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United States Department of the Interior  
Bureau of Land Management  
Safford Field Office  
Safford, AZ



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Environmental Assessment  
DOI-BLM-AZ-G010-2013-0024-EA

**East Spear Permit Renewal**



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## **1.0 Introduction**

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the proposed grazing permit renewal for the East Spear Allotment # 46410 (Fig. 1). The action culminates an evaluation conducted on the allotment under the Arizona Bureau of Land Management (BLM) Standards for Rangeland Health and Guidelines for Grazing Management (S&Gs). In addition, this EA determines if current grazing management practices would maintain desirable conditions and continue to allow improvement of public land resources, or whether changes in grazing management for the allotments are necessary. This EA is intended to evaluate the findings of the S&G evaluations as they relate to vegetation conditions and resource values in the allotments. This is done in an effort to balance demands placed on the resources by various authorized uses within the allotments. It was determined by the Interdisciplinary Assessment Team (IAT), during the assessment process, that resource conditions on the East Spear Allotment are meeting the applicable Standards for Rangeland Health. This EA is intended to be used with the East Spear Allotment Evaluation & Rangeland Health Analysis (Appendix 1).

### **1.1 Background**

The East Spear Allotment # 46410 was evaluated through the Standards and Guideline process. The BLM completed Rangeland Health Assessments (RHA) on the East Spear Allotment in 2009 and 2013. On May 5, 2009, the East Spear permit was issued under the Appropriations Act with the following language: “In accordance with Sec. 325, Title III, H.R. 2691, Department of the Interior and related agencies Appropriations Act, 2004 (P.L. 108-108), which was enacted on November 10, 2003, this grazing permit is renewed under Section 402 of the Federal Land Policy and Management Act of 1976, as amended (43 U.S.C. 1752), Title III of the Bankhead-Jones Farm Tenant Act (7 U.S.C. 1010 ET SEQ.), or, if applicable, Section 510 of the California Desert Protection Act (16 U.S.C. 410AAA-50). In accordance with Public Law 108-108,” the terms and conditions contained in the expired or transferred permit shall continue in effect under the renewed permit until such time as the Secretary of the Interior completes processing of this permit in compliance with all applicable laws and regulations, at which time this permit or lease may be cancelled, suspended, modified, in whole or part, to meet the requirements of such applicable laws and regulations.”

On August 27, 2012, a proposed decision to renew the East Spear permit based on a Documentation of NEPA Adequacy was protested. As a result of that protest, additional review of the proposed management was completed and subsequent RHA was completed in 2013.

### **1.2 Purpose and Need**

The purpose of this action is to provide for livestock grazing opportunities on public lands where consistent with meeting management objectives, including the Arizona Standards for Rangeland Health and Guidelines for Livestock Grazing Management.

The need for this action is established by the Taylor Grazing Act (TGA), the Federal Land Policy and Management Act (FLPMA), and the Safford District (SD) Resource Management Plan (RMP) (USDI BLM, 1999), which requires that the BLM respond to applications to fully process and renew permits to graze livestock on public land. In detail, the analysis of the actions identified in the applications for grazing permit renewals and the alternative actions is needed because:

- BLM Arizona adopted the Arizona Standards for Rangeland Health (Land Health Standards) and Guidelines for Livestock Grazing Management in all Land Use Plans (Arizona S&Gs) in 1997 (Appendix A). Land Health Standards and Guidelines for Grazing Administration were also incorporated into the SD RMP (1991, 1993). Land Health Standards for Rangelands should be achieving or making significant progress towards achieving the standards and to provide for proper nutrient cycling, hydrologic cycling, and energy flow. Guidelines direct the selection of grazing management practices and, where appropriate, livestock facilities to promote significant progress toward, or the attainment and maintenance of, the standards. Rangeland health assessments and evaluation reports have been completed for the East Spear Allotment, and all standards were being met.
- The SD RMP identifies resource management objectives and management actions that establish guidance for managing a broad spectrum of land uses and allocations for public lands in the Safford Field Office. The SD RMP allocated public lands within the White Spring Allotment as available for domestic livestock grazing. Where consistent with the goals and objectives of the RMP and Land Health Standards, allocation of forage for livestock use and the issuance of grazing permits to qualified applicants are provided for by the Taylor Grazing Act (TGA) and the Federal Land Policy and Management Act (FLPMA).

### **1.3 Decision to be made**

The Safford Field Manager is the authorized officer responsible for the decisions regarding management of public lands within this allotment. Based on the results of the NEPA analysis, the authorized officer will issue a determination of the significance of the environmental effects and whether an environmental impact statement (EIS) would be required. If the authorized officer determines that it is not necessary to prepare an EIS, the EA will provide information for the authorized officer to make an informed decision whether to renew, renew with modifications, or not renew the permit and if renewed, which management actions, mitigation measures, and monitoring requirements will be prescribed for the East Spear Allotment to ensure management objectives and Arizona Standards for Rangeland Health are achieved.

### **1.4 Conformance with Land Use Plan:**

The proposed action is in conformance with the Safford Resource Management Plan (RMP) (1991) and the Statewide Land Use Plan Amendment for Implementation of Arizona Standards

for Rangeland Health and Guidelines for Grazing Administration 1997. Arizona's Standards and Guides were developed through a collaborative process involving the Arizona Resource Advisory Council and the Bureau of Land Management State Standards and Guidelines team. The Secretary of the Interior approved the Standards and Guidelines in April 1997. The Decision Record, signed by the BLM Arizona State Director (April 1997) provided for full implementation of the Standards and Guides in all Arizona BLM Land Use Plans.

Implementation level decisions from the Upper Gila-San Simon Grazing Environmental Impact Statement (UG-EIS) (BLM 1978) were carried forward into the RMP. Through the above authorizing documents, BLM will continue to issue grazing permits and licenses, implement, monitor and modify allotment management plans and increase or decrease grazing authorizations as determined through the allotment evaluation processes. As necessary, National Environmental Policy Act compliance documents will be prepared prior to any action being implemented. The grazing decisions are incorporated into this Resource Management Plan/Environmental Impact Statement by reference and are common to all alternatives. Management direction pertaining to grazing for this allotment can be found in the Upper Gila-San Simon Grazing Environmental Impact Statement (BLM 1978), Appendix C, p. A-27. All other discipline management objectives pertaining to this allotment can be found in the RMP.

#### **1.4.1 RMP Decision Number and Narrative**

CL19 Cultural resources stipulations will be included on all grazing leases and permits. UG-EIS page 4-2

GM12 The general objective of the proposed action is to permit livestock to use the harvestable surplus of palatable vegetation—a renewable resource—and thereby produce a usable food product. The proposed livestock management program is based on the multiple-use management concept, which provides for the demands of various resource uses and minimizes the conflicts among those uses or activities. Although the various uses of the rangeland resources can be compatible, competition among uses requires constraints and mitigating measures to realize multiple-use resource management goals. The Specific objectives for each grazing unit are shown in appendix C. UG-EIS Page 1-6

GM17 Deviation from the management system could be allowed for circumstances beyond the licensee's control, such as severe drought, but such deviations would require the District Manager's prior authorization UG-EIS Pages 1-8.

GM32 Proper stocking is an essential principle of range management, which should precede or coincide with the initiation of any grazing management system. With stocking rates in balance with the proposed grazing capacities, utilization of key forage species in the key areas would average about 40 percent over a period of years. At a given stocking rate during years of high forage production (e.g. above normal rainfall) utilization in the use pasture might be as low as 20 percent. During years of low forage production utilization could be as high as 60 percent. UG-EIS Page 1-9

VM02 Upland vegetation on public lands within the Safford District will be managed for watershed protection, livestock use, reduction of non-point source pollution, Threatened and Endangered species protection, priority wildlife habitat, firewood and other incidental human uses. Best management practices and vegetation manipulation will be used to achieve desired plant community management objectives. Treatments may include various mechanical, chemical and prescribed fire methods. RMP page 24 & 45. UG-EIS Partial ROD I page 10.

VM03 Ecological Site Inventories will be combined with the desired plant community concept to develop management objectives for activity plans as they are written or revised. RMP page 45.

VM04 Public lands will be managed to preserve and enhance the occurrences of special status species and to achieve the eventual delisting of threatened and endangered species. RMP page 45.

VM07 Land treatments (vegetation manipulation) will be used to decrease invading woody plants and increase grasses and forbs for; wildlife and livestock forage and watershed condition. Treatment areas will be identified in activity plans. Treatments may include various artificial (mechanical, chemical, or prescribed fire) methods. RMP page 45.

WF02 District management will focus on priority species and their associated habitats to maintain or enhance population levels. Threatened and endangered, proposed, candidate, State-listed and other special status species will be managed to enhance or maintain district population levels or in accordance with established inter/intra-agency management plans. District management efforts will be directed towards the enhancement of biological diversity. UG-EIS ROD Part I page 6.

WF14 Manage habitat for optimum wildlife populations, based on ecological conditions, taking into consideration local, yearly climatic variations. BLM will follow Arizona Game and Fish Department's five-year strategic plans for the various species and will assist the Department in accomplishing its goals for the various species. RMP page 34.

1/ RMP - Safford District Resource Management Plan

2/ UG-EIS - Upper Gila - San Simon Grazing Environmental Statement

### **1.5 Relationship to Statutes, Regulations or Other Plans or Policies:**

Grazing permit renewals are provided for in 43 CFR 4100 where the objectives of the regulations are "...to promote healthy, sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions; to promote the orderly use, improvement and development of the public lands; to establish efficient and effective administration of grazing of public rangelands; and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands" (43 CFR 4100.0-2). The proposed action would comply with 43 CFR 4100.0-8 which states, in part, "The authorized officer shall manage livestock grazing on public lands

under the principle of multiple use and sustained yield, and in accordance with applicable land use plans.” The proposed action also complies with 43 CFR 4130.2(a) which states, in part, “Grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans”. The proposed action is consistent with the Fundamentals of Rangeland Health (43 CFR 4180.1) and Arizona’s Standards and Guidelines, which were developed through a collaborative process involving the Arizona Resource Advisory Council and the BLM State Standards and Guidelines team. The Secretary of the Interior approved the Standards and Guidelines in April 1997. These standards and guidelines address watersheds, ecological condition, water quality, and habitat for special status species. These resources are addressed later in this document. The proposed action conforms to the President’s National Energy Policy and would not have adverse energy impacts. The proposed action would not deny energy projects, withdraw lands, close roads, or in any other way deny or limit access to mineral materials to support energy actions. The regulations at 43 CFR Part 10 specifically require land use authorizations, including leases and permits, to include a requirement for the holder of the authorization to notify the appropriate Federal official immediately upon the discovery of human remains and other items covered by the Native American Graves Protection and Repatriation Act (see 43 CFR 10.4(g); the actual requirement for persons to notify the Federal agency official and protect the discovery is in 43 CFR 10.4(b) and (c). Executive Order 13186 requires the BLM and other Federal agencies to work with the USFWS to provide protection for migratory birds. Implementation of the proposed action is not likely to adversely affect any species of migratory bird known or suspected to occur on the allotments.

The proposed action would comply with the following laws and/or agency regulations, and are consistent with applicable Federal, state and local laws, regulations, and plans to the maximum extent possible.

- Taylor Grazing Act (TGA) of 1934
- Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701 et seq.)
- Public Rangelands Improvement Act (PRIA) of 1978
- Endangered Species Act (ESA) of 1973, as amended
- 43 CFR 4100 Grazing Administration - Exclusive of Alaska
- Arizona Water Quality Standards, Revised Statute Title 49, Chapter II
- Section 106 of the National Historic Preservation Act of 1966, as amended
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001-3013; 104 Stat. 3048-3058)
- National Environmental Policy Act (NEPA) of 1969
- Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds

## 1.6 Scoping

*Scope of Issues:* The CEQ defines scoping as “...an early and open process for determining the scope of issues to be addressed and for identifying significant issues related to a proposed action” (40 CFR 1501.7). Scoping is an important underpinning of the NEPA process that encourages public input and helps focus the environmental impact analysis on relevant issues. Distribution of scoping information typically heralds the beginning of the public component of the NEPA process. To encourage public participation, BLM mailed scoping information regarding the East Spear permit renewal proposal to interested individuals, organizations, and agencies on 19 June 2012. BLM received one letter of comment during the scoping period.

*Key Issues:* Several environmental issues concerning the proposed project were identified by the NEPA interdisciplinary team members and from the public comments during scoping.

### 1.6.1 Issues Identified

- What wildlife or T & E species occur in or within five miles of the East Spear Allotment?
- What impacts on livestock grazing operations would occur from the no grazing alternative?

## 2.0 Proposed Action and Alternatives

### 2.1 Proposed Action (No Action): Issue Grazing Permit

The proposed action would be to renew the grazing permit for East Spear for a period of ten years as authorized by the grazing regulations at §4130.2(d) with the same mandatory terms and conditions as the current permit (Table 1).

Table 1. Mandatory terms and conditions.

| Allotment | Livestock number | Kind   | Grazing Period |       | Type %PL | Type Use | Active AUMS |
|-----------|------------------|--------|----------------|-------|----------|----------|-------------|
|           |                  |        | Begin          | End   |          |          |             |
| 4641      | 50               | Cattle | 03/01          | 02/28 | 20       | Active   | 120         |

Annual Meetings: When large changes are identified in monitoring data, an annual meeting between BLM and the grazing permittee would be conducted to discuss previous years monitoring and the coming year’s grazing schedule. Emergency situations would be handled on a case by case basis and would involve consultation with the above parties. The final decisions concerning the annual meeting recommendations and moves outside the scheduled use periods would be made by the authorized officer.

Flexibility: When drought is declared by the authorized officer, permittees are contacted and educated on consequences of drought on forage production. The permittee is also reminded of the

upper limit of utilization. Permittees are: 1.) encouraged to voluntarily reduce numbers 2.) if drought continues, permittees can be required to remove all cattle under a voluntary agreement or full force and effect decision.

## **2.2 No Grazing Alternative**

This alternative would remove grazing as an authorized activity on the East Spear Allotment. This alternative would cancel the permit on the East Spear Allotment. Under this alternative, BLM would initiate the process in accordance with the 43 CFR parts 4100 and 1600 to eliminate grazing on the allotment and amend the resource management plan.

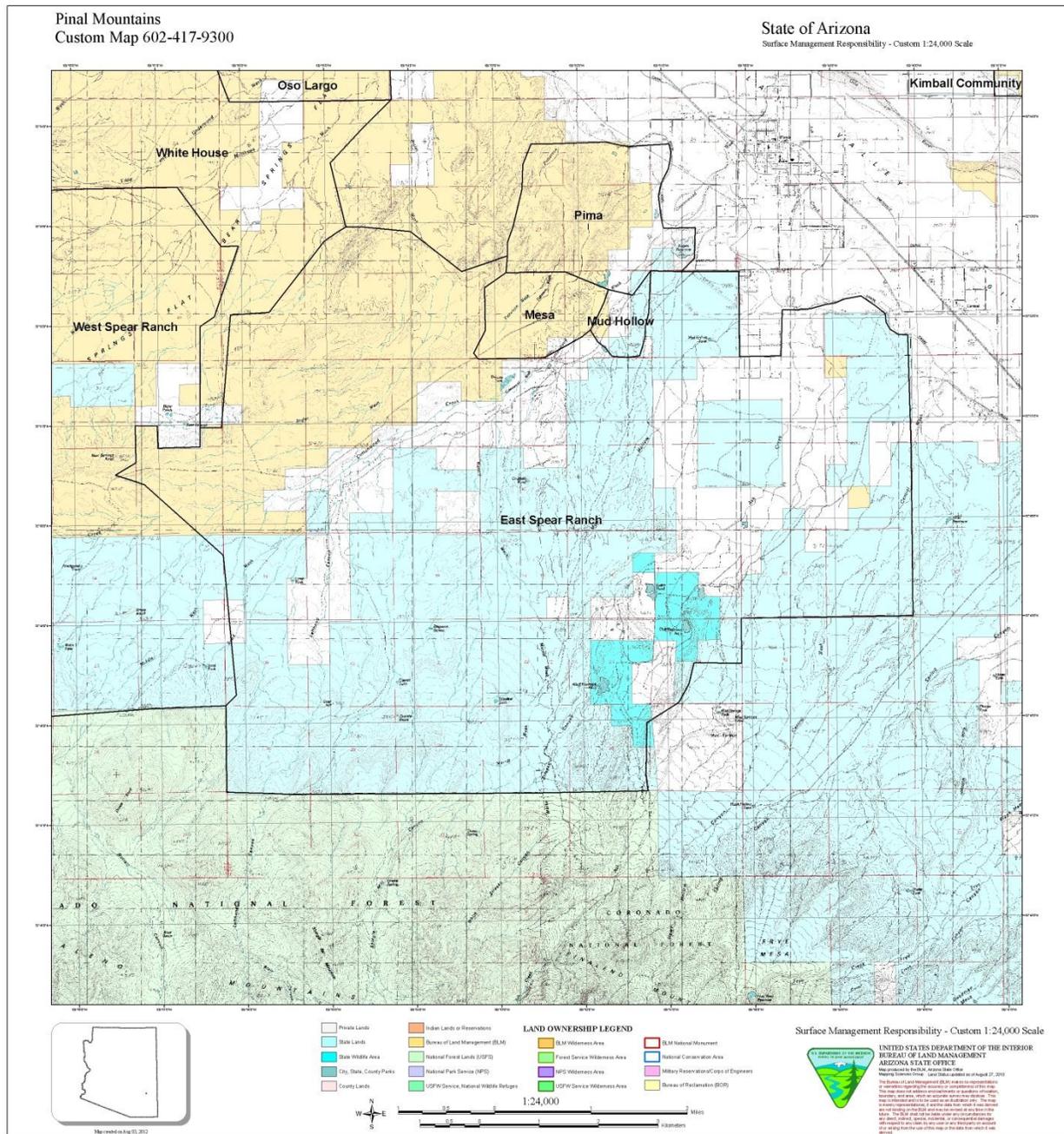
## **2.3 Alternatives Considered but Eliminated From Detailed Analysis**

No other alternatives were identified during scoping that would respond to the purpose and need and could be practically implemented on the East Spear Allotment.

## **3.0 Affected Environment**

The East Spear Allotment is located approximately two miles southwest of Pima, Arizona (Fig.1). It is bordered on the north by the Coronado National Forest and the BLM White House Allotment to the south, with east and west boundaries state land. The majority of the allotment falls within Township 7 South and Ranges 23 and 24 East. The East Spear Allotment drains to the north into Cottonwood Creek. Elevation varies from approximately 4,000 feet above sea level near Coyote Knoll to 3,000 feet above sea level at Cottonwood Creek.

**Figure 1. Map of East Spear Allotment (DOI-BLM-AZ-G010-0024-EA).**



The BLM is required to consider many authorities when evaluating a Federal action. Those elements of the human environment that are subject to the requirements specified in statutes, regulations, or executive orders, and must be considered in all EAs, have been considered by BLM resource specialists to determine whether they would be potentially affected by the

proposed action. These elements are identified in Table 2, along with the rationale for the determination on potential effects. If any element was determined to be potentially impacted, it was carried forward for detailed analysis in this EA; if an element is not present or would not be affected, it was not carried forward for analysis. Table 2 also contains other resources/concerns that have been considered in this EA. As with the elements of the human environment, if these resources were determined to be potentially affected, they were carried forward for detailed analysis in this document.

