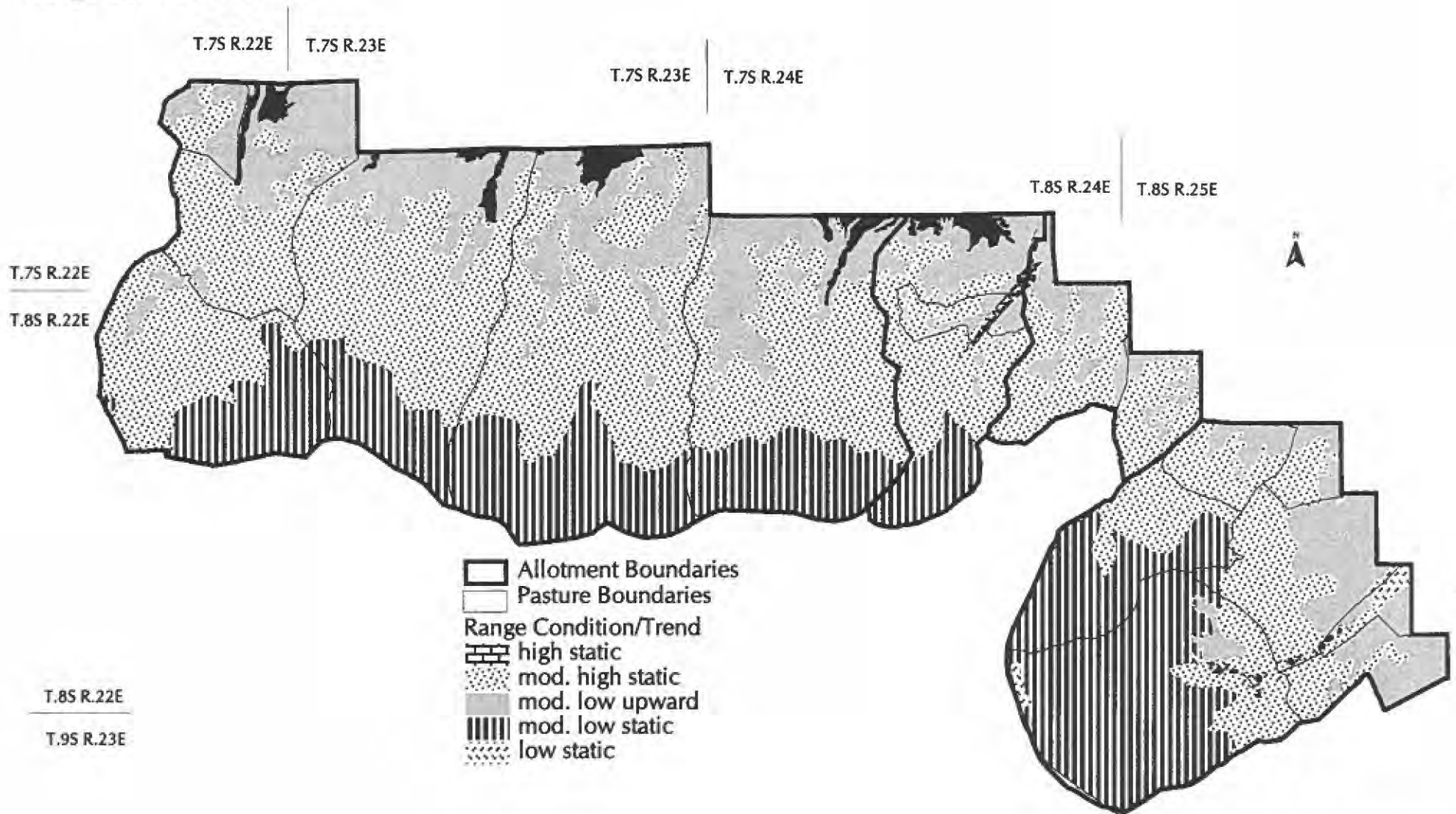


2 0 2 4 Miles

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The USDA Forest Service uses the most current & complete data available. GIS data & products accuracy may vary. Using GIS products for purposes other than those for which they were intended may yield inaccurate or misleading results. The USDA Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. Prepared 6/23/00 tla.