Table 2. Summary evaluation of elements/resources of the human environment.

| <b>Resource</b>   | <b>Determination*</b> | <b>Affected Environment (Rationale for Determination)</b>  |
|---|-----------------------|--|
| <p>* NP = Not present in the area that will be impacted by the proposed action.<br/>           NI = Present, but not affected to a degree that would mean detailed analysis is required.<br/>           PI = Present with potential for impact; analyzed in detail in the EA.</p> |                       |  |
| Areas of Critical Environmental Concern   | NP                    | The proposed action or alternatives would not affect this element as no ACECs are within or adjacent to the proposed area.   |
| Air Quality   | NI                    | Moving livestock could produce small amounts of fugitive dust in the short term, but this would cause negligible and localized impacts on air quality. No long-term adverse effects are expected from the proposed or alternative action.  |
| Cultural Resources  | NP                    | The proposed action would not affect this element as no historic properties were found in areas of cattle congregation. A Cultural Resource Compliance Documentation Record (Project No. AZ-410-09-024) was completed June 2 <sup>nd</sup> , 2009 by Safford Field Office. Allotment case files, AMP files, range project files, Water Source Inventory files and Cultural Resource files were reviewed. |
| Environmental Justice   | NP                    | The closest community is Pima, Arizona approximately three miles from the East Spear Allotment. No aspect of the proposed action, or no grazing alternative would have any disproportionately high or adverse human health or other environmental effects on minority or low-income segments of the populations as defined by Executive Order 12898.   |
| Farmlands (Prime or Unique)   | NP                    | There are no prime or unique farmlands within or near the project area; therefore, there would be no direct, indirect, or cumulative impacts to this critical element.   |

| Resource                           | Determination* | Affected Environment (Rationale for Determination)   |
|------------------------------------|----------------|--|
| Floodplains                        | NP             | The East Spear Allotment is outside of any designated floodplain; therefore, there would be no direct, indirect, or cumulative impacts to this critical element.   |
| Invasive and Nonnative Species     | NI             | There are currently no known invasive species or noxious weeds located on the East Spear Allotment. Since there are no known invasive or nonnative species that have been established on the allotment to date from livestock grazing the risk of establishment is thought to be low with the proposed or alternative action.  |
| Livestock Grazing                  | PI             | The East Spear Allotment was evaluated in 2013 and is meeting all Rangeland Health Assessment standards. No impacts of the proposed action are anticipated. Under the no grazing alternative, the Bureau would have to fence the non-grazed public land from private and state land. The Bureau would have to purchase the permittees vested value in range improvements and determine whether to maintain or abandon them.  |
| Native American Religious Concerns | NP             | During consultations with American Indian Tribes who claim cultural affiliation to southern Arizona, no Native American religious concerns have been identified in relation to actions proposed in this EA.  |
| Socioeconomic Values               | NI             | The small farming community of Pima is just outside the allotment boundaries. Under the proposed action, the permittees would continue running a livestock operation on the allotment. The permittee would continue to contribute in a small way to the economy of the local community. In addition, the county would continue to receive the allotment proportion of in lieu taxes. The proposed action would have no effect on the economy or social aspect of the region. |
| Soils                              | NI             | Soil Surface Resistance to Erosion and Soil Surface Loss or Degradation was graded <i>None to Slight</i> . Soils are Whitlock / <i>Tres Hermanos</i> with average soil slake test of 3.56. Reference Sheet for Limy Upland 8-12” has an average of 3. Livestock trails and congregation areas cause soil compaction. These areas are small and isolated and pasture rotation would lessen the impact. No long-term adverse effects are expected from the proposed action.    |

| <b>Resource</b>                                    | <b>Determination*</b> | <b>Affected Environment (Rationale for Determination)</b>  |
|--|-----------------------|--|
| Threatened, Endangered, or Candidate Plant Species | NP                    | No threatened, endangered, or candidate species are known to occur on the allotment; therefore, there would be no direct, indirect, or cumulative impacts to this critical element.  |
| Threatened, Endangered Animal Species              | NI                    | The Safford Field Office implements its grazing program consistent with the Biological Opinion (BO) rendered on the Gila District Livestock Grazing Program for the Safford/Tucson Field Offices' Livestock Grazing Program, Southeastern Arizona (22410-2006-F-0414). This BO was reviewed to insure that all mitigation measures and stated in the BO are being followed.  |
| Visual Resource Management                         | NI                    | The proposed action would not impact VRM.  |
| Wastes (hazardous or solid)                        | NP                    | There are no hazardous or solid wastes within the project area and no direct, indirect, or cumulative impacts on this critical element would occur.  |
| Water Quality (Surface, Ground, Drinking)          | NP                    | Due to the lack of surface water within the East Spear Allotment water quality would not be impacted to a degree that would be measurable from natural background water quality estimates.   |
| Wetlands/Riparian Zones                            | NP                    | Executive Order 11990, Protection of Wetlands, directs federal agencies to take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. There are no wetlands or riparian zones within the East Spear Allotment; therefore there would be no direct, indirect, or cumulative impacts to this critical element. |
| Wild and Scenic Rivers                             | NP                    | There are no wild and scenic rivers within the project area and no direct, indirect, or cumulative impacts on this critical element would occur.   |
| Wilderness   | NP                    | The project area is not located within designated wilderness; therefore, no direct, indirect, or cumulative impacts on this critical element would occur.  |

| <b>Resource</b>                     | <b>Determination*</b> | <b>Affected Environment (Rationale for Determination)</b>   |
|-------------------------------------|-----------------------|---|
| Wilderness Characteristics          | NP                    | The area analyzed within the East Spear Allotment does not meet the size criteria for wilderness characteristics. Due to not meeting the size criteria, no direct, indirect, or cumulative impacts would occur to wilderness characteristics from the proposed action.  |
| Wildlife and Special Status Species | NI                    | The Safford Field Office reviewed a list of known Special Status Species occurrences in or within five miles of the East Spear Allotment provided by the Arizona Game and Fish Department, Heritage Data Management System, on May 1, 2009 (AGFD #M09-04213056) and rechecked July 2012. No species have been documented on the allotment or within five miles that are on the current list of Arizona BLM sensitive species. |

### **3.1 Resources Brought Forward for Analysis**

#### **3.1.2 Livestock Grazing**

The management category given to the East Spear Allotment is custodial (C). Custodial grazing management is applied to areas having acceptable range condition and a stable or improving trend. Under custodial management, BLM management actions are limited to licensing livestock use based on the AUMs available on the public lands which have been established at 120 AUMs for the East Spear Allotment. The ranch operator is responsible for determining livestock numbers (up to the allowable AUM) and the grazing system (if any) to be used and reporting actual use on the allotment. The East Spear Allotment has an AMP which has year-long grazing at 50 AU. Bureau of Land Management checks these grazing units to ensure that the utilization on public lands is not excessive, that range condition and trend are being maintained, and that applicable regulations are being followed. If utilization is found to be excessive or the range trend to be down, BLM would work with the operator to adjust livestock numbers on the total grazing unit.

## **4.0 Environmental Consequences**

### **4.1 Environmental Consequences of the Proposed Action**

#### **4.1.1 Livestock Grazing**

With implementation of the proposed action, there would be no changes in livestock grazing on the East Spear Allotment.

## **4.2 Environmental Consequences of No Grazing Alternative**

### **4.2.1 Livestock grazing**

If the no grazing alternative is selected, the permittee would be notified of the decision and a three year process of cancelling the allotment would be initiated. Under the Taylor Grazing Act, the permittee's financial interest in the range improvements on public land would be compensated or purchase would be negotiated. The selection of the no grazing alternative would likely not influence continued grazing on private or state land. The private and state land within the East Spear Allotment would need to be fenced. This alternative could not constrain the state land department or their permittee from access to or use of the state land. If determined to be an issue, the Bureau would have to resolve it by modifying the location of approximately six miles of fence.

## **4.3 Cumulative Impacts**

The Council on Environmental Quality (CEQ) regulations that implement NEPA defines a cumulative impact as: "The impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Life of the proposed action and its alternatives is ten years; this time frame is considered to be most appropriate for considering the incremental effect of actions in the foreseeable future. Many of the past and present actions are expected to persist through this time frame, though the relative intensity of these actions could vary.

The following critical elements, ACEC's, Floodplains, Wastes, Invasive and Nonnative Species, Cultural Resources, Native American Religious Concerns, Prime Farmland, VRM, Water Quality, Wetlands and Riparian Zones, Wild and Scenic Rivers, Wilderness Characteristics, Wilderness, wildlife, and T&E Fish/Fisheries would have no cumulative impacts from the proposed action or alternatives as they are not found within or adjacent to the East Spear Allotment. Visual Resources would not be altered by the proposed action or alternatives and therefore would not add to cumulative impacts.

## **4.4 Past, Present and Reasonably Foreseeable Future Activities**

In 1936 the first attempts were made to process application and claims for livestock use on public lands. First consideration was given to livestock operators who could show control or prior use of water necessary to support livestock grazing on public lands. In most areas, the application for livestock grazing exceeded the land's actual carrying capacity.

In 1935 and 1936 the Soil Conservation Service conducted a range survey of the public lands and presented its finding to the Safford District Advisory Board in 1937. The Advisory Board recommended carrying capacities to be set somewhat higher than range survey indicated. There are no additional range projects proposed in the foreseeable future.

Development of water for wildlife has jointly been an emphasis by the Bureau and the Arizona Game and Fish Department. There are currently no proposals to construct wildlife waters.

The East Spear Allotment is located west of Pima, AZ. and receives traffic to access the Coronado National Forest. There are no additional proposals for rights of ways on the allotment.

The allotment is a recreational destination for small and big game hunting with other recreational activities such as hiking, picnicking, birding, horseback riding, primitive camping, and off-highway vehicle driving. Recreational activities are likely to increase with the raising population of the state.

**4.5 Proposed Action**

With implementation of the proposed action, livestock grazing would continue as it has resulting in no change to wildlife habitat or the wildlife dependent on the habitat. Livestock grazing would also remain with no new impacts or additive to cumulative impacts.

**4.6 No Grazing Alternative**

Implementation of the no grazing alternative would result in some long term changes. Minor changes in vegetation are expected over the long term. Increased standing vegetative matter would result in increased cover for some species. Long term minor changes in vegetative composition may create a more varied forage source. Removal of livestock grazing alone would not alter the dominant vegetative community. Changes to the vegetative components of wildlife habitat would be minor, occur slowly and be long term. This would also in the long term reduce the number and lessen the impacts of human structures on the allotment.

**5.0 Consultation and Coordination**

**5.1 List of Preparers and Contributors**

The following tables list persons who contributed to preparation of this EA.

**Table 3.** List of BLM preparers/reviewers.

| Name       | Title         | Responsible for the Following Program                  |
|------------|---------------|--|
| Dan McGrew | Archaeologist | Cultural Resources Native American Religious Concerns, |

|                         |   |  |
|-------------------------|---|--|
| Tim Goodman             | Wildlife Biologist  | Environmental Justice, Federally Listed Species, Socioeconomic Values, BLM Sensitive Plants,                               |
| Deb Morris, Tom Schnell | Outdoor Recreation Planner, Assistance Field Office Manager | Areas of Critical Environmental Concern, Wild and Scenic Rivers, Wilderness, Visual Resources, Wilderness Characteristics, |
| Heidi Blasius           | Fisheries Biologist   | Fisheries  |
| Sharisse Fisher         | Geographic Information Specialist                           | NEPA Maps  |
| Roberta Lopez           | Realty Specialist   | Realty   |
| Bill Wells              | Hydrologist   | Water Quality and Quantity, Areas of Critical Environmental Concern, Floodplains, Air Quality, Wetlands/Riparian Zones,    |
| Dave Arthun             | Range Management Specialist                                 | EA Preparer, Farmlands (Prime or Unique), Invasive, Non-native Species, Invasive, Non-native Species, Livestock Grazing,   |
| R. J. Estes             | Range Management Specialist                                 | Wastes (hazardous or solid)  |
| Ron Peru                | Realty Specialist   | VRM  |
| Joe David               | Assistant Field Office Manager                              | NEPA   |

The following persons/agencies were consulted during preparation of this EA:  
Permittee: Calvert Allred  
Western Watersheds Project

## 6.0 Appendix 1: Arizona Standards and Guides Evaluation

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**STANDARDS AND GUIDELINES EVALUATION**  
**White House # 46340**  
**East Spear # 46410 & West Spear # 46400**

## **1.0 Introduction**

The Allotment Assessment was conducted in accordance with the direction set forth in the Washington Office Instruction Memorandum No. 98-91 and Arizona No. 99-012 for implementation of Standards for Rangeland Health and Guidelines for Grazing Administration. The purpose of the standards and guidelines is to improve the health of the public rangelands. The standards and guidelines are intended to help the Bureau, rangeland users and others focus on a common understanding of acceptable resource conditions and work together to achieve that vision. The Decision Record for implementation of Arizona Standards for Rangeland Health and Guidelines for Grazing Administration Environmental Assessment were approved by the Arizona State Director in April 1997. This decision became effective upon approval of the Arizona standards and guidelines by the Secretary of Interior in April 1997. The Decision Record allowed for full implementation of Arizona Standards for Rangeland Health and Guidelines for Grazing Administration in all Arizona BLM Land Use Plans.

### **1.1 Definition of Standards and Guidelines**

Standards of rangeland health are expressions of levels of physical and biological condition or degree of function required for healthy, sustainable rangelands and defines minimum resource conditions that must be achieved and maintained. Determination of rangeland health is based upon conformance with the standards. Application of the standard to the range site considers the potential of the site without regard for the types or levels of use or management actions or decisions.

Guidelines, in contrast, do consider type and level of grazing use. Guidelines for grazing management are types of methods and practices determined to be appropriate to ensure the standards can be met or that significant progress can be made toward meeting the standard. Guidelines are tools that help managers and permittee achieve standards. Guidelines are specific to livestock grazing. Guidelines are best management practices such as grazing systems which could be used to achieve rangeland health standards.

Although the process of developing standards and guidelines applies to grazing administration, present rangeland health is the result of the interaction of many factors in addition to grazing livestock. Other contributing factors may include, but are not limited to, past land uses, land use restrictions, recreation, wildlife, rights-of-way, wild horses and burros, mining, fire, weather, and insects and disease (Arizona Standards for Rangeland Health and Guidelines for Grazing Administration, 1997).

With the commitment of BLM to ecosystem and interdisciplinary resource management, the standards for rangeland health as developed in this current process will be incorporated into

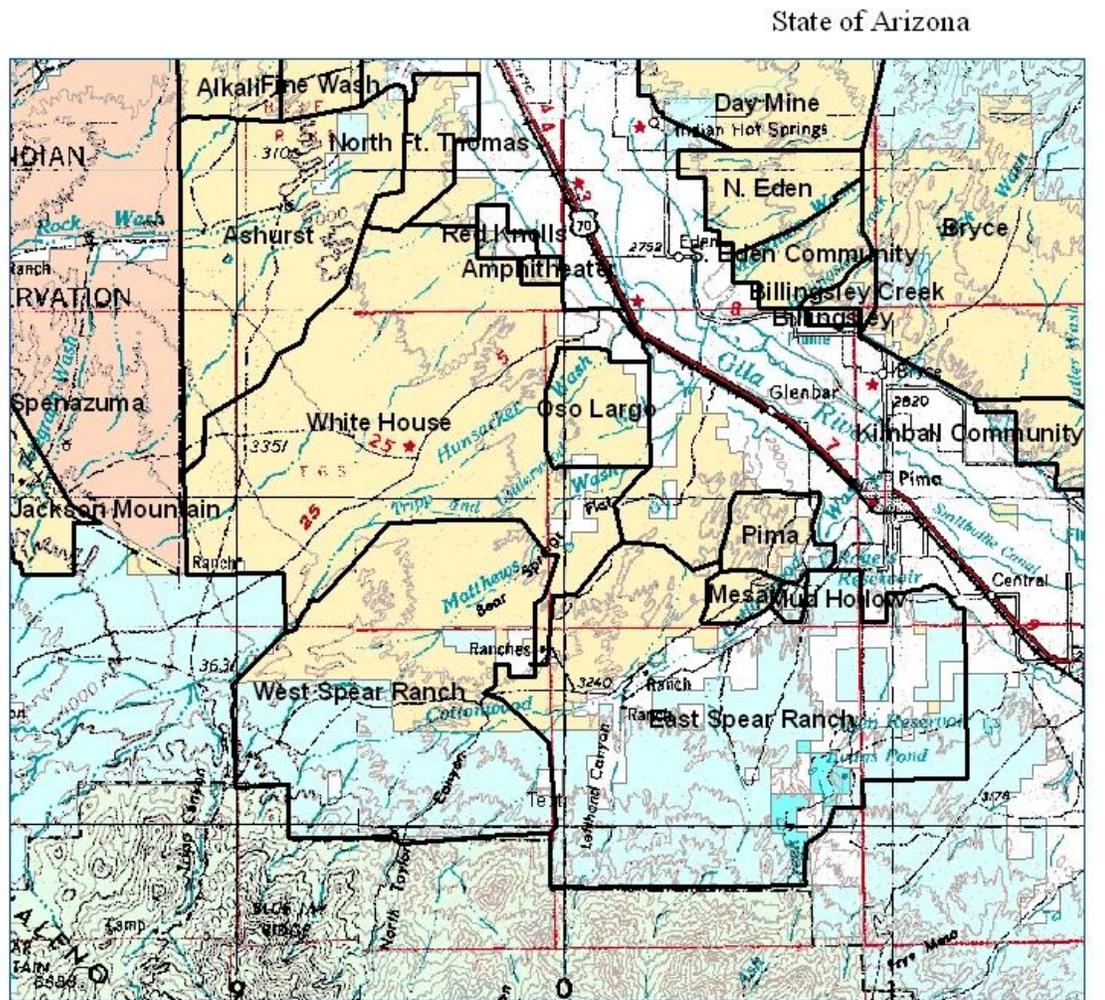
management goals and objectives. The standards and guidelines for rangeland health for grazing administration, however, are not the only considerations in resolving resource issues (Arizona standards for Rangeland Health and Guidelines for Grazing Administration, 1997).

## **2.0 General Description of Evaluation Area**

White House Allotment is located approximately five miles west of the town of Pima. It is bisected (northeast to southwest) by Klondyke Road and is nestled between the Santa Teresa Mountains to the northwest and the Pinaleno Mountains to the south. Elevation ranges from a high of approximately 3400' (west boundary) to 2800' (eastern boundary near Red Knolls Amphitheater). It occupies the lower portion of alluvial-fan and associated bajada sloping northeast to the Gila River (Figure 1).

East and West Spear Allotments are directly south of the White House Allotment and include the Bear Springs Badlands ACEC (Area of Critical Environmental Concerns). The northern portion borders White House Allotment where monitoring sites L-5 and L-9 are in close proximity. The southern portion is state land (Figure 1).

Figure 1. Map of the White House, East and West Spear Allotments.



Legend

- |                           |   |                                |  |
|---------------------------|---|--------------------------------|--|
| Private Lands             | Bureau of Land Management (BLM)           | BLM Wilderness Area            | BLM National Monument                    |
| State Lands               | National Forest Lands (USFS)              | Forest Service Wilderness Area | National Conservation Area               |
| State Wildlife Area       | National Park Service (NPS)               | NPS Wilderness Area            | Military Reservations/Corps of Engineers |
| City, State, County Parks | US FWS Service, National Wildlife Refuges | US FWS Service Wilderness Area | Bureau of Reclamation (BOR)              |
| County Lands              | Indian Lands or Reservations              |                                |  |



White House, East and West Spear Standards and Guidelines

1:175,444



United States Department of the Interior  
 Bureau of Land Management  
 Gila District Office  
 Safford Field Office  
 Map created on Aug 21, 2007



**CAUTION:**  
 Land ownership data is derived from less accurate data than the 1:24,000 scale base map. Therefore, land ownership may not be shown for parcels smaller than 40 acres, and land ownership lines may have a digitization error due to source data.

No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by the BLM.

### 3.0 Grazing Use

Grazing use on White House, East, and West Spear Allotments are in accordance with the terms and conditions on the term permit. A summary of type and level of grazing management for the allotments are provided in the Table 1.

Table 1. Current permitted use.

| Allotment   | Livestock | Season of Use | % Public Land | Active Use (AUM's) |
|-------------|-----------|---------------|---------------|--------------------|
| White House | 117       | 3/1 – 2/28    | 97            | 1362               |
| West Spear  | 75        | 3/1 – 2/28    | 49            | 441                |
| East Spear  | 50        | 3/1 – 2/28    | 20            | 120                |

#### Other Terms and Conditions:

In order to improve livestock distribution on the public lands, all salt blocks and/or mineral supplements will not be placed within a ¼ mile of any riparian area, wet meadow or watering facility (either permanent or temporary) unless stipulated through a written agreement or decision in accordance with 43 CFR 4130.3-2 C.

If in connection with allotment operations under this authorization any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 STAT. 3048; U.S. C. 3001) are discovered, the permittee/leasee shall stop operations in the immediately area of the discovery, protect the remains and objects, and immediately notify the authorized officer of the discovery until notified by the authorized officer that operations may resume. Permittee is required to submit a report (Form 4130-5) of the actual grazing use made on this allotment for the previous grazing period, March 1 to February 28. Failure to submit a report by March 15 may result in suspension or cancellation of your grazing permit.

Grazing use is authorized in accordance with the Allotment Management Plan (AMP).

### 4.0 Evaluation Area Profile

#### 4.1 Land Status

The Grazing EIS (1978) states the evaluation takes place 30 years after the I designation. Efforts have been made to mitigate previous conditions and will continue.

White House Allotment is identified as I (Improve) category allotment. By definition, I category allotments are based on the following criteria:

1. Present range condition is unsatisfactory and/or needs improvement.
2. Allotments have moderate to high resource production potential and are producing at low to moderate levels.

3. Serious resource use conflict and/or controversy exists.
4. Opportunity exists for positive economic return from public investment.
5. Present management appears unsatisfactory and/or needs improvement.

Allotments in the “I” category require either a change in management practices to improve conditions and achieve a relatively high resource potential or mitigation of serious resource conflicts. The management objectives for “I” allotments are to improve current resource conditions or resolve conflicts. Therefore, “I” allotments will have first priority for monitoring and use supervision.

Range condition, trend and precipitation will be monitored on all “I” allotments. Utilization and actual livestock use will be monitored on the allotments that receive livestock grazing use. Other studies to monitor water and wildlife habitat will also be conducted. (Safford District RMP, EIS (Final) 1991.

White House Allotment is comprised of Federal and private land with no State of Arizona holdings (Table 2).

East and West Spear are Custodial allotments. Custodial grazing management is applied in areas having an acceptable range condition and a stable or improving trend. Under custodial management BLM management actions are limited to licensing livestock use based on the AUMs available on the public lands, and the individual ranch operator determines the livestock numbers and grazing system (if any) to be used. (Safford District RMP, EIS (Final) 1991.

East and West Spear have an AMP (established 11-1-1985). The allotment is divided into two separate operations. Livestock graze on West Spear according to a deferred rotation grazing system with one heard rotating through three pastures. East Spear is used as a year-long pasture.

East and West Spear Allotments are comprised of Federal, private, and State land (Table 2).

Table 2. Allotment acreage.

| Allotment   | Acres       |              |            |        |
|-------------|-------------|--------------|------------|--------|
|             | Public Land | Private Land | State Land | Total  |
| White House | 22,263      | 731          | 0          | 22,994 |
| West Spear  | 8,471       | 160          | 8,792      | 17,423 |
| East Spear  | 4,084       | 1,948        | 14,521     | 20,553 |

#### 4.2 Wildlife Resources/Special Status and Threatened and Endangered Species

The Whitehouse, East Spear, and West Spear Allotments are not very diverse in elevation, vegetation or wildlife species. Dominated by two ecological sites, Limy uplands and degraded (transitioned) sandy loam upland. Limy uplands typically do not support populations of large animals. A rather distinct assemblage of small mammals, birds, and reptiles are sustained by this creosote dominated vegetation type. Large animal use is limited to washes, primarily as movement corridors between other vegetation types. Some species that can be found include whip tailed lizards, kangaroo rats, Gambel’s quail, rattlesnakes and Gila monsters. The sandy

loam upland site is in a mesquite/annuals steady state. Populations of mule deer and javelina exist in this vegetation type, but only in low densities. Gambel's quail, rabbits, red tail hawks are a sampling of the wildlife that occur on the site.

#### 4.2.1 Federally Listed Species

The Safford Field Office implements its grazing program consistent with the Programmatic Biological Opinion for the Gila District Livestock Grazing Program (22410-2006-F-0414). This BO was reviewed to insure that administration of the allotment is within the scope of the consultation, and all mitigation measures stated in the BO are being followed. In addition the current USFWS County List for Graham County was reviewed.

| <u>Common Name</u>                  | <u>Scientific Name</u>                        | <u>Listing Status</u> | <u>Affected</u>  |
|-------------------------------------|---|-----------------------|--|
| American peregrine falcon           | <i>Falco peregrinus anatum</i>                | D                     | Considered BLM Sensitive Species. No eyries are known to occur within five miles of the allotments.  |
| Apache trout                        | <i>Oncorhynchus apache</i>                    | T                     | No affect. There are no known locations or suitable habitat within five miles of the allotment.  |
| Arizona cliff-rose                  | <i>Purshia subintegra</i>                     | E                     | No affect. There are no known locations or suitable habitat within five miles of the allotments.   |
| Bald Eagle                          | <i>Haliaeetus leucocephalus</i>               | D                     | Considered BLM Sensitive Species. Wintering bald eagles are known to occur along the Gila River. No portion of the River is within the allotment boundaries. At any point the Gila River is separated from the three allotments by no less than one half mile. |
| Chiricahua leopard frog             | <i>Rana chiricahuensis</i>                    | T                     | No affect. There are no known locations or suitable habitat within five miles of the allotments.   |
| Desert pupfish                      | <i>Cyprinodon macularius</i>                  | E                     | No affect. There are no known locations or suitable habitat within five miles of the allotments.   |
| Desert tortoise, Sonoran population | <i>Gopherus agassizii</i>                     | C                     | Considered a BLM Sensitive Species. There are no known locations or suitable habitat within five miles of the allotments.  |
| Gila chub                           | <i>Gila intermedia</i>                        | E                     | No affect. There are no known locations within five miles of the allotment. The Gila River is historic habitat but no longer supports the species.   |
| Gila topminnow                      | <i>Poeciliopsis occidentalis occidentalis</i> | E                     | No affect. There are no known locations or suitable habitat within five miles of the allotments.   |
| Headwater chub                      | <i>Gila nigra</i>                             | C                     | Considered a BLM sensitive species. There are no known locations or suitable habitat within five miles of the allotments.  |
| Lesser long-nosed bat               | <i>Leptonycteris curasoae yerbabuena</i>      | E                     | No affect. There are no known roost locations within 40 miles of the allotments.   |
| Loach minnow                        | <i>Tiaroga cobitis</i>                        | E                     | No affect. There are no known locations within five miles of the allotments. The Gila River is historic habitat but no long supports the species.  |
| Mexican spotted owl                 | <i>Strix occidentalis lucida</i>              | T                     | BLM portions of the East Spear Allotment are within two miles of critical owl habitat. The state land portion of the allotment has a common boundary with Forest Service   |

|                                |  |    |  |
|--------------------------------|--|----|--|
|                                |  |    | land. The Forest is designated critical habitat. Authorized grazing actions on the three allotments are covered by (BO # 22410-2006-F-0414). There are no new projects or actions proposed that would affect Mexican spotted owls or their critical habitat.   |
| Mount Graham red squirrel      | <i>Tamiasciurus hudsonicus grahamensis</i> | E  | No affect. There are no known locations or suitable habitat within five miles of the allotments.   |
| Northern Mexican gartersnake   | <i>Thamnophis eques megalops</i>           | C  | Considered a BLM Sensitive Species. There are no known locations within five miles of the allotments. The Gila River is historic habitat, but the species is considered likely extirpated.   |
| Ocelot                         | <i>Leopardus pardalis</i>                  | E  | No affect. The allotments do not provide suitable habitat for the species. Of the few recent known locations, the closest to the allotments was near Globe 45 miles away. There is no reasonable expectation that the species occurs on the allotment.   |
| Razorback sucker               | <i>Xyrauchen texanus</i>                   | E  | No affect. Razorback suckers may occur in the Gila River at such low population levels they are not detectable. The 100 year flood plain of the Gila River is designated critical habitat for razorbacks. The allotments do not include any portion of the river and at no point are the boundaries closer than one half mile from the river.                          |
| Round tailed chub              | <i>Gila robusta</i>                        | C  | Considered a BLM sensitive species. Historically occurred in the Gila River and may still occur in the River near the allotment at very low population levels. There is no portion of the Gila River aquatic habitat within the allotment boundaries.  |
| Southwestern willow flycatcher | <i>Empidonax traillii extimus</i>          | E  | The 100 year floodplain of the Gila River is critical habitat for flycatchers and flycatchers are known to occur along the river as close as one half mile of the allotment boundaries. Authorized grazing actions are covered by (BO # 22410-2006-F-0414). No new actions are proposed, and conservation measures are being implemented. Additional analysis in text. |
| Spikedace                      | <i>Meda fulgida</i>                        | E  | No affect. There are no known locations within five miles of the allotment. The Gila River is historic habitat but no longer supports the species.   |
| Wet Canyon talussnail          | <i>Sonorella macrophallus</i>              | CA | There is no known occurrence on BLM administered public lands.   |
| Yellow-billed Cuckoo           | <i>Coccyzus americanus</i>                 | C  | Considered a BLM sensitive species. The yellow-billed Cuckoo is a summer migrant occurring in the riparian forests along the Gila River. No portion of the River is within the allotment boundaries. At any point the Gila River is separated from the three allotments by no less than one half mile.   |

**E – Endangered    T – Threatened    C – Candidate    CA - Conservation Agreement    D - Delisted**  
Reference <http://arizonaes.fws.gov/>

The southwestern willow flycatcher (*Empidonax traillii extimus*) was listed as federally endangered on February 27, 1995 (Vol. 60, No. 38, 10693-10715). It is a riparian obligate species. They prefer dense canopy cover, a large volume of foliage, and surface water during

midsummer. They appear to avoid riparian areas found in steep, closed canyons. The flycatcher is very threatened throughout its range due to riparian habitat loss and fragmentation and brood-parasitism by the brown-headed cowbird. Other factors include diversion of water, draining of wetlands, channelization and levying of streambeds, construction of canals, drains and impoundments, livestock grazing, off-road vehicles, and the cutting of woodlands. Another possible threat is the invasion of riparian habitats by exotic tamarisk (AZGF 2002).

Cattle congregation areas have the potential to increase brown-headed cowbird populations which could negatively affect southwestern willow flycatcher nest success, due to brood parasitism. Nesting southwestern willow flycatchers have been documented along the Gila River within five miles of these three allotments. These allotments have no riparian vegetation on them and no designated critical habitat for southwestern willow flycatchers. Applicable conservation measures for flycatchers contained in the Programmatic Biological Opinion for the Gila District Livestock Grazing Program (22410-2006-F-0414) include:

- Range Improvements: The BLM will locate range improvement projects outside of flycatcher occupied areas, except for fences, cattle guards, and gates needed to exclude or better manage livestock. Within breeding habitat, implement construction, maintenance, or management activities outside of the flycatcher breeding season. Any range improvement project within two miles of occupied, suitable or critical habitat, including those proposed to improve flycatcher habitat, will be reviewed by the FWS for compliance with the Biological opinion.
- Cowbird Control: To reduce the likelihood of nest abandonment and loss of flycatcher productivity owing to cowbird parasitism associated with BLM-authorized grazing activities in or near occupied habitats, BLM will implement the following:
  - a. Investigate, identify, and assess livestock concentration areas on BLM lands in the action areas that are likely foraging areas for cowbirds. This will be done within a 5-mile radius of occupied or un-surveyed suitable southwestern willow flycatcher habitat. The BLM will evaluate ways to reduce any concentration areas found. The BLM will pay special attention to those facilities within two miles of breeding habitat, since this is the range in which alteration of concentration areas are most effective.
  - b. The BLM will ensure that willow flycatcher surveys and nest monitoring take place at least every three years in the areas where the BLM controls significant breeding habitat and public land grazing is a predominate use on adjacent lands. This will be initiated along the Gila River between Winkleman and the Dripping Spring Wash confluence and between Kelvin Bridge and the Buttes. If jointly determined other areas may be added. Monitoring protocols will be updated as necessary and nest monitoring may use surrogate species.
  - c. If cowbird parasitism in monitored areas is determined to be ten percent of nests or greater, the BLM and the FWS will meet and discuss reasons for the parasitism and possible management actions.

Through this allotment evaluation the BLM is not proposing any new livestock improvements, modification of improvements or any change in management that would increase the concentration of livestock within two miles of flycatcher habitat. The Bureau does not control a

significant portion of the willow flycatcher habitat along this portion of the Gila River. The predominant use of lands immediately adjacent to flycatcher habitat is farming, irrigated pasture, commercial, and residential development.

Cowbirds primarily consume seeds and grains and become concentrated in areas that provide this food source. Supplemental feeding on public land is not an authorized action; grains and grain products therefore, are not a source of cowbird concentration on public lands within these allotments. Cowbirds also concentrate in areas where livestock feces are concentrated. On grazing allotments including these, a majority of the feces is disbursed, but there are concentrations around livestock waters, loafing areas and corrals. These areas of livestock and feces concentrations are not used continuously. Corrals are used sporadically as needed to work the livestock, in addition livestock move around the allotment changing watering locations and loafing areas. Approximately half of the allotments are within five miles of flycatcher habitat. On public land there are no livestock improvements within five miles of flycatcher habitat on public land that would concentrate livestock on either the East Spear or West Spear Allotments. On the Whitehouse allotment there are no improvements within two miles. Within five miles on the Whitehouse Allotment there are six ephemeral dirt tanks three water trough locations and one corral. In all these livestock improvements represent less than a half-acre where feces are concentrated. Cowbirds have not been noted to occur at disproportionate concentration levels at these locations.

The most current information available to the Bureau on willow flycatchers and flycatcher habitat on private lands along the Gila River is from the Annual Report for the Roosevelt Habitat Conservation Plan (Salt River Project, 2011), and the Annual Implementation Report for the Horseshoe and Bartlett Reservoirs Habitat Conservation Plan (Salt River Project, 2011). Both of these plans involve conservation lands for willow flycatchers in the Ft. Thomas area. Although cowbird management is part of their commitment neither report indicates that cowbird parasitism is currently an issue of particular concern. There is currently no indication that cowbird parasitism is un-naturally high along this portion of the Gila River. There is currently no indication that livestock concentrations on public land within the allotments are contributing to higher concentrations of cowbirds, resulting in higher flycatcher nest parasitism.

#### 4.2.2 Special Status Species:

The Safford Field Office reviewed a list of known Special Status Species occurrences in or within five miles of the Whitehouse, East Spear and West Spear Allotments provided by the Arizona Game and Fish Department, Heritage Data Management. Table 4 contains the species considered special status by the Bureau (IM # AZ-2009-004) that were on that list.

Table 4. Special status species occurrences/critical habitat within five miles of the White House and East and West Spear allotments.

|                           |                                |                                 |
|---------------------------|--------------------------------|---------------------------------|
| American peregrine falcon | <i>Falco peregrines anatum</i> | AGFD Species of Special Concern |
| lowland leopard frog      | <i>Lithobates yavapaiensis</i> | AGFD Species of Special Concern |
| California leaf-nosed bat | <i>Macrotus californicus</i>   | AGFD Species of Special Concern |

|                   |                            |                               |
|-------------------|----------------------------|-------------------------------|
| Bylas springsnail | <i>Pyrgulopsis arizona</i> | Bureau Special Status Species |
| Gila Tryonia      | <i>Tryonia gilae</i>       | Bureau Special Status Species |

Of these species only the California leaf-nosed bat has been documented on any of the three allotments. The others species have been found within the five mile buffer. Continued livestock grazing on these allotments is not likely to negatively affect these special status species.

### 4.2.3 Game Species

#### Deer

Habitat degradation from excessive herbivory and drought can alter and / or eliminate cover and food needed by deer and other wildlife species. Perennial bunch grasses and low shrubs are required fawning habitat (*i.e.*, cover) for deer and offer concealment from predators. Adult animals also require cover for hiding and resting. Hiding or resting locations are selected to provide concealment, a view of the surrounding terrain, and easy access to escape routes.

Deer feed primarily on browse and forbs. Forbs are highly preferred and in spring and summer can comprise 20% to 40% of the annual diet; whereas browse can constitute between 40% to 70% of the diet in fall and winter. Deer are selective feeders and will choose the most succulent and nutritious shoots and grasses on which to feed. Diet largely depends on the ecoregion in which they live (Heffelfinger, *et al.*, 2006), in more productive habitats, such as woodland areas, a greater variety of food will be eaten than in desert areas.

Grazing at light to moderate levels has little impact on mule deer since browse and forbs constitute 90% of their diet with grass important only in early spring. Cattle consume primarily grass, with forbs and browse as secondary, but seasonally important components. Overgrazing results in livestock consuming more browse, which exacerbates the level and intensity of competition with deer. To reduce this impact livestock should not be allowed to browse more than 50% of the annual leaders growth (by weight), which equates to approximately 50% of the leaders browsed (Holechek and Galt, 2000).

Disappearance of springs, cienegas, and other natural waters in the southwest due to anthropogenic activities has negatively affected mule deer and other wildlife species (Heffelfinger, *et al.*, 2006). In addition, fragmentation of habitat by roads, farms, communities, etc. has reduced the ability of deer to access traditional water sources.

Deer inhabit the allotment year round in low densities and are more abundant when annual vegetation is available. Habitat for deer on these allotments would benefit from more vegetative diversity. A number of efforts to alter/improve vegetation on these allotments have taken place over the last 50 years with little to no documented improvement.

#### Javelina

Like deer, javelina, inhabit a variety of different habitat types throughout Arizona and are quite adaptable. Javelina are opportunistic feeders and require a diverse plant community comprised of flowers, fruits, nuts, grasses, forbs, shrubs, vines, succulents, and trees for survival. Prickly pear cactus comprises a major portion of their diet. A diverse and intact plant community not only provides forage, but much needed shelter and cover. Sonoran desert scrub and desert

grassland habitat are two of the most important biotic communities in Arizona for javelina and comprise approximately 67% of their range. Javelina do not inhabit pure grasslands, but grasslands that have been invaded by shrubs and cacti. Riparian forests are also important and are used quite frequently by javelina as sources of water, food, and cover (Day 1985). Although in low numbers there are resident populations of javalina on the three allotments. As with deer javalina would benefit from improve vegetative diversity, but to date no effort has been successful.

### **4.3 Soils and Ecological Sites**

For a complete description of soils on White House Allotment and East and West Spear Allotments refer to Gila-Duncan Area, Arizona, Parts of Graham and Greenlee Counties Soil Survey (NRCS 1981). Ecological Site descriptions can be found at <http://esis.sc.egov.usda.gov/Welcome/pgReportLocation.aspx?type=ESD>

Specific information on soil and ecological sites will be detailed in:

Section 4.10 Key Areas / Key Species.

### **4.4 Special Management Areas**

There are no special management areas within the White House Allotment. Bear Springs Badlands ACEC (Area of Critical Environmental Concerns) borders the allotment to the south and is within East and West Spear Allotments.

### **4.5 Recreation Resources**

There are no developed recreation facilities in the allotment; however, dispersed recreation does occur. Dispersed recreation primarily involves small and big game hunting, target shooting and off-highway vehicle (OHV) operation. Vehicle access to the allotment is primarily off Klondyke Road (White House Allotment). Red Knolls Amphitheater receives some local use. Tripp Canyon Road accesses East and West Spear Allotments.

### **4.6 Visual Resources**

Visual Resource Management (VRM) Class III, Buffer and Class IV. (Appendix 6 (Safford District Resource Management Plan, Environmental Impact Statement, 1991), VRM class objectives.

**Class IV:** The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. Every attempt should be made, however, to minimize the impact of these activities through careful location, minimal disturbance and repeating the basic elements.

**Class III.** The objective of this class is to partially retain the existing character of the landscape. The level of activity may attract attention but should not dominate the view of the casual

observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Class III, Buffer follows the corridor of Hwy 70.

East and West Spear are Class IV and Class II (Bear Springs Badlands ACEC).

#### **4.7 Cultural Resources**

Issuance of the permit constitutes a Federal Undertaking under Section 106 of the National Historic Preservation Act (NHPA). The Area of Potential Effect (APE) has been determined to be the public lands within the grazing allotment.

In compliance with the BLM Cultural Resources Programmatic Agreement, the Arizona BLM-SHPO Protocol, the 1980 Programmatic Memorandum of Agreement between the BLM, Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Livestock Grazing and Range Improvement Program, and the BLM 8100 Manual series, the following actions have been taken to identify cultural resources located in the APE, evaluate the eligibility of cultural resources for listing in the National Register of Historic Places (NRHP), determine the effect of the undertaking on eligible cultural resources, and design mitigation measures or alternatives where appropriate.