Map No. 4a
Existing Hawk Hollow, Marijilda, Shingle Mill & White Streaks Allotments
Range Condition/Trend

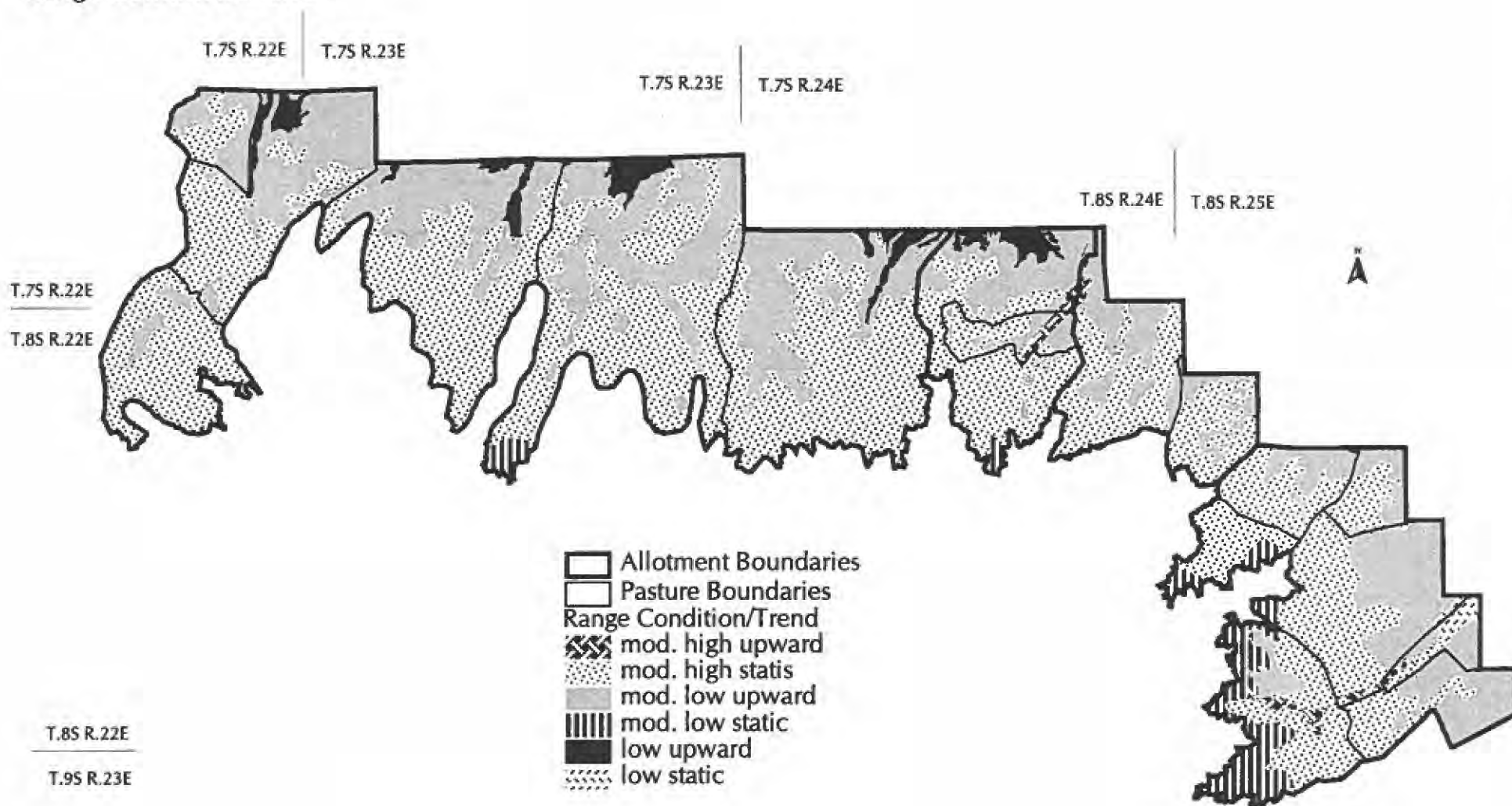


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Map No. 4b
Proposed Hawk Hollow, Marijilda, Shingle Mill & White Streaks Allotments
Range Condition/Trend

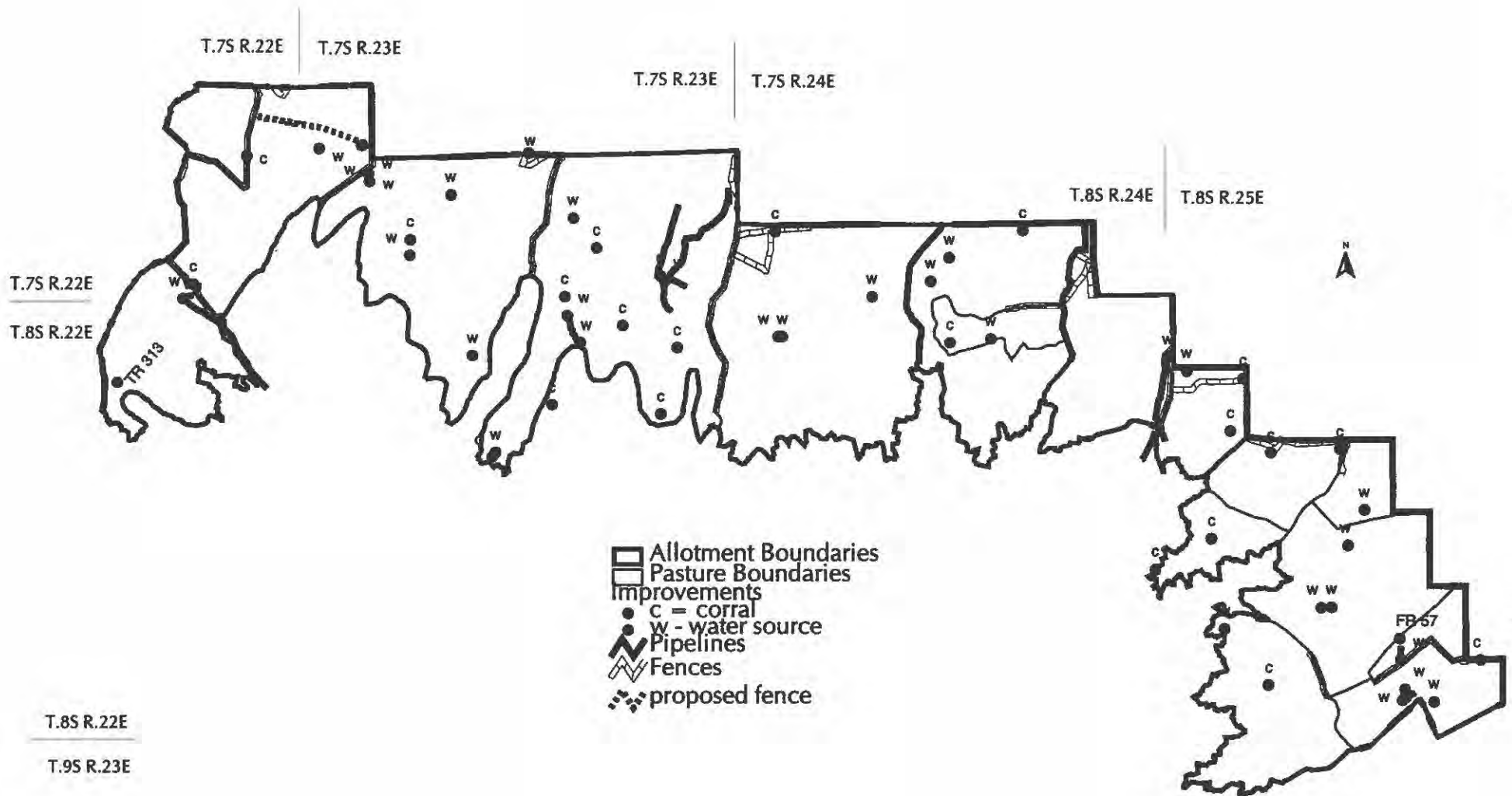


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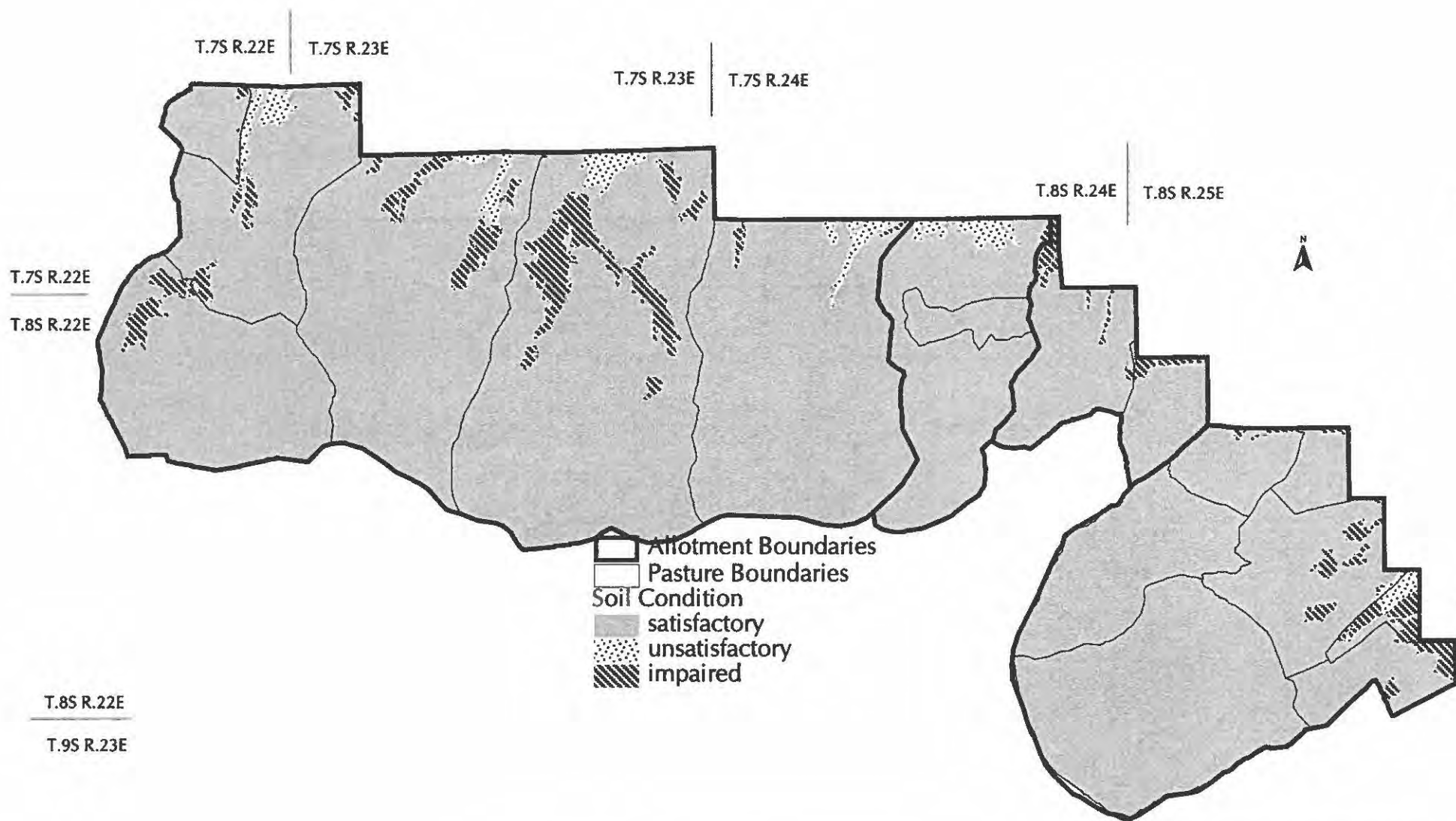
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Map No. 5
Existing Hawk Hollow, Marijilda, Shingle Mill & White Streaks Allotments
Improvements



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Map No. 6a
Existing Hawk Hollow, Marijilda, Shingle Mill & White Streaks Allotments
Soil Condition