The State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, and Indian tribes having historical ties to Arizona public lands were consulted during the preparations of the Upper Gila/San Simon Grazing Environmental Impact Statement (9/86) and the Safford Resource Management Plan (9/78). Indian tribes were consulted at the beginning of the permit renewal process. There were no areas of Native American concern, Traditional Cultural Properties (TCP), or Sacred Sites identified during consultations.

A Cultural Resource Compliance Documentation Record (Project No. AZ-410-09-024) was completed 2 June 2009 by Safford Field Office Archaeologist Daniel L. McGrew. (Appendix X.).

As required by the Native American Graves Protection and Repatriation Act regulations at 43 CFR 10.4(g), the following should be added to the grazing lease/permit as a term and condition:

If in connection with allotment operations under this authorization, any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3048; 25 U.S.C. 3001) are discovered, the permittee shall stop operations in the immediate area of the discovery, protect the remains and objects, and immediately notify the Authorized Officer of the discovery. The permittee shall continue to protect the immediate area of the discovery until notified by the Authorized Officer that operations may resume. Properties refer to archaeological sites, Traditional Cultural Properties, and Sacred Sites.

#### 4.8 Noxious Weeds/Invasive Species

Salt cedar (*Tamarix spp.*) has been identified on the eastern (lower) end of White House Allotment. No other noxious weeds were observed on the allotment; however, other noxious plants are either present in the area or identified in adjacent areas. BLM is active in monitoring noxious plants.

Any future treatment will be in conformance with Environmental Impact Statement, Vegetation Treatment on BLM Lands in Thirteen Western States, May, 1991: Safford District Resource Management Plan (RMP), (date approved: Record of Decision Part I, September 1992; Record of Decision Part II, July 1994) and Consistency with Related Subordinate Implementation Plans. (For a list of noxious weed species in Graham and Greenlee County see Appendix I).

#### 4.9 Precipitation

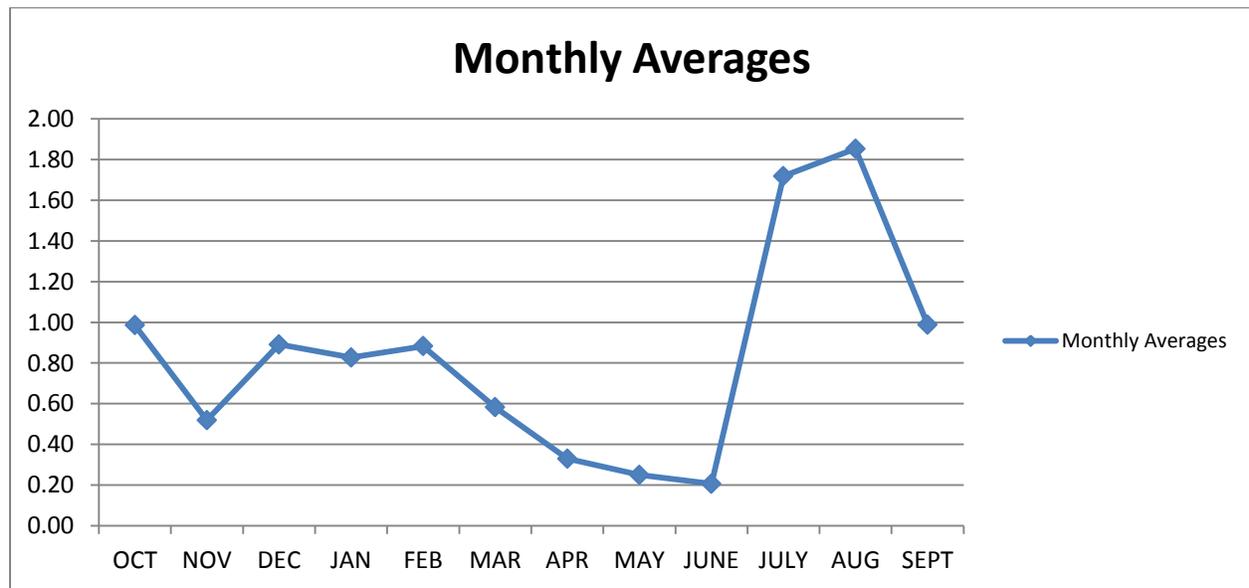
Precipitation patterns are typically bimodal with the majority occurring July to September (Figure 2). Summer rainfall (monsoon) is heavy localized convectional thunderstorms while winter moisture results from general frontal storms. Precipitation data is collected from BLM, National Oceanic and Atmospheric Agency and rain gauge stations within the BLM Administrative Area. The data presented in Table 3 came from the Pima Plots rain gauge station which is located on White House Allotment.

Table 3. Pima Plots Rain Gauge Data.

| PIMA<br>PLOTS<br>RAINGAGE | Elevation 3220 Feet |      |      | SWSE Sec. 16, T. 6S., R.23E. |      |      |      |      |      |      |      |      | TOTAL |
|---------------------------|---------------------|------|------|------------------------------|------|------|------|------|------|------|------|------|-------|
|                           | OCT                 | NOV  | DEC  | JAN                          | FEB  | MAR  | APR  | MAY  | JUNE | JULY | AUG  | SEPT |       |
| 1967                      |                     |      |      |                              |      |      |      |      | 0.4  | 2.08 | 1.42 | 0.39 |       |
| 1983                      | 0.79                |      |      |                              |      |      |      |      |      |      | 1.01 | 5.09 |       |
| 1984                      | 3.93                | 1.15 | 1.03 | 0.42                         | 0.02 | 0.05 | 0.66 | 0.33 | 0.07 | 2.46 | 2.74 | 1.4  | 14.26 |
| 1985                      | 1.04                | 0.69 | 3.42 | 1.52                         | 1.11 | 0.58 | 0.85 | 0.01 | 0.03 | 0.74 | 0.64 | 1.92 | 12.55 |
| 1986                      | 1.36                | 1.25 | 0.33 | 0.18                         | 1.04 | 2.16 | 0    | 0.1  | 0.67 | 2.43 | 0.6  | 1.65 | 11.77 |
| 1987                      | 2.3                 | 0.44 | 1.29 | 0.43                         | 1.39 | 0.55 | 0.36 | 0.62 | 0.12 | 1.16 | 2.67 | 0.35 | 11.68 |
| 1988                      | 0.6                 | 0.48 | 1.66 | 0.45                         | 1.01 | 0    | 0.93 | 0    | 0.04 | 0.36 | 1.59 | 0.82 | 7.94  |
| 1989                      | 0.8                 | 0.59 | 0.05 | 0.8                          | 0.02 | 0.25 | 0    | 0.14 | 0.02 | 0.33 | 0.43 | 0.21 | 3.64  |
| 1990                      | 1.1                 | 0    | 0.25 | 0.71                         | 0.63 | 1.7  | 0.15 | 0    | 0.11 | 3.14 | 3.39 | 2.06 | 13.24 |
| 1991                      | 0.05                | 0.75 | 1.94 | 0.92                         | 2.23 | 1.14 | 0    | 0    | 0    | 0.81 | 1.7  | 0.77 | 10.31 |
| 1992                      | 0.23                | 0.36 | 2.74 | 1.54                         | 2.21 | 1.33 | 0.2  | 2.99 | 0.97 | 1.03 | 5.53 | 0.25 | 19.38 |
| 1993                      | 0.16                | 0    | 3.2  | 4.66                         | 1.35 | ***  | ***  | 0    | 0    | 0.15 | 1.84 | 0    | 11.36 |
| 1994                      | 1.98                | 0.52 | 0.45 | 0                            | 1.37 | 0.88 | 0.05 | 0.35 | 0.52 | 1.39 | 2.33 | 1.1  | 10.94 |
| 1995                      | 0.9                 | 1.54 | ***  | 0.28                         | 1.3  | 0.35 | 0.05 | 0    | 0.12 | 1.27 | 0.89 | 0.99 | 7.69  |
| 1996                      | 0                   | 0.92 | 0.04 | 1.65                         | 0.25 | 0    | 0.13 | 0    | 0.32 | 1.49 | 0.83 | 2.61 | 8.24  |
| 1997                      | 1.58                | 0.32 | 0.01 | 1.31                         | 0.92 | 0.03 | 0.1  | 0.27 | 0.44 | 0.47 | 0.62 | 0.88 | 6.95  |
| 1998                      | 0.93                | 1.25 | 1.75 | 0.22                         | 2.76 | 1.22 | 0.21 | 0    | 0    | 2.35 | 3.19 | 0.17 | 14.05 |
| 1999                      | 0.95                | 0.76 | 0.35 | 0.06                         | 0.04 | 0.15 | 1.21 | 0.02 | 0.02 | 4.6  | 1.1  | 1.01 | 10.27 |
| 2000                      | 0                   | 0    | 0    | 0.31                         | 0.12 | 0.42 | 0    | 0    | 0.62 | 0.59 | 1.79 | 0.02 | 3.87  |

|      |      |      |      |      |      |      |      |      |      |      |      |      |       |
|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| 2001 | 4.34 | 1.09 | 0.12 | 1.12 | 0.4  | 0.25 | 1.53 | 0.6  | 0.32 | 2.3  | 2.4  | 0.05 | 14.52 |
| 2002 | 0.78 | 0.13 | 0.29 | 0.04 | 0.05 | 0.21 | 0    | 0    | 0    | 1.69 | 1.67 | 1.07 | 5.93  |
| 2003 | 1.42 | 0.17 | 0.91 | 0.19 | 1.59 | 0.27 | 0    | 0.2  | 0.06 | 0.71 | 1.21 | 0.15 | 6.88  |
| 2004 | 0.28 | 0.74 | 0.11 | 0.57 | 0.26 | 1.47 | 1.09 | 0    | 0.06 | 1.27 | 0.86 | 0.95 | 7.66  |
| 2005 | 0.81 | 0.31 | 0.42 | 1.77 | 2.29 | 0.32 | 0.25 | 0.53 | 0.24 | 0.75 | 1.56 | 0.46 | 9.71  |
| 2006 | 0.26 | 0    | 0.02 | 0.05 | 0    | 0.82 | 0.07 | 0.02 | 0.1  | 5.55 | 2.53 | 0.52 | 9.94  |
| 2007 | 1.28 | 0    | 0    | 0.15 | 0.44 | 0.94 | 0.5  | 0.04 | 0.34 | 2.89 | 1.46 | 0.77 | 8.81  |
| 2008 | 0.14 | 0.23 | 1.33 | 0.66 | 0.69 | 0.02 | 0.02 | 0.58 | 0.15 | 2.7  | 5.05 | 0.25 | 11.82 |
| 2009 | 0.4  | 0.7  | 0.5  | 0.85 | 0.26 | 0.18 | 0.36 | 0.2  | 0.05 | 1.06 | 0.35 | 1.1  | 6.01  |
| 2010 | 0    | 0.03 | 0.41 | 2.55 | 1.31 | 0.67 | 0.03 | 0    | 0.1  | 3.17 | 3    | 1.45 | 12.72 |
| 2011 | 0.59 | 0    | 0.68 | 0    | 0.11 | 0    | 0.15 | 0    | 0.08 | 0.9  | 1.2  | 1.15 | 4.86  |
| 2012 | 0.56 | 0.63 | 1.65 | 0.58 | 0.43 | 0.33 |      |      |      |      |      |      | 4.18  |
|      |      |      |      |      |      |      |      |      |      |      |      |      |       |
| AVG  | 0.99 | 0.52 | 0.89 | 0.83 | 0.88 | 0.58 | 0.33 | 0.25 | 0.21 | 1.72 | 1.85 | 0.99 | 9.89  |

Figure 2. Monthly rainfall averages for the White House Allotment. Data is based on the BLM-maintained rain gage at Pima Plots located on the White House Allotment.



#### 4.10 Key Areas / Key Species

Key areas are indicator areas that are able to reflect what is happening on a larger scale as a result of on-the-ground management actions. A key area should be a representative sample of a large stratum, such as a pasture, grazing allotment, wildlife habitat area, herd management area, or watershed area depending on the management objectives being addressed by the study. Key species are generally an important component of a plant community as they serve as indicators of change and may or may not be forage species. Refer to Table 4 for key areas on White House Allotment.

Table 4. Six key areas (monitoring sites) located on White House Allotment.

| Site                          | GPS (NAD83 CONUS)       |
|-------------------------------|-------------------------|
| L-4 (Red Knolls) <sup>1</sup> | 12S 0595317 UTM 3645013 |
| L-5 (Brimhall)                | 12S 0593600 UTM 3639097 |
| L-7 (Mesquite) <sup>1</sup>   | 12S 0589779 UTM 3639527 |
| L-8 (Company)                 | 12S 0594580 UTM 3643677 |
| L-9 ( Bear Springs)           | 12S 0602397 UTM 3640969 |
| L-10 (Red Knolls)             | 12S 0598412 UTM 3644208 |

<sup>1</sup> University of Arizona monitoring and BLM Rangeland Health Assessment (RHA) evaluation locations.

#### 4.11 Allotment Objectives

##### Standard 1: Upland Sites

Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform.

##### Standard 2: Riparian- Wetland Sites

Maintain or improve riparian/wetland areas to facilitate proper functioning condition.

##### Standard 3: Desired Resource Condition

Maintain or improve productive and diverse upland and riparian-wetland plant communities of native species.

#### 5.0 Management Evaluation

##### 5.1 White House Allotment

##### 5.1.1 Actual Use (White House Allotment).

Table 5. Actual use<sup>1</sup>.

| Preference (AUMs) | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|-------------------|------|------|------|------|------|------|------|------|------|------|------|
| 1362              | 651  | 983  | 924  | 1105 | 1288 | 1361 | 1361 | 1361 | 1361 | 1163 | 1361 |

<sup>1</sup>Based on Actual Grazing Use Report (4130-5), RAS Billing Statements.

##### 5.1.2 Upland Health Assessment

The National Research Council (1994) suggested rangeland *health* as an alternative to condition. Rangeland health is defined as: “*the degree to which the integrity of the soil and ecological processes of rangeland ecosystems are maintained.*” Ecological processes are to include: the *water cycle* (the capture, storage and safe release of precipitation), *energy flow* (conversion of sunlight to plant and then animal matter), and *nutrient cycle* (the cycle of nutrients through the physical and biotic components of the environment) (USDI 2005). Integrity is defined as “*maintenance of the functional attributes characteristic of a locale, including normal variability*” (USDA 1997).

Upland health assessment was completed in 2009, 2012 and 2013 on the White House and Spear Allotments near monitoring sites L-4 and L-7. This method involves observing a set of physical and biological attributes at a site to determine upland health. The product of this qualitative assessment is not a single rating of rangeland health, but an assessment of three components called attributes (USDI 2005).

These observed attributes are placed in one of five categories depending on their degree of presence or absence on the site (i.e. None to Slight, Slight to Moderate, Moderate, Moderate to Extreme, and Extreme). These attributes include items such as: plant pedestaling, flow patterns, soil and litter movement by wind or water, presence of rills or active gullies. A final upland health determination is made by summing all of the attributes.

Figure 3. RHA was conducted near Monitoring Site L-4. (The potential relic site was Investigated and did not meet the requirements).

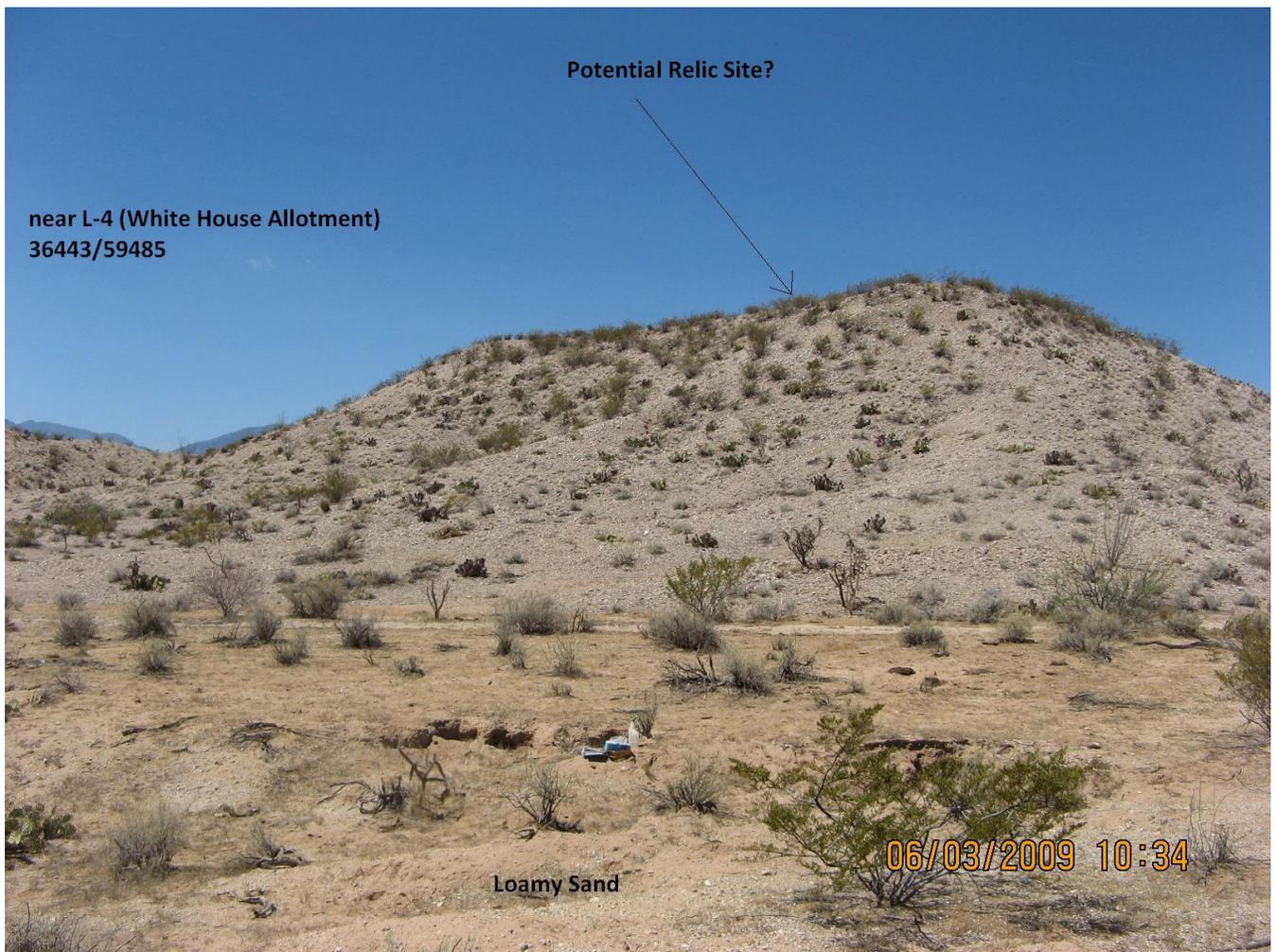


Table 6. Attribute rating for soil and site stability (L-4), 2009.

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              | 8               | 9                           |                         |
|                |                              | 5               | 7                           |                         |
|                |                              | 2               | 4                           | 11                      |
|                |                              | 1               | 3                           | 6                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Soil and Site Stability was placed in the “slight to moderate” category.** Some rills were observed on slopes and evidence of head cutting moderately more than expected. Pedestals and/or terracettes were not noticeable. Bare ground was 35% (University of Arizona), with a range of 10 -80% (NRCS Site Guide). Litter was being displaced primarily by water flow. Neither wind-scoured blowouts nor compaction were observed. Indicator # 8 “Soil Surface Resistance to Erosion” was scored *Moderate* due to some minor erosion and was moderately reduced throughout the site.

Table 6 (a). Attribute rating for soil and site stability (L-4), 2013.

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             |                         |
|                |                              |                 |                             | 11                      |
|                |                              |                 |                             | 9                       |
|                |                              |                 | 8                           | 7                       |
|                |                              |                 | 4                           | 6                       |
|                |                              |                 | 2                           | 5                       |
|                |                              |                 | 1                           | 3                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

Figure 4. RHA conducted near Monitoring Site L-4.