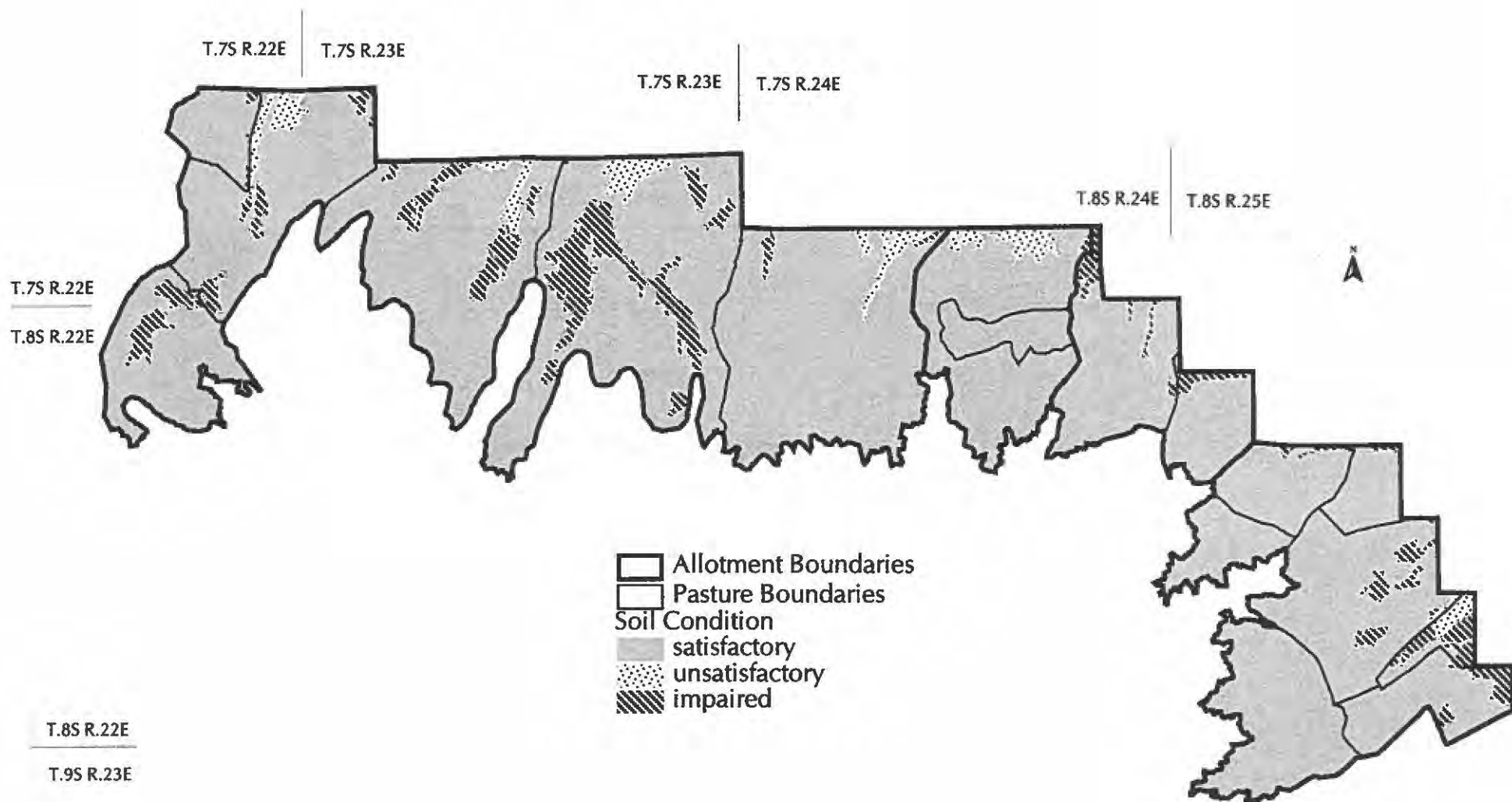


2 0 2 4 Miles

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Map No. 6b
 Proposed Hawk Hollow, Marijilda, Shingle Mill & White Streaks Allotments
 Soil Condition



2 0 2 4 Miles

1:190702

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Map No. 7
Hawk Hollow, Marijilda, Shingle Mill & White Streaks Allotments
Roads and Trails