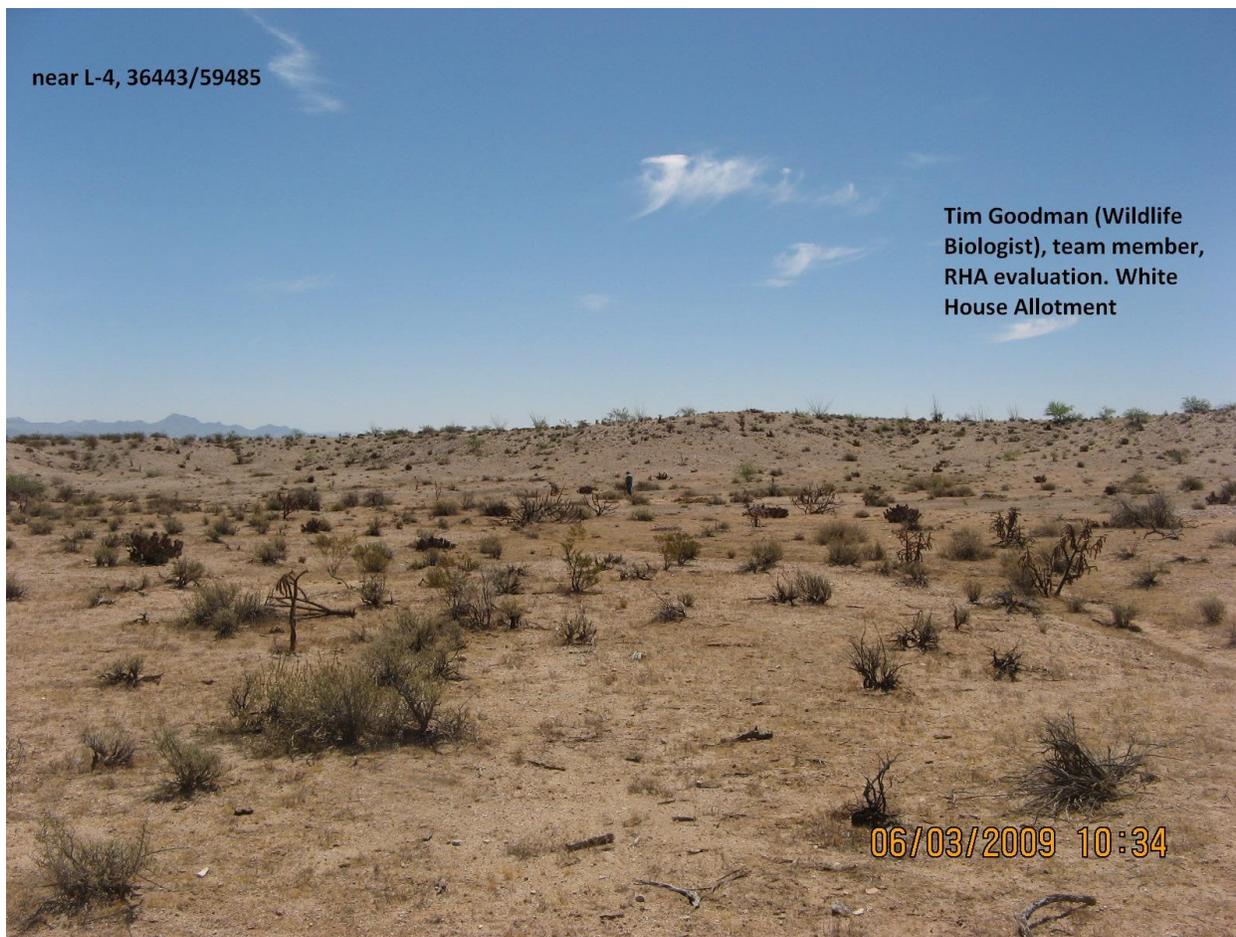


Table 7. Attribute rating for hydrologic function 2009 (L-4).

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             |                         |
|                |                              | 8               | 14                          |                         |
|                |                              | 5               | 9                           |                         |
|                |                              | 2               | 4                           |                         |
|                | <b>10</b>                    | 1               | 3                           | 11                      |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Hydrologic Function was placed in the “moderate” category.** Shift in plant community composition (indicator #10) was a concern due to the resulting decrease in perennial grasses and subsequent increase in shrubs (primarily mesquite) and annual grasses (transition from reference state). As stated previously, rills and some head cutting were moderately more than expected and loss of organic matter and A Horizon.

Physiographic Features: This site occurs in the lowest elevations of the Madrean Basin and Range province in southeastern Arizona. It occurs on fan terraces and gently sloping uplands (Sandy Loam Upland 8-12” p.z. R041XB215AZ; Limy Upland 8-12” p.z. (R041XB208AZ).

In July 2012, L-4 and L-7 were evaluated based on soil work and enclosure data.

In late 2011 a soil pit was dug in the Pima Plots Enclosure. The location is between L-4 and L-7 (Appendix VIII, Figure 7). The soil analysis revealed a Limy Upland Site. These typically intrude within the loamy sites on the White House Allotment. Based on NRCS Ecological Site Description, Limy Upland 8-12” p.z. (R041XB208AZ) these Limy Uplands are at or close to Historical Climax. In light of this data attribute # 10 was moved from M-E to S-M (L-4).

Table 7 (a). Attribute rating for hydrologic function (L-4) 2013.

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             | 10                      |
|                |                              |                 |                             | 14                      |
|                |                              |                 | 8                           | 11                      |
|                |                              |                 | 4                           | 9                       |
|                |                              |                 | 2                           | 5                       |
|                |                              |                 | 1                           | 3                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

Figure 5. Landscape view of area near L-4 displaying the fan terrace that typifies the Limy and Sandy Loam Uplands Ecological Sites.

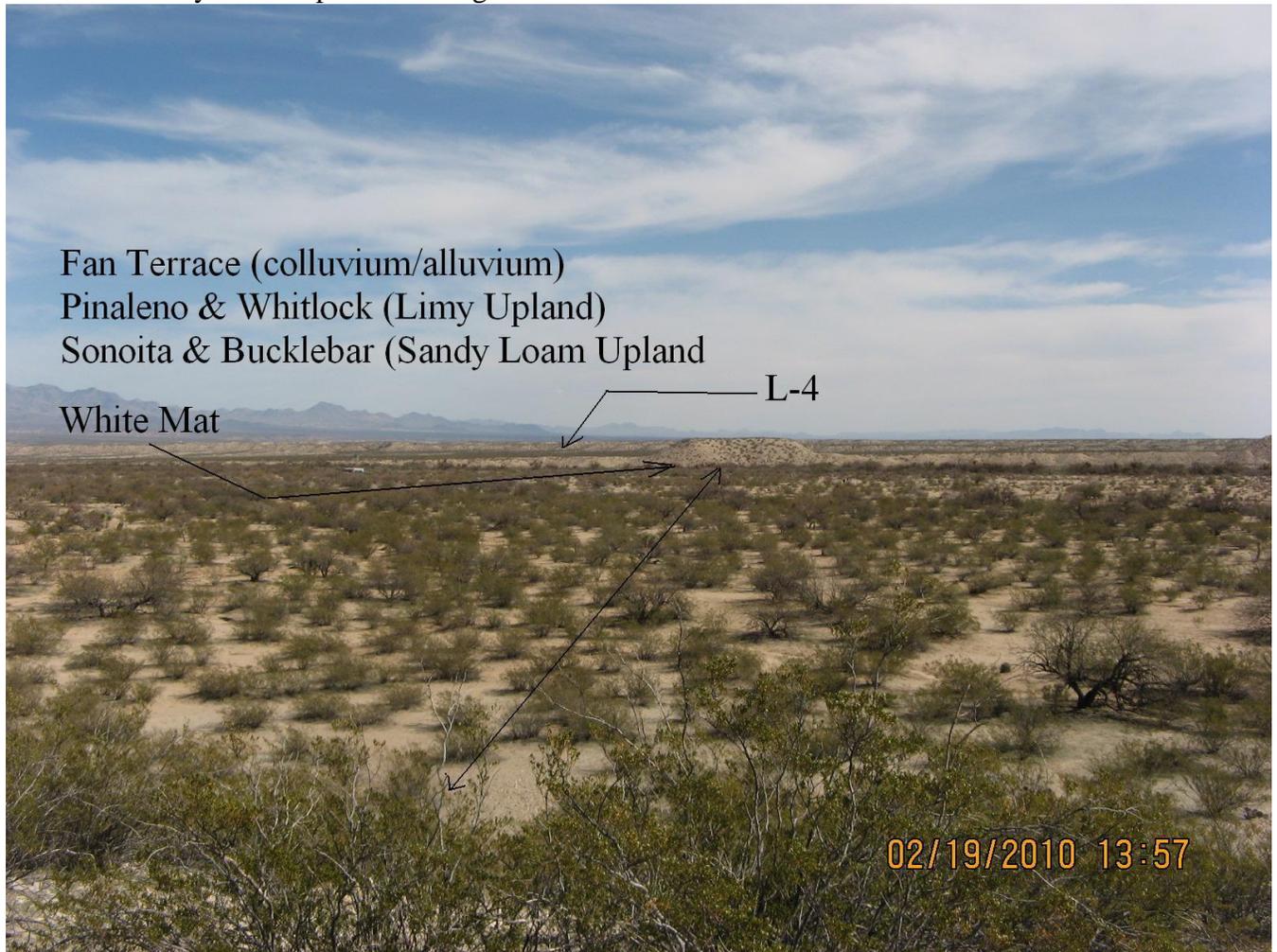


Table 8. Attribute rating for biotic integrity (L-4).

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             |                         |
|                |                              | 12              |                             |                         |
|                |                              | 17              | 15                          |                         |
|                |                              | 13              | 14                          |                         |
|                | 16                           | 8               | 9                           | 11                      |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Biotic Integrity was placed in the “moderate” category.** Invasive plants (indicator #16) were moderate to extreme (common throughout the site). Extreme category would place them as “dominating” the site. The two invasive shrub species were creosote and mesquite. Invasive plants can be either exotic or native. If native (as are creosote and mesquite) then they would have only make up a minor component of the original plant community. Plant mortality/decadence (indicator #13) was placed in the “moderate” category due to the apparent

loss of all observed wolfberry. Indicator #17 (reproduction capability of perennial plants) was also influenced by the loss of wolfberry. Indicator #12 (functional / structural groups) received a “moderate” score because mesquite had increased (at least 10-15% canopy) and a number of species within the functional / structural group had been reduced (suffrutescent grasses, e.g. bush muhly and black grama). No one dominant group and /or sub-dominant group had been replaced by a functional / structural group not expected for the site. Indicator #15 (annual production) was within the site guides, but was primarily shrubs.

[Item # 16 native shrubs have increased throughout the desert southwest; moreover, the Ecological Site Description for Sandy Loam Upland has shrubs at 22% of composition based on pounds per acre. A cogent argument could place item # 16 in the “Moderate” or even “Slight to Moderate” category. The role of *native* shrubs has been underestimated].

[Items # 13 and 17 was placed in the “Moderate” category because of wolfberry; however, a subsequent visit (post rain event) revealed wolfberry was robust].

[Item # 12 is appropriate because native grasses are not properly represented].

The above mentioned modification would shift the Biotic Integrity from “Moderate” to “Slight to Moderate”.

Table 8 (a). Attribute rating for biotic integrity (L-4) 2013.

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             | 17                      |
|                |                              |                 |                             | 16                      |
|                |                              |                 |                             | 15                      |
|                |                              |                 |                             | 14                      |
|                |                              |                 |                             | 13                      |
|                |                              |                 |                             | 12?                     |
|                |                              |                 |                             | 11                      |
|                |                              |                 | 8                           | 9                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

Table 8 (b). Comparison between 2009 and 2013 (L-4).

| Year | Soil and Site Stability | Hydrologic Function | Biotic Integrity |
|------|-------------------------|---------------------|------------------|
| 2009 | S-M                     | M                   | M                |
| 2013 | S-M, N-S                | S-M, N-S            | N-S              |

Figure 6. Geological reference of fan terrace and mesa near L-4.

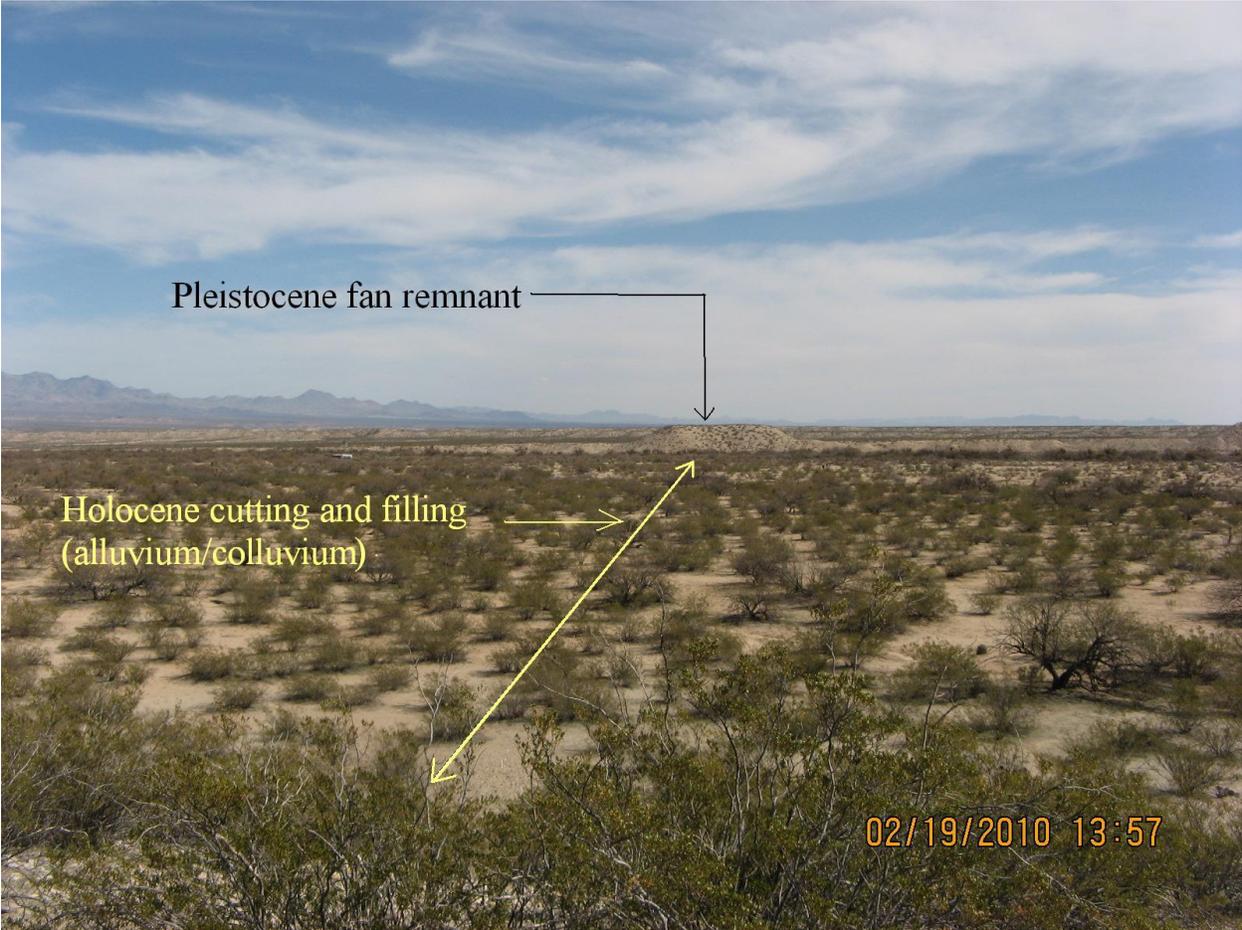


Figure 7. RHA conducted near Monitoring Site L-7.

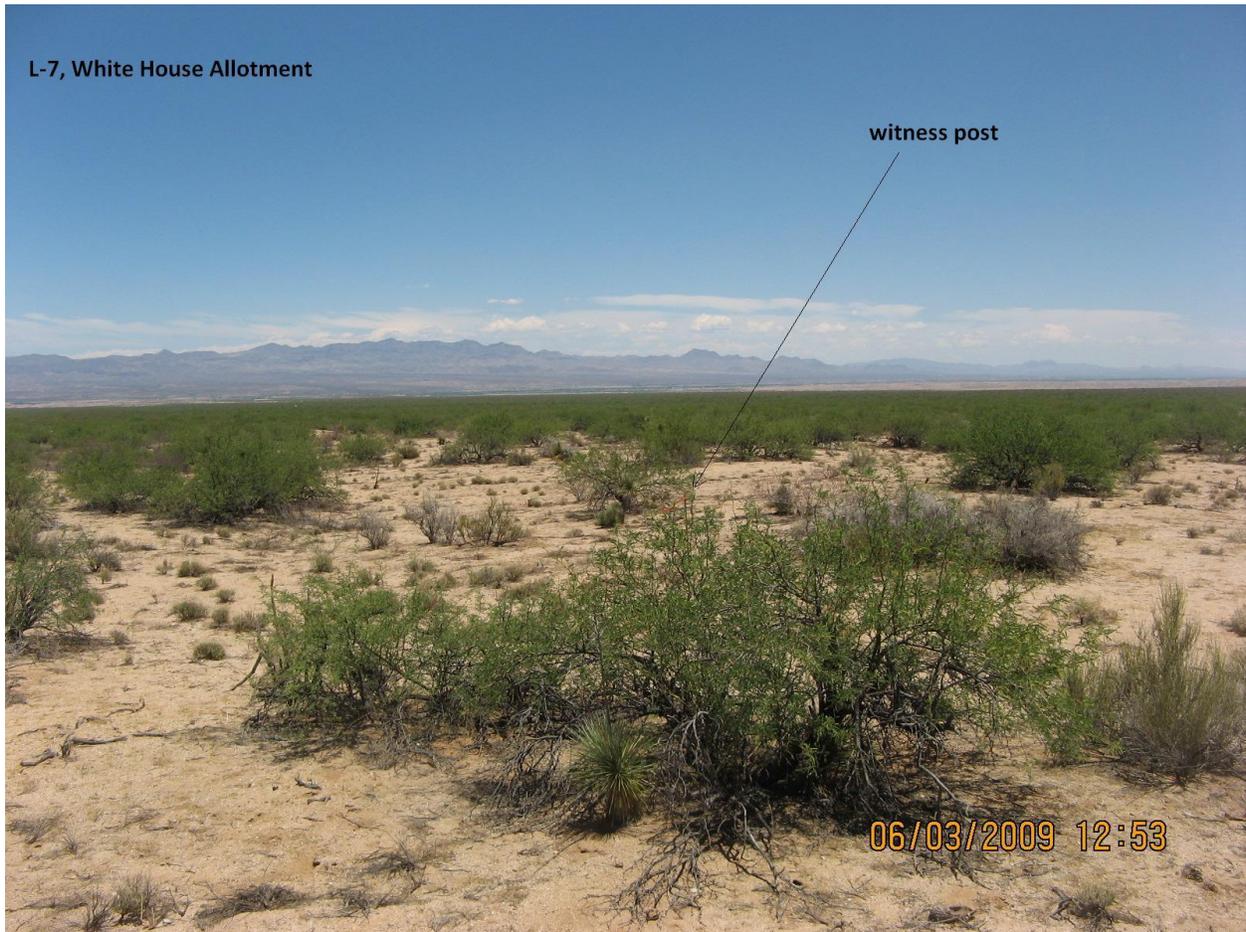


Table 9. Attribute rating for soil and site stability, 2009 (L-7).

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              | 8               | 9                           |                         |
|                |                              | 5               | 7                           |                         |
|                |                              | 2               | 4                           | 11                      |
|                |                              | 1               | 3                           | 6                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Soil and Site Stability was placed in the “slight to moderate” category.** Some rills were observed on slopes and evidence of head cutting moderately more than expected. Pedestals and/or terracettes were not noticeable. Bare ground was 30.5% (University of Arizona), with a range of 10 -80% (NRCS Site Guide). Litter was being displaced primarily by water flow. Neither wind-scoured blowouts nor compaction were observed.

Table 10. Attribute rating for hydrologic function, 2009 (L-7).

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              | 10              |                             |                         |
|                |                              | 8               | 14                          |                         |
|                |                              | 5               | 9                           |                         |
|                |                              | 2               | 4                           |                         |
|                |                              | 1               | 3                           | 11                      |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Hydrologic Function was placed in the “moderate” category.** Shift in plant community composition (indicator #10) was a concern due to the resulting decrease in perennial grasses and subsequent increase in shrubs (primarily mesquite) and annual grasses (transition from reference state). As stated previously, rills and some head cutting were moderately more than expected and loss of organic matter and A Horizon. Higher clay content was evident and a more stable (intact) A Horizon, therefore (indicator #10) was placed in the “moderate” whereas at L-4 it was in the “moderate to extreme” category.

Figure 8. RHA conducted near Monitoring Site L-7.



Table 11. Attribute rating for biotic integrity, 2009 (L-7).

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             |                         |
|                |                              | 17              | 15                          |                         |
|                |                              | 13              | 14                          |                         |
|                | 16                           | 8               | 9                           | 11                      |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Biotic Integrity was placed in the “moderate” category.** Invasive plants (attribute #16) were moderate to extreme (common throughout the site). Extreme category would place them as “dominating” the site. The two invasive shrub species were creosote and mesquite. Invasive plants can be either exotic or native. If native (as are creosote and mesquite) then they would have only make up a minor component of the original plant community. Plant mortality/decadence (indicator #13) was placed in the “moderate” category due to the apparent condition of wolfberry. Indicator #17 (reproduction capability of perennial plants) was also influenced by the loss of wolfberry. Indicator #15 (annual production) was within the site guides, but was primarily shrubs. Four wing saltbush was absent.

Attributes 17 and 13 would all shift to S-M and 16 to N-S based on 2011 soil pit and enclosure data. See discussion p. 16.

Table 12. Attribute rating for soil and site stability, 2012 (Lee Enclosure).

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             |                         |
|                |                              |                 | 7                           |                         |
|                |                              |                 | 5                           |                         |
|                |                              |                 | 4                           | 11                      |
|                |                              |                 | 3                           | 9                       |
|                |                              |                 | 2                           | 8                       |
|                |                              |                 | 1                           | 6                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

Table 13. Attribute rating for hydrologic function, 2012 (Lee Enclosure).

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             |                         |
|                |                              |                 | 10                          |                         |
|                |                              |                 | 5                           |                         |
|                |                              |                 | 4                           | 14                      |
|                |                              |                 | 3                           | 11                      |
|                |                              |                 | 2                           | 9                       |
|                |                              |                 | 1                           | 8                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

Table 14. Attribute rating for biotic integrity, 2012 (Lee Exclosure).

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             | 17                      |
|                |                              |                 |                             | 16                      |
|                |                              |                 |                             | 15                      |
|                |                              |                 |                             | 14                      |
|                |                              |                 |                             | 11                      |
|                |                              |                 |                             | 9                       |
|                |                              |                 | 13                          | 8                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

R041XB214AZ (Sandy Upland 8-12" p.z.), no Reference Sheet.

Table 15. Rangeland health evaluation (White House, East and West Spear Allotments, (2009).

| Site               | Departure From Ecological Site Description |                     |          |                    |                |
|--------------------|--|---------------------|----------|--------------------|----------------|
|                    | Extreme                                    | Moderate to Extreme | Moderate | Slight to Moderate | None to Slight |
| L-4 <sup>1,2</sup> |  |                     | HB       | SHB                |                |
| L-7 <sup>1,2</sup> |  |                     | HB       | S                  |                |

Where:

S = Soil/Site stability

H = Hydrologic Function

B = Biotic Integrity

<sup>1</sup> = Soil/site verification (Sundt, 2005)

<sup>2</sup> = R041XB215AZ (Sandy Loam Upland 8-12" p.z.), no Reference Sheet; R041XB208AZ (Limy Upland 8-12" p.z.), no Reference Sheet; R041XB210AZ (Loamy Upland 8-12" p.z.), no Reference Sheet.

Table 16. Rangeland health evaluation (White House, East and West Spear Allotments, November 2012 and April 2013).

| Site               | Departure From Ecological Site Description |                     |          |                    |                |
|--------------------|--|---------------------|----------|--------------------|----------------|
|                    | Extreme                                    | Moderate to Extreme | Moderate | Slight to Moderate | None to Slight |
| L-4 <sup>1</sup>   |  |                     |          |                    | SHB            |
| Lee <sup>2,3</sup> |  |                     |          | SH                 | B              |

Where:

S = Soil/Site stability

H = Hydrologic Function

B = Biotic Integrity

<sup>1</sup> = Soil/site verification (Sundt, 2005), R041XB215AZ (Sandy Loam Upland 8-12" p.z.), Reference Sheet (Approved 4-2-2013);

<sup>2</sup> = R041XB215AZ (Sandy Loam Upland 8-12" p.z.), Reference Sheet (Approved 4-2-2013); R041XB208AZ (Limy Upland 8-12" p.z.), Reference Sheet (Approved 3-27-2013); R041XB210AZ (Loamy Upland 8-12" p.z.), no Reference Sheet. R041XB214AZ (Sandy Upland 8-12" p.z. no Reference Sheet (soil pit near Lee Exclosure).

<sup>3</sup> = R041XB214AZ (Sandy Upland 8-12" p.z. no Reference Sheet).

### 5.1.3 Standard 1. Upland Sites

The criteria for Standard 1 are being met.

Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform (ecological site).

In order to better understand the soils and watershed health, upland health assessments was conducted at two key areas (L-4, L-7 and near Lee Exclosure) on White House Allotment. Soil/site stability, hydrologic functions and biotic integrity were evaluated to help determine a rating (departure from ecological site potential) for each site. A “*preponderance of evidence*” approach is used to select the appropriate departure category for each attribute.

Criteria for meeting Standard 1:

#### Ground Cover

- litter
- live vegetation

#### Erosion

- flow patterns
- gullies
- rills
- plant pedestaling

Guidelines:

1-1. Management activities that will maintain or promote ground cover that will provide for infiltration, permeability, soil moisture storage and soil stability appropriate for the ecological sites within management units. Rotation grazing that provides for rest two out of three years.

1-2. when grazing practices alone are not likely to restore areas of low infiltration or permeability, land management treatments may be designed and implemented to attain improvement.

Herbicide Treatment: The site also supports loamy sand which is a preferred soil texture for effective herbicidal treatment, specifically tebuthiuron treatment (L-4); however, slightly higher clay content may reduce herbicide effectiveness. See discussion on shrub control (Appendix VI).

### 5.1.4 Standard 2: Riparian-Wetland Sites

There are no riparian areas on White House Allotment. Therefore, Standard 2 is being met.

### 5.1.5 Standard 3: Desired Resource Conditions

[Standard 3 is met, due to biotic integrity placed in the “none to slight” category, specifically (attribute #16) Invasive plants (See Appendix VI for a more detailed discussion on shrub

treatments).

Standard 3 is not being met, due to biotic integrity placed in the “moderate” category, specifically (attribute #16) Invasive plants. (See Appendix VI for a more detailed discussion on shrub treatments) This was the 2009 conclusion.

Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.

Criteria for meeting Standard 1:

- composition
- structure
- distribution

## 5.2 East and West Spear

Table 17. Attribute rating for soil and site stability, 2009 (East and West Spear<sup>1</sup>).

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 | 9                           |                         |
|                |                              |                 | 8                           |                         |
|                |                              |                 | 5                           |                         |
|                |                              |                 | 4                           |                         |
|                |                              |                 | 3                           |                         |
|                |                              |                 | 2                           | 11                      |
|                |                              |                 | 1                           | 6                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

<sup>1</sup> Approximate GPS location 12S 05973571 UTM 3634005

**Soil and Site Stability was placed in the “slight to moderate” category.** No recent rill formation. Water flow patterns were short and stable. Pedestal and terracettes were rare with some evidence due to water flow. Bare ground was within the range of 10 -80% (NRCS Site Guide) and therefore could have possibly been placed in the none to slight category. Neither wind-scoured blowouts nor compaction layers were observed. Litter movement was only slightly more than expected for the site, with most litter uniformly distributed (in place). Soil surface resistance to erosion / soil surface loss or degradation was slight to moderate due the surface armored with rocks, albeit some soil loss has occurred.

Table 18. Attribute rating for hydrologic function, 2009 (East and West Spear).

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 | 14                          |                         |
|                |                              |                 | 9                           |                         |
|                |                              |                 | 8                           |                         |
|                |                              |                 | 7                           |                         |
|                |                              |                 | 6                           |                         |
|                |                              |                 | 5                           |                         |
|                |                              |                 | 4                           |                         |
|                |                              |                 | 3                           |                         |
|                |                              |                 | 2                           |                         |
|                |                              | 10              | 1                           | 11                      |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Hydrologic Function was placed in the “slight to moderate” category.** See Soil and Site Stability for categories 1-5, 6, 8,9 and 11. Litter amount was within the range of 1 -20% (NRCS Site Guide), therefore placed in the slight to moderate category.

Indicator #10 (plant community composition and distribution relative to infiltration and runoff) was placed in the moderate category (although a case was made to place it in Slight to Moderate category).

It was felt that a change in the plant community (increase in grasses) could increase infiltration. Annual plants do provide good ground cover when favorable moisture occurs.

Table 19. Attribute rating for biotic integrity (East and West Spear).

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 | 17                          |                         |
|                |                              |                 | 14                          |                         |
|                |                              |                 | 13                          |                         |
|                |                              | 16              | 9                           | 15                      |
|                |                              | 12              | 8                           | 11                      |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Biotic Integrity was placed in the “slight to moderate” category.** Functional/structural (indicator #12) was between slight to moderate and moderate. The amount of creosote (%cover) was dominant yet within the HCPC (historical climax plant community). Invasive plants, creosote, (indicator #16) was moderate (scattered throughout the site), but native and included in the HCPC. Indicator #15 (annual production) exceeded the site guides (200 pounds per acre, representative value). Indicator #17 (reproduction capability of perennial plants) was only slightly limited due to recent drought.

Table 20. Attribute rating for soil and site stability (West Spear, Goodman, Robert L. Porter<sup>1</sup> and Arthun; 4-18-2013 Goodman, Wells and Arthun 4-22-2013)

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             | 11                      |
|                |                              |                 |                             | 9                       |
|                |                              |                 |                             | 8                       |
|                |                              |                 |                             | 7                       |
|                |                              |                 |                             | 6                       |
|                |                              |                 |                             | 5                       |
|                |                              |                 |                             | 3                       |
|                |                              |                 |                             | 2                       |
|                |                              |                 | 4                           | 1                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

<sup>1</sup> Volunteer, Editor: Gila Watershed Partnership of Arizona, PE (Professional Engineer).

Soil and Site Stability was placed in the “None to Slight” category.

Table 21. Attribute rating for hydrologic function West Spear, Goodman, Porter and Arthun; 4-18-2013; Goodman, Wells and Arthun 4-22-2013))

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             | 14                      |
|                |                              |                 |                             | 11                      |
|                |                              |                 |                             | 9                       |
|                |                              |                 |                             | 8                       |
|                |                              |                 |                             | 5                       |
|                |                              |                 |                             | 4                       |
|                |                              |                 |                             | 3                       |
|                |                              |                 |                             | 2                       |
|                |                              |                 | 10                          | 1                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Soil Data:**

West Spear (Hap Soil Series) GPS: 596721 / 3634085. 4-15-2013

0-1” = non-effervescent, sandy loam, 7.5 YR 5/6

1-4” = non-effervescent, clay loam, 5 YR 3/4

4-8” = non-effervescent, clay loam, 5 YR 4/6

Table 22. Soil stability test (surface 2-3 mm, interspace and canopy)

| Position | Interspace | Canopy Cover |
|----------|------------|--------------|
| 1        | 1          | 6            |
| 2        | 1          | 6            |
| 3        | 1          | 6            |
| 4        | 1          | 6            |
| 5        | 2          | 6            |
| 6        | 1          | 5            |
| 7        | 2          | 5            |
| 8        | 5          | 6            |
| 9        | 4          | 6            |
| Average  | 1.56       | 5.78         |

Overall average = 3.67

Reference Sheet for Sandy Loam Upland 8-12” (R041XB215AZ), Indicator # 8 soil surface resistance to erosion (stability values are averages – most sites will show a range of values).

Averages value for soil slake test value from areas without canopy cover were 2-3 with canopy values ranging from 4-6.

**Hydrologic Function was placed in the “None to Slight” category.**

Table 23. Attribute rating for biotic integrity (West Spear, Goodman, Porter and Arthun; 4-18-2013; Goodman, Wells and Arthun 4-22-2013)

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             |                         |
|                |                              |                 |                             | 17                      |
|                |                              |                 |                             | 16                      |
|                |                              |                 |                             | 15                      |
|                |                              |                 |                             | 14                      |
|                |                              |                 |                             | 13                      |
|                |                              |                 |                             | 11                      |
|                |                              |                 |                             | 9                       |
|                | 12                           |                 | (17)                        | 8                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Biotic Integrity was placed in the “None to Slight” category.**

Table 24. Attribute rating for soil and site stability (East Spear, Goodman, Wells and Arthun 4-22-2013)

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             |                         |
|                |                              |                 |                             |                         |
|                |                              |                 |                             | 11                      |
|                |                              |                 |                             | 9                       |
|                |                              |                 |                             | 8                       |
|                |                              |                 |                             | 6                       |
|                |                              |                 | 7                           | 5                       |
|                |                              |                 | 3                           | 4                       |
|                |                              |                 | 1                           | 2                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Soil and Site Stability was placed in the “none to slight” category.** Some rills were observed but no recent formations. Slight pedestalling. Litter was being displaced but only small size classes.

Table 25. Attribute rating for hydrologic function East Spear, Goodman, Wells and Arthun 4-22-2013))

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             |                         |
|                |                              |                 |                             |                         |
|                |                              |                 |                             | 14                      |
|                |                              |                 |                             | 11                      |
|                |                              |                 |                             | 10                      |
|                |                              |                 |                             | 9                       |
|                |                              |                 |                             | 8                       |
|                |                              |                 |                             | 5                       |
|                |                              |                 | 3                           | 4                       |
|                |                              |                 | 1                           | 2                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Hydrologic Function was placed in the “None to Slight” category.**

**Soil Data:**

East Spear (Whitlock / *Tres Hermanos*) 4-16-2013

0-1” = violently -effervescent, sandy loam, 10 YR 6/4

1-6” = violently -effervescent, loam, 10 YR 6/4

4-8” = violently-effervescent, loam, 10 YR 7/3

Table 26. Soil stability test (surface 2-3 mm, interspace and canopy)

| Position | Interspace | Canopy Cover |
|----------|------------|--------------|
| 1        | 1          | 6            |
| 2        | 2          | 6            |
| 3        | 2          | 6            |
| 4        | 1          | 6            |
| 5        | 1          | 2            |
| 6        | 1          | 6            |
| 7        | 1          |              |
| 8        | 1          |              |
| 9        | 6          |              |
| Average  | 1.78       | 5.33         |

Overall average = 3.56

Reference Sheet for Limy Upland 8-12” (R041XB208AZ), Indicator # 8 soil surface resistance to erosion (stability values are averages – most sites will show a range of values). Averages value for soils slake test value is 3. Average for areas without canopy cover is 2 and average values from areas with creosote canopy are 4.3.

Table 27. Attribute rating for biotic integrity( East Spear, Goodman, Wells and Arthun 4-22-2013)

|                |                              |                 |                             |                         |
|----------------|------------------------------|-----------------|-----------------------------|-------------------------|
|                |                              |                 |                             |                         |
|                |                              |                 |                             | 16                      |
|                |                              |                 |                             | 15                      |
|                |                              |                 |                             | 14                      |
|                |                              |                 |                             | 13                      |
|                |                              |                 |                             | 12                      |
|                |                              |                 |                             | 11                      |
|                |                              |                 |                             | 9                       |
|                |                              |                 | 17                          | 8                       |
| E<br>(Extreme) | M-E<br>(Moderate to Extreme) | M<br>(Moderate) | S-M<br>(Slight to Moderate) | N-S<br>(None to Slight) |

**Biotic Integrity was placed in the “None to Slight” category.**

### 5.2.1 Standard 1. Upland Sites

The criteria for Standard 1 are being met.

Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform (ecological site).

In order to better understand the soils and watershed health, upland health assessments was conducted on East and West Spear Allotments. Soil/site stability, hydrologic functions and biotic integrity were evaluated to help determine a rating (departure from ecological site potential) for each site. A “*preponderance of evidence*” approach is used to select the appropriate departure category for each attribute.

Criteria for meeting Standard 1:

#### Ground Cover

- litter
- live vegetation

#### Erosion

- flow patterns
- gullies
- rills
- plant pedestaling

Guidelines:

1-1. Management activities that will maintain or promote ground cover that will provide for infiltration, permeability, soil moisture storage and soil stability appropriate for the ecological sites within management units.

1-2. When grazing practices alone are not likely to restore areas of low infiltration or permeability, land management treatments may be designed and implemented to attain improvement.

### 5.2.2 Standard 2: Riparian-Wetland Sites

There are no riparian areas on East and West Spear Allotments. Therefore, Standard 2 is being met.

### 5.2.3 Standard 3: Desired Resource Conditions

Standard 3 is being met.

Productive and diverse upland plant communities of native species exist and are maintained.

Figure 9. Landscape view of the Spear Allotment.



Figure 10. Ground cover at Spear Allotment.



#### State and Transition Models:

A **State** by definition includes one or more biological (including soil) communities that occur on a particular ecological site and that are functionally similar with respect to the three attributes. A number of different plant communities may be included in a state (p. 15 Tech Ref. 1734-6). For more detail see Bestelmyer et al. (2002).

Shifts between states are referred to “**transitions**”. Unlike community pathways (within a state), these “threshold” transitions are not reversible by simple altering the intensity or direction of factors that produced the change.

The **Reference State** is the state where the functional capacities represented by soil/site stability, hydrologic function, and biotic integrity are performing at a near optimum level under the natural disturbance regime. This state usually includes more than one community, one of which is

known as the “*historic climax plant community*” (HCPC).

Healthy ecosystems generally allow various communities to fluctuate over time within a state. Transitions rarely occur in response to the natural disturbance regime. However, resistance and resilience alone are insufficient criteria for healthy ecosystems: degraded systems are often highly resistant to change.  
p. 16 Tech Ref. 1734-6).

## 6.0 Conclusions

The Sandy Loam Upland 8-12” p.z. (R041XB215AZ) may be the best representative Ecological Site Description for the White House Allotment (Appendix IX). RHA evaluation revealed the dominance of mesquite, signaling the transition to the *mesquite, annuals community* from the *native grass / shrub-land community*. Saltbush, however, is still well represented and Lehmann’s lovegrass (*Eragrostis lehmanniana*) is fortunately still absent. The Ecological Site Description recommends [suggests] these actions to transition back to the HCPC:

1. Seeding or planting of native grasses
2. Herbicide treatment of annuals
3. Ripping, contouring

The Sandy Loam Upland 8-12” p.z. should have production levels <sup>1</sup> (pounds per acre) of 275 for grass, 100 for shrubs, and 40 for forbs. Monitoring data and RHA evaluation did not indicate grass production at these levels; with most of production coming from shrubs. Sundt (2005) reported heavy browsing of four wing saltbush (*Atriplex canescens*).

The White House and Spear Allotments are located on a fan terrace of mixed alluvium and colluvium. Upland Ecological Sites include Sandy Loam Upland, Limy Upland and Sandy Bottom, Loamy. Soil series are Tres Hermanos, Pinaleno, Whitlock, Sonoita, Bucklebar, Comoro and Santo Tomas. Inconstant precipitation (less than 10”) is influenced by a rain shadow effect of the Santa Teresa Mountains (winter) and the Pinaleno Mountains (summer), (personal communication, Larry Humphrey). These precipitation patterns put the White House and Spear Allotments at the margins in terms of employing fire, rooting, plowing, seeding or herbicide application (Appendix 22) as viable management options.

The Ecological Site Description, Limy Upland 8-12” p.z. (R041XB208AZ), had no Recommendations to transition back to the HCPC.

NRCS Ecological Site Descriptions did not have Reference Sheets and *relic areas* are not known to exist making it difficult to have a frame of reference. Monitoring data provide good ground cover and species present but does not provide trend.

April 2013.

1. The NRCS Sandy Loam Upland 8-12” p.z. (R041XB215AZ) Ecological Site Guide with approved Reference Sheet (4-2-2013) does not include the State and Transition flow chart p. 5 (see Appendix\_) as in previous editions.
2. The White House and Spear Allotments are primarily a shrub-annual plant community within the sandy loam and limy upland ecological sites.
3. Previous efforts (mechanical and chemical) to increase grass production have not succeeded. Fire seems unlikely as a major factor in plant succession. Comments from a fire ecologist requested. R.J. Estes.
4. Existing data suggests a shrub-annual plant community has adapted to the specific conditions existing on the White House and Spear Allotments.
5. Nonnative invasive species are absent (a few isolated tamarisk)
6. Livestock diets vary. Shrubs and annuals are the primary forage base.
7. Desired Future Condition? Don’t do anything.

*The terminus a quo is the terminus ad quem.*

<sup>1</sup> Annual production is the net quantity of above –ground vascular plant material produced within a year. It is an indicator of the energy captured by plants and its availability for secondary consumers in an ecosystem given current weather conditions (U.S. Department of Interior, Bureau of Land Management. 2005. Interpreting indicators of rangeland health. Technical Reference 1734-6).

## 7.0 Recommendations

### Grazing System:

White House Allotment employs a five-pasture<sup>1</sup> best pasture grazing system established in 1982 under the Allotment Management Plan (AMP). The Best Pasture grazing system attempts to match cattle movements with irregular precipitation patterns and associated forage production without regard to rigid rotation. This system allows perennial warm season grasses to rest during the growing season. This approach works well when some of the pastures in the “rotation” contain palatable shrubs (e.g. four wing saltbush) and winter annuals (Howery et al. 2000). Past actual use reports show this practice of rotation. Spear Allotments have used a deferred rotation system and should continue (Appendix VIII). A more orthodox system of scheduled rotation (e.g. Santa Rita) may prove beneficial for the White House Allotment... and is my recommendation.

Issue the White House Allotment a 10-year grazing permits with existing terms and conditions with a modification of the Best Pasture system

## 8.0 Consultation

Permittee(s), interested public, state agencies, and other federal agencies were initiated by a letter on February 25, 2009 with a public meeting invitation on March 25, 2009. On August 3, 2009 the Standard and Guidelines evaluations were sent to the interested parties and comments were received from Western Watersheds Projects. Evaluations were sent out again for comments on June 12, 2012. Comments were received from Western Watersheds Project. Section 7 Consultation occurred on the Gila District Livestock Grazing Program Biological Opinion (BO) for the Safford/Tucson Field Offices' Livestock Grazing Program, Southeastern Arizona (22410-2006-F-0414).

## 9.0 Selected Management Action

Implement the grazing and other management actions identified in 7.0 Recommendations.

### Authorized Officer Concurrence:

- I concur with the conclusions and recommendations as written.
- I do not concur.
- I concur, but with the following modifications.

---

Scott C. Cooke  
Field Office Manager

---

Date

## 10.0 Appendix I. Noxious weeds in Graham, Cochise, and Greenlee Counties.

Table 1. Noxious Weed Species Identified as Present by County<sup>1</sup>

|                 | <b>Noxious Weed Species Identified</b>  |
|-----------------|---|
| Graham County   | Malta starthistle, sweet resinbush, Karoo bush, Saharan mustard, buffelgrass                                |
| Cochise County  | Russian knapweed, Malta starthistle, yellow starthistle, onionweed, Saharan mustard                         |
| Greenlee County | Russian knapweed, Malta starthistle, yellow starthistle, onionweed, whitetop, Saharan mustard, bull thistle |

<sup>1</sup> From Kim McReynolds (University of Arizona).

## 11.0 Appendix II. Soil Data

Table 2. Soil Data<sup>1,5</sup> (L-4).

| Depth  | Color      | Structure <sup>2</sup> | Texture <sup>3</sup> | Effervecent <sup>4</sup> |
|--------|------------|------------------------|----------------------|--------------------------|
| 0-1    | 7.5 YR 5/3 | Mod. Pl thick          | LS                   | NE                       |
| 1-9    | 7.5 YR 5/4 | Mod. SBK fine          | SL                   | NE                       |
| 9-13   | 7.5 YR 5/4 | Weak SBK fine          | SL                   | 1                        |
| 13-25+ | 7.5 YR 5/4 | Weak SBK fine          | L                    | 3                        |

<sup>1</sup> Sundt (2005).

<sup>2</sup> M = moderate, W = weak, Pl = platy, SB = subangular blocky

<sup>3</sup> S = sand, C = clay, L = loam, Si = silt

<sup>4</sup> 1= weak, 2= moderate, 3= strong, NE= non-effervescent

<sup>5</sup> Soil Structure: The three general types of soil structure are:

1. Granular ( imperfect spheres, usually sand size)  
Fine (<2 mm) Medium (2-5mm) Coarse (5-10 mm)
2. Blocky (imperfect cubes with angular or rounded edges)  
Very Fine (<5 mm) Fine (5-10 mm) Medium (10-20 mm)
3. Platy (flattened or compressed appearance)  
Thin (<2 mm) Medium (2-5 mm) Thick (5-10mm)

Where:

Weak: Aggregates or peds are barely observable in place in moist soil.

Moderate: Aggregates or peds are moderately well-formed and distinct in place.

Strong: Aggregates or peds are well-formed and very evident in place.

Sandy loam soils have low field capacity<sup>1</sup>. However, in very arid environments sandier soils also allow deeper percolation of the scarce rain, reducing evaporation ( Pete Sundt, personal communication, March, 2008).

<sup>1</sup>The maximum amount of water that a particular soil can hold; the amount of water held in soil after gravitational water is drained.

Table 3. Soil Data<sup>1</sup> (L-5).

| <b>Depth</b> | <b>Color</b> | <b>Structure<sup>2</sup></b> | <b>Texture<sup>3</sup></b> | <b>Effervecent<sup>4</sup></b> |
|--------------|--------------|------------------------------|----------------------------|--------------------------------|
| 0-4          | 10 YR 5/3    | wk                           | FLS                        | NE                             |
| 4-10         | 10 YR 4/3    | wk                           | FSL                        | 1                              |
| 10-18+       | 10 YR 5/3    | wk                           | FSL                        | 1                              |

<sup>1</sup> Sundt (2005).

<sup>2</sup> M = moderate, W = weak, Pl = platy, SB = subangular blocky

<sup>3</sup> S = sand, C = clay, L = loam, Si = silt, F= fine

<sup>4</sup> 1= weak, 2= moderate, 3= strong, NE= non-effervescent

Table 4. Soil data<sup>1</sup> (L-7).

| <b>Depth</b> | <b>Color</b> | <b>Structure<sup>2</sup></b> | <b>Texture<sup>3</sup></b> | <b>Effervecent<sup>4</sup></b> |
|--------------|--------------|------------------------------|----------------------------|--------------------------------|
| 0-1          | 7.5 YR 5/4   | wk platy                     | LS                         | NE                             |
| 1-8          | 5 YR 4/3     | wk sbk                       | SL                         | NE                             |
| 8-14         | 5 YR 4/4     | wk sbk                       | SCL                        | NE                             |
| 14-20+       | 5 YR 5/3     | wk sbk                       | SCL                        | NE                             |

<sup>1</sup> Sundt (2005).

<sup>2</sup> M = moderate, W = weak, Pl = platy, SB = subangular blocky

<sup>3</sup> S = sand, C = clay, L = loam, Si = silt

<sup>4</sup> 1= weak, 2= moderate, 3= strong, NE= non-effervescent

Table 5. Soil data<sup>1</sup> (L-10).

| Depth | Color     | Structure <sup>2</sup> | Texture <sup>3</sup> | Efferecent <sup>4</sup> |
|-------|-----------|------------------------|----------------------|-------------------------|
| 0-3   | 10 YR 6/4 | wk platy               | SL                   | 1                       |
| 3-17  | 10 YR 6/3 | granular               | SCL                  | 3                       |
| 17-24 | 10 YR 5/4 | wk sbk                 | SCL                  | 3                       |

<sup>1</sup> Sundt (2005).

<sup>2</sup> M = moderate, W = weak, Pl = platy, SB = subangular blocky

<sup>3</sup> S = sand, C = clay, L = loam, Si = silt

<sup>4</sup> 1= weak, 2= moderate, 3= strong, NE= non-effervescent

Soil Pit: 12-21-2011(Pima Plots Experimental Site). Larry Humphrey and R.J. Estes

A1 – 0-1” non- effervescent, gravelly sandy loam (15% gravel)

7.5 YR 3/4 (moist), *weak* , platy structure

B21t - 1-5” eff, slight to moderate, clay loam, 10 % gravel, 5YR 4/6 (moist), moderate (Medium?) subangular blocky

B22tk - 5-9” , violently effervescent, clay gravelly loam, gravel-lime coated – 20%), 5 YR 4/6 (moist)

B23tk - 9-12” , violently effervescent, very gravelly clay loam, 50 % gravel 5 YR 7/3

Ckm- 12 + “ Indurated Calcic Pan, violently effervescent, with laminar surface 5 YR 7/3.

Limy Upland Tres Hermanos Series, Aridisol, est. 1942.

Over time: top soil removed ----- time-----→ sandy-loam (calcic) accumulation (from mountains) – eroded ----→ sandy-loam (non-calcic) A1 Horizon now over Tres Hermanos Series.

Tres hermanos

The sandy loam soil originated from the Penaleno Mountains and would be granitic.

White House Soil Pit with Randy Norton (U. of A. Soil Scientist)

28 August 2012

Two pits dug.

GPS: 592856 / 3642204

Pit # 1:

0-12" Sandy Loam, violently effervescent

12- 20" Sandy Loam, violently effervescent

Pit # 2:

0 – 12" Sandy Loam, violently effervescent

12 – 20" Loamy Sand, violently effervescent

20 -30" Loamy Sand, violently effervescent

Profiles were hard to distinguish

## 12.0 Appendix III. Monitoring data.

Table 6. Ground cover (L-4)<sup>1</sup>.

|                     | 2005 <sup>2</sup> | 2006 <sup>3</sup> | 2013 |
|---------------------|-------------------|-------------------|------|
| Bare Ground         | 51                | 36                | 77   |
| Litter <sup>4</sup> | 37                | 44                | 20   |
| Rock (>3")          | 0.0               | 0.0               | 1    |
| Gravel(.2 – 3")     |                   | 14                | 2    |
| Vegetative Base     | 1                 | 6                 | 1    |

<sup>1</sup> Pace frequency.

<sup>2</sup> Sundt

<sup>3</sup> University of Arizona

<sup>4</sup> Persistent and non-persistent litter.

Table 7. Frequency (L-4)<sup>1</sup>.

|                          | 2005 <sup>2</sup> | 2006 <sup>3</sup> | 2013           |
|--------------------------|-------------------|-------------------|----------------|
| Saltbush <sup>4</sup>    | 9                 | 12 <sup>5</sup>   | 0              |
| Mesquite (Prosopis spp.) | 5.5               | 7.5 <sup>5</sup>  | 7 <sup>5</sup> |
| Wolfberry (Lycium spp.)  |                   | 1.0 <sup>5</sup>  | 7 <sup>5</sup> |
|                          |                   |                   |                |

<sup>1</sup> Pace frequency.

<sup>2</sup> Sundt

<sup>3</sup> University of Arizona

<sup>4</sup> Sundt (*Atriplex polycarpa*); University of Arizona (*Atriplex canescens*)

<sup>5</sup> Base and canopy.

Sundt comments: Heavy browse of *Atriplex canescens*.

Table 8. Composition (%) from dry weight rank (L-4).

|   | 2005 <sup>1</sup> | 2006 <sup>2</sup> | 2013               |
|---|-------------------|-------------------|--------------------|
| Blue grama ( <i>Bouteloua gracilis</i> )        |                   | 1                 |                    |
| Spurge  |                   | 69.67             |                    |
| Creosote ( <i>Larrea tridentata</i> )           |                   | 5.65              | 18.28              |
| Mesquite ( <i>Prosopis</i> spp.)                | 10.7              | 12.88             | 17.65              |
| Fourwing saltbush ( <i>Atriplex canescens</i> ) | 12.6              | 6.84              |                    |
| Ladi ( <i>Lagophylla dichotoma</i> ?)           | 15.8              |                   |                    |
| Zinnia ( <i>Zinnia</i> spp.)                    | 6.32              |                   |                    |
| Cattle saltbush ( <i>Atriplex polycarpa</i> )   | 6.32              |                   | 26.62 <sup>3</sup> |

<sup>1</sup> Sundt

<sup>2</sup> University of Arizona

<sup>3</sup> Unknown saltbush

Table 9. Ground cover (L-5)<sup>1</sup>.

|                     | 2005 <sup>2</sup> | 2006 <sup>3</sup> | 2013 |
|---------------------|-------------------|-------------------|------|
| Bare Ground         | 46                | 49                | 64   |
| Litter <sup>4</sup> | 35                | 24                | 33   |
| Rock (>3")          |                   | 0.0               |      |
| Gravel(.2 – 3")     | 1.5 <sup>5</sup>  | 25                | 3    |
| Vegetative Base     | 0.0               | 2.5               | 1    |

<sup>1</sup> Pace frequency.

<sup>2</sup> Sundt

<sup>3</sup> University of Arizona

<sup>4</sup> Persistent and non-persistent litter.

<sup>5</sup> Gravel/stone

Table 10. Frequency (L-5)<sup>1</sup>.

|                                | 2005 <sup>2</sup> | 2006 <sup>3</sup> | 2013            |
|--------------------------------|-------------------|-------------------|-----------------|
| Saltbush <sup>4</sup>          | 6.5               | 1.5 <sup>5</sup>  | 0               |
| Mesquite (Prosopis spp.)       | 14                | 12 <sup>5</sup>   | 16 <sup>5</sup> |
| Whitethorn (Acacia constricta) | 7                 | 1.5 <sup>5</sup>  | 14 <sup>5</sup> |
| Larrea                         |                   | 4 <sup>5</sup>    | 8 <sup>5</sup>  |
| Acacia greggii                 |                   | 3 <sup>5</sup>    | 8 <sup>5</sup>  |
| Lycium                         |                   | 0                 | 3               |
| Annual forbs                   |                   | 27                | 27              |
| Annual grass                   |                   | 10                | 35              |

<sup>1</sup> Pace frequency.

<sup>2</sup> Sundt

<sup>3</sup> University of Arizona

<sup>4</sup> Sundt (Atriplex canescens); University of Arizona (Atriplex confertifolia)

<sup>5</sup> Base and canopy.

Table 11. Composition (%) from dry weight rank (L-5).

|                                     | 2005 <sup>1</sup> | 2006 <sup>2</sup> | 2013  |
|-------------------------------------|-------------------|-------------------|-------|
| Whitethorn (Acacia constricta)      | 11                | 25.45             | 27.39 |
| Catclaw (Acacia greggii)            | 1.2               | 9.09              | 16.2  |
| Creosote (Larrea tridentata)        | 10.91             | 12.73             | 15.11 |
| Mesquite (Prosopis spp.)            | 24.7              | 43.64             | 33.59 |
| Shadescale (Atriplex confertifolia) | 7.5               | 5.45              |       |

<sup>1</sup> Sundt

<sup>2</sup> University of Arizona

Monitoring Site L-5.

This site was monitored by Sundt (2005) and U. of Arizona (2006). The Soil Survey classifies this as a Sandy Bottom 7-12” Ecological Site with Santo Tomas and Comoro Soils Series. This site has deep well drained soils on flood plains, alluvial fans, and stream channels.

A RHA was not completed near this site. Ephemeral streams on the White House Allotment have not been addressed but need to be studied. Ephemeral streams (arroyos) are inherently unstable streams of semiarid regions. These streams are sensitive to short-term climatic changes, and to human impacts. Discontinuous ephemeral streams appear to be constantly changing as they alternate between two primary modes of operation; either aggradation or degradation (Bull 1997). Cross-section measurements would provide a good starting point (base line). Safford BLM has experience collecting cross-section data. This data should contribute to local insight much like the follow up work completed on shrub control. For an extensive review on arroyo formation in the American Southwest the reader is referred to Webb & Hereford (2010).

Table 12. Ground cover (L-7)<sup>1</sup>.

|                     | 2005 <sup>2</sup> | 2006 <sup>3</sup> | 2013 |
|---------------------|-------------------|-------------------|------|
| Bare Ground         | 50.5              | 30.5              | 75   |
| Litter <sup>4</sup> | 37                | 37.5              | 18   |
| Rock (>3”)          |                   | 0.5               |      |
| Gravel(.2 – 3”)     | 7.5 <sup>5</sup>  | 24                | 7    |
| Vegetative Base     |                   | 7.5               | 1    |

<sup>1</sup> Pace frequency.

<sup>2</sup> Sundt

<sup>3</sup> University of Arizona

<sup>4</sup> Persistent and non-persistent litter.

<sup>5</sup> Gravel/stone

Table 13. Frequency (L-7)<sup>1</sup>.

|                                  | 2005 <sup>2</sup> | 2006 <sup>3</sup> | 2013            |
|----------------------------------|-------------------|-------------------|-----------------|
| Mesquite ( <i>Prosopis</i> spp.) | 6                 | 9 <sup>4</sup>    | 13 <sup>4</sup> |
| Wolfberry ( <i>Lycium</i> spp.)  | 2                 | 2 <sup>4</sup>    | 4               |

<sup>1</sup> Pace frequency.

<sup>2</sup> Sundt

<sup>3</sup> University of Arizona

<sup>4</sup> Base and canopy.

Table 14. Composition (%) from dry weight rank (L-7).

|   | 2005 <sup>1</sup> | 2006 <sup>2</sup> | 2013  |
|---|-------------------|-------------------|-------|
| Whitethorn acacia ( <i>Acacia constricta</i> )              | 7.6               | 1.7               | 4.69  |
| Tobosa <sup>3</sup> ( <i>Pleuraphis mutica</i> )            |                   | 0.9               |       |
| Spurge ( <i>Trianthema portulacastrum</i> )                 |                   | 73.1              |       |
| Mesquite ( <i>Prosopis</i> spp.)                            | 16.8              | 14.2              | 36.09 |
| Wolfberry ( <i>Lycium</i> spp.)                             | 7.3               | 3.2               | 10.62 |
| Burroweed ( <i>Isocoma</i> <sup>4</sup> <i>tenuisecta</i> ) |                   | 5.2               | 33.91 |
| Iste ( <i>Isocoma tenuisecta</i> )                          | 57.55             |                   |       |
| Palmella ( <i>Yucca elata</i> )                             | 3.77              |                   |       |
| Bush Muhly ( <i>Muhlenbergia porteri</i> )                  | 1.3               |                   |       |

<sup>1</sup> Sundt

<sup>2</sup> University of Arizona

<sup>3</sup> *Hilaria mutica*

<sup>4</sup> *Haplopappus*

Table 15. Ground cover (L-10)<sup>1</sup>.

|                     | 2005 <sup>2</sup> | 2006 <sup>3</sup> | 2013 |
|---------------------|-------------------|-------------------|------|
| Bare Ground         | 24.5              | 18.8              | 19   |
| Litter <sup>4</sup> | 22                | 5.0               | 7    |
| Rock (>3")          |                   | 18.3              | 19   |
| Gravel(.2 – 3")     | 37.5 <sup>5</sup> | 56.9              | 55   |
| Vegetative Base     |                   | 1.0               | 1    |

<sup>1</sup> Pace frequency.

<sup>2</sup> Sundt

<sup>3</sup> University of Arizona

<sup>4</sup> Persistent and non-persistent litter

<sup>5</sup> Gravel/stone

Table 16. Frequency (L-10)<sup>1</sup>.

|   | 2005 <sup>2</sup> | 2006 <sup>3</sup> | 2013 |
|---|-------------------|-------------------|------|
| Tobosa <sup>5</sup> ( <i>Pleuraphis mutica</i> )      | 22                | 27.7 <sup>4</sup> | 28   |
| Shadescale saltbush ( <i>Atriplex confertifolia</i> ) | 1.5               | 1.5 <sup>4</sup>  | 1    |
| Creosote ( <i>Larrea tridentata</i> )                 | 10                | 5.9 <sup>4</sup>  | 3    |
| Annual Forbs  |                   | 67                | 34   |
| Annual grass  |                   | 11                | 40   |

<sup>1</sup> Pace frequency.

<sup>2</sup> Sundt

<sup>3</sup> University of Arizona

<sup>4</sup> Base and canopy.

<sup>5</sup> *Hilaria mutica*

Table 17. Composition (%) from dry weight rank (L-10).

|   | 2005 <sup>1</sup> | 2006 <sup>2</sup> | 2013  |
|---|-------------------|-------------------|-------|
| Fluffgrass ( <i>Dasyochloa pulchella</i> )            |                   | 10.57             |       |
| Tobosa <sup>3</sup> ( <i>Pleuraphis mutica</i> )      | 75.08             | 69.43             | 83.94 |
| Shadescale saltbush ( <i>Atriplex confertifolia</i> ) | 2.95              | 3.86              | 3.03  |
| Creosote ( <i>Larrea tridentata</i> )                 |                   | 14.29             | 6.06  |
| Prickly pear ( <i>Opuntia</i> spp.)                   | 4.4               | 1.71              |       |
| Ladi ( <i>Lagophylla dichotoma</i> ?)                 | 9.18              |                   |       |

<sup>1</sup> Sundt

<sup>2</sup> University of Arizona

<sup>3</sup> *Hilaria mutica*

Figure 1. White House Allotment (near L-9 & L-10), looking south.



Table 18. Monitoring data (2005), White House (Sundt).

| Site | Date       | Photo | Cover <sup>1</sup> | Frequency | DWR <sup>2</sup> | Fetch <sup>3</sup> |
|------|------------|-------|--------------------|-----------|------------------|--------------------|
| L-4  | 08-26-2005 | Y     | Y                  | Y         | Y                | Y                  |
| L-5  | 08-29-2005 | Y     | Y                  | Y         | Y                | Y                  |
| L-7  | 08-26-2005 | Y     | Y                  | Y         | Y                | Y                  |
| L-9  | 08-29-2005 | Y     | Y                  | Y         | Y                | Y                  |
| L-10 | 08-29-2005 | Y     | Y                  | Y         | Y                | Y                  |

<sup>1</sup>Point Cover (ground cover).

<sup>2</sup>Dry Weight Rank, observer only ranks the three species which contribute the highest percentage of the biomass in the quadrat.

<sup>3</sup>Fetch is the distance from the nearest perennial plant base within 360 degrees of the quadrat point.

Table 19. Monitoring data (2007), White House Allotment (University of Arizona).

| Site | Date       | Photo | Cover <sup>1</sup> | Frequency | DWR <sup>2</sup> | Fetch <sup>3</sup> |
|------|------------|-------|--------------------|-----------|------------------|--------------------|
| L-4  | 08-28-2006 | Y     | Y                  | Y         | Y                | Y                  |
| L-5  | 08-04-2006 | Y     | Y                  | Y         | Y                | Y                  |
| L-7  | 08-28-2006 | Y     | Y                  | Y         | Y                | Y                  |
| L-8  | 07-21-2006 | Y     | Y                  | Y         | Y                | Y                  |
| L-10 | 08-04-2006 |       |                    |           |                  |                    |

<sup>1</sup>Point Cover (ground cover), (McReynolds et al. 2006).

<sup>2</sup>Dry Weight Rank, observer only ranks the three species which contribute the highest percentage of the biomass in the quadrat.

<sup>3</sup>Fetch is the distance from the nearest perennial plant base within 360 degrees of the quadrat point.

### 13.0 Appendix IV. Stocking Rate.

Stocking rate is defined by the Society for Range Management as the amount of land allocated to each animal unit for the grazable period of the year. Holechek (1988) viewed numerous stocking rate studies and found a harvest coefficient<sup>1</sup> of 35% was suitable for semi-arid rangelands. However, after reviewing available research these authors feel a 25% harvest coefficient (25% of the forage to livestock, 25% to wildlife and natural disappearance and 50% for site protection) is a sound idea for most western rangelands ( Galt et al. 2000). This was also recommended for Australian rangelands ( Johnston et al. 1996). In summary Galt et al. (2000) felt the 25% harvest coefficient allows both forage species and livestock to maximize their productivity, allows for error in forage production estimates, greatly reduces problems from buying and selling livestock, reduces the risk of financial ruin during drought years, and promotes multiple use values. Unused forage in wet years provides a reserve of forage for drought and increases plant vigor and soil water infiltration.

<sup>1</sup> Harvest coefficient is the percentage of total forage produced that is assigned to grazing animals for consumption.

New Mexico research shows conservative (35% use of primary forage species) stocked rangelands produced nearly 50% more forage than moderate (43% use of primary forage species) stocked rangelands in drought years. Conservative stocking is a term commonly used by range researchers to define a level of grazing between light and moderate, generally involving about 35% use of forage (Holechek et al.2001).

Stocking rate on White House Allotment:

22,263 acres, 117 AU, with 1362 AUMs

$22,263/117 = 190$  acres per AU

900 pound cow @ .02 body weight = 18 pounds per day (365) = 6570 pounds per year

$6570 \text{ pounds}/190 \text{ acres} = 35$  pounds per acre

$22,263/640 \text{ acre/section} = 34$  sections

$117(\text{AU})/34(\text{sections}) = 3.44$  sections per AU

$35 \text{ pounds per acre}/.25 = 140$  pounds per year biomass/year/acre

$35 \text{ pounds per acre}/.40 = 88$  pounds per year biomass/year/acre

A 1300 pound brood cow @ .02 intake would require 200 pounds per year biomass per acre vs. 140 pounds. The Sandy Loam Upland has a range from 217 pounds (low) to 1065 pounds (high) with the representative value at 450 pounds.

Based on BLM guidelines, current stocking rates are reasonable.

#### 14.0 Appendix V. White House Allotment Dietary Study (Seasonal Patterns by Lifeforms).

University of Arizona scientists Phil Ogden and Lamar Smith conducted dietary studies on Van Gausig, Creosote and White House Allotments from June to October 1979. White House Allotment results are presented here.

“June [sic] diet at Brimhall Well was mostly Atriplex and annual grasses but in July the grasses dropped out and Erodium increased greatly, with shrubs about evenly split between Atriplex and Prosopis. Whether these shifts represent cattle preference or whether cattle were forced to move farther out into different vegetation is not known. In August cattle were eating mainly Ambrosia, Haplopappus heterophyllus and Prosopis. By September, Atriplex and Prosopis dominated the diet, with some increase in Acacia constricta in October”.

Table 20 . Cattle dietary study results.

| June                 | July                        | August                       | October                        |
|----------------------|-----------------------------|------------------------------|--------------------------------|
| <i>Atriplex</i> spp. | <i>Erodium</i> <sup>1</sup> | <i>Ambrosia</i> <sup>2</sup> | whitethorn acacia <sup>3</sup> |
| Annual grasses       | <i>Atriplex</i> spp.        | <i>Prosopis</i>              |                                |
|                      | <i>Prosopis</i> spp.        |                              |                                |

<sup>1</sup> Filaree: Introduced winter annual or biennial.

<sup>2</sup> *Haplopappus heterophyllus*: annual forb, native, chicura.

<sup>3</sup> *Acacia constricta*

In this study perennial grasses were not a measurable portion of the diet, indicating livestock are maintained by browse, annual grasses, and forbs, with browse the primary forage.

These researchers have confirmed locally what is known generally about cattle use of browse species. Krysl et al. (1984), working in Wyoming, found cattle consumed from 28 to 36% of the diet as browse in the summer and 33 to 34% as browse in the winter. Dominant shrubs consumed were winterfat, fourwing saltbush, and gray horsebrush. Arthun et al. (1992) reported shrub diets (fourwing and mountain mahogany) at 62%.

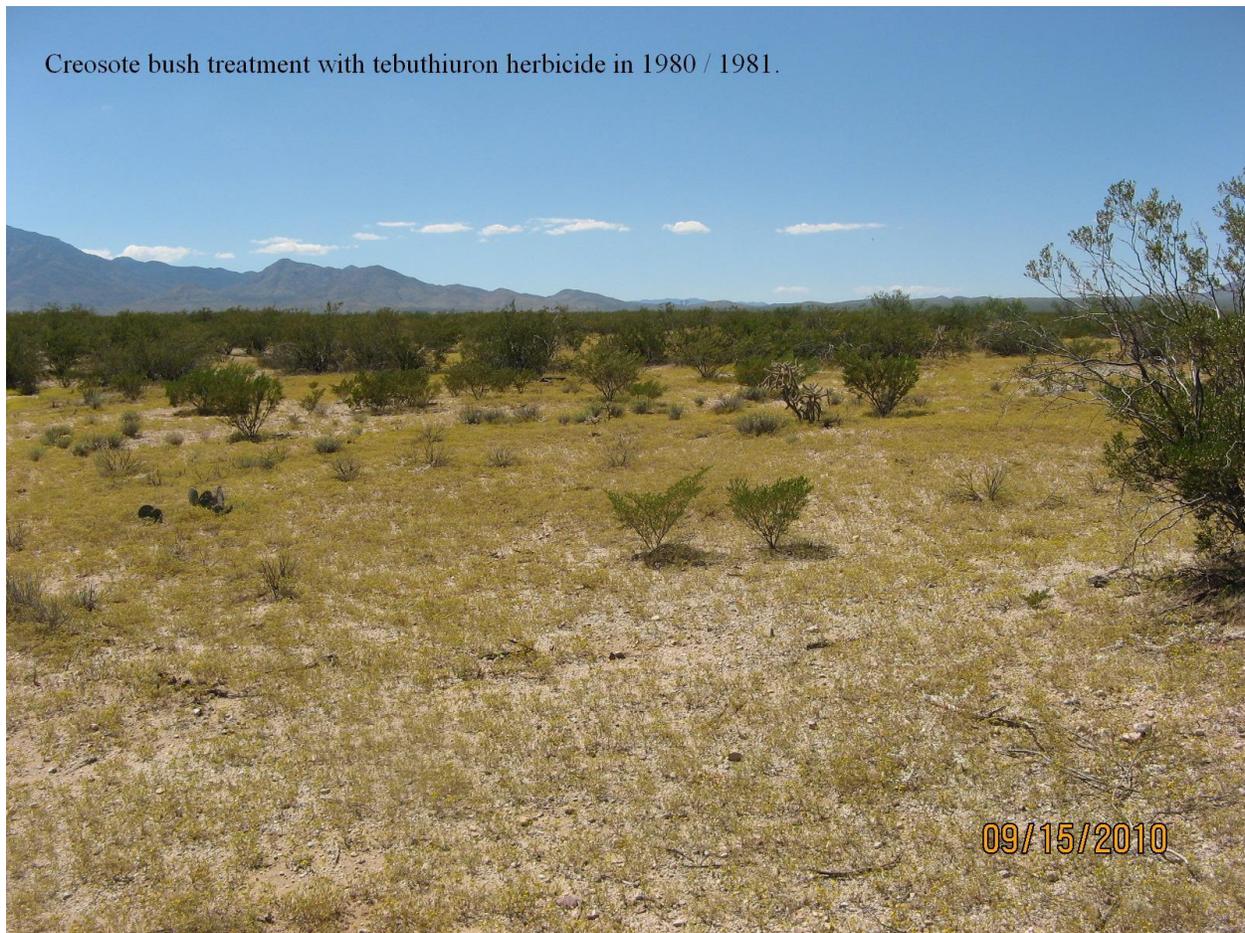
Since shrubs store food in the stems as well as the roots, the portion of the plant available for browsing tends to hold nutritional quality better than do grasses during drought. Following monsoon rains, consumption of browse declined as perennial grasses became more available. During the winter with lesser amounts of grasses being available, the consumption of the diet as browse was greater than 50%. With advancing season and extended time in pastures, livestock will not be able to select a high quality diet when shrubs are browsed more heavily. Data from the Arizona Strip showed crude protein was reduced by 17 and 30% respectively with moderate and heavy use. (Sprinkle et al.2002).

Shrubs like fourwing saltbush and winterfat containing low amounts of harmful secondary compounds and few physical barriers to browsing (such as spines) are highly preferred (Holechek et al.,1990). Whereas creosote and mesquite have higher concentrations of tannins.

Large fluctuations in browse consumption can and does occur, depending upon climatic conditions, growth form and availability of different browse species, and the presence of other forage classes such as winter annuals.

## 15.0 Appendix VI. Shrub Control.

**Figure 2.** Creosote treatment with tebuthiuron herbicide at Pima Plots.



Once a “transition” has occurred between states ( native grass/shrub-land to mesquite, annuals) they are not reversible by simply altering the intensity or direction of factors that produced the change (USDI 2005). The cause of the “transition” may not be clear (see Appendix 22 for a discussion). Herbicide treatment is one suggestion (Ecological Site Description).

The current grazing system and stocking rate will probably not affect or alter the current state in the White House Allotment (mesquite, annuals) or Spear Allotments (creosote/whitethorn acacia, annual grasses and forbs).

Whitehouse and East and West Spear are at the margins in terms of precipitation (less than 10 inches with East and West Spear receiving more with increased elevation). Previous herbicide treatment was applied at Pima Plots enclosure (White House Allotment). This should provide an opportunity to evaluate past results and the potential for any future treatments.

## **16.0 Appendix VII. Potential factors causing state transitions.**

Fredrickson et al. (2006) reviewed the literature on shrub (mesquite) population dynamics and proposed that mesquite in North America was influenced by indigenous peoples and Pleistocene mega fauna. Mesquite was used as a resource and by doing so, exerted significant pressures on mesquite populations that apparently limited or reduced mesquite expansion and dominance. However, another event occurred during this timeframe that further accelerated mesquite expansion. Due to speculative eastern markets and a series of severe winters livestock numbers swelled in the desert southwest in the late 1880s. In addition to increased seed dispersal associated with excessive livestock numbers, overgrazing provided open sites conducive to mesquite establishment.

Based on packrat middens, mesquite was not common north of present day El Paso, Texas until 8000 years ago, suggesting that climate was a dominant factor affecting the expansion of mesquite at regional scales (Van Devender 1990). Bioclimatic change over the last 20,000 years (late Pleistocene to late Holocene) from C3 shrub lands to C4 grasslands to C3 woodlands with increasing aridity favoring the C3 shrubland( 20,000 years of change on piedmont slopes of the Jornada Basin Long-Term Ecological Research site in southern New Mexico (Monger, 2003). With the driest period being middle Holocene approximately 6000 years ago (as cited in Fredrickson et al. (2006).

Desert grasslands experience extended droughts ( e.g. southern New Mexico in the 1930's and 1950's) that caused grassland communities to change to shrublands even where grazing did not occur (Herbel et al. 1972)

Bestelmyer (2006) cautions that uncritical use of classification thresholds may lead to the abandonment of management efforts in land areas that would otherwise benefit from intervention. Antithetically Johnson and Mayeux (1992) believe some shrublands that were once grasslands will not return to grasslands from grazing management alone because of ongoing climatic shift. Conversion of these areas back to grasslands using fire, herbicides, or mechanical means will probably be only temporary because climatic and other environmental forces now favor shrubland (as cited in Holechek et al. 2001).

“The [sic] pale ecological record and the history of the last two centuries of land use are clear. If we manage for the future by trying to recreate communities of the past, most of our efforts will not succeed because the conditions that made those past communities possible no longer exist” (Tausch et al. 1993).

**17.0 Appendix VIII. White House and Spear Allotments Grazing System.**

Planned Grazing Rotation

| Yr   | Pasture      | Jan    | Feb | Mar         | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|--------------|--------|-----|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2008 | Mesquite     |        |     |             |     |     |     |     |     |     |     |     |     |
| 2008 | Company      |        |     |             |     |     |     |     |     |     |     |     |     |
| 2008 | Red Knolls   |        |     |             |     |     |     |     |     |     |     |     |     |
| 2008 | Brimhall     |        |     |             |     |     |     |     |     |     |     |     |     |
| 2008 | Bear Springs | RESTED |     |             |     |     |     |     |     |     |     |     |     |
|      |              |        | =   | Grazing Use |     |     |     |     |     |     |     |     |     |

| Yr   | Pasture   | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2009 | Mesquite  |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Company   |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Red knlls |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Brimhall  |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Bear Spr  |     |     |     |     |     |     |     |     |     |     |     |     |

Green = rest

| Yr   | Pasture   | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2010 | Mesquite  |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Company   |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Red knlls |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Brimhall  |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Bear Spr  |     |     |     |     |     |     |     |     |     |     |     |     |

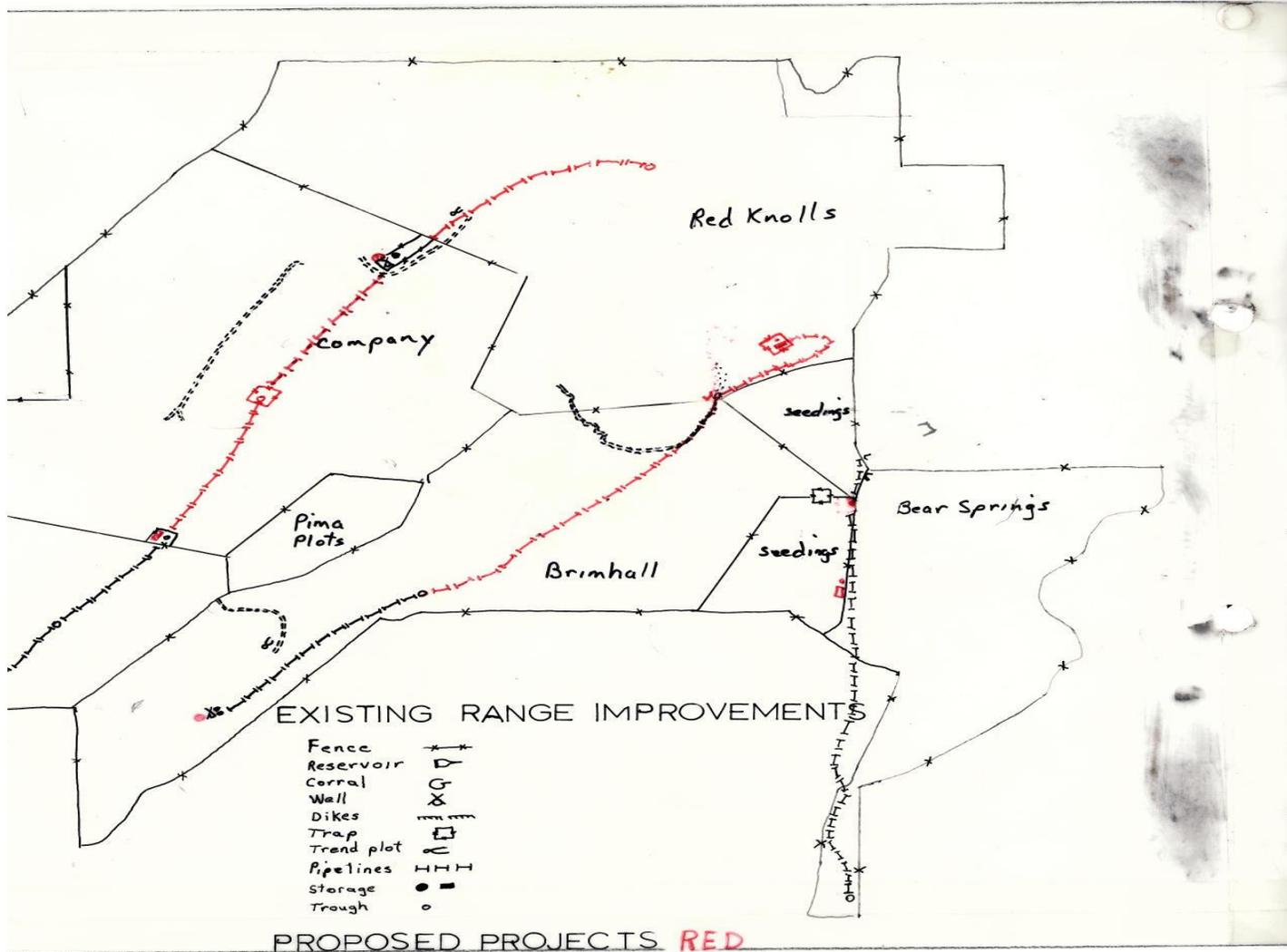
| Yr   | Pasture   | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2011 | Mesquite  |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Company   |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Red knlls |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Brimhall  |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Bear Spr  |     |     |     |     |     |     |     |     |     |     |     |     |

West Spear

| Yr   | Pasture     | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2012 | Deep Well   |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Bear Spring |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Middle Wash |     |     |     |     |     |     |     |     |     |     |     |     |



Figure 4. White House and Spear Allotment Pasture Maps (Mesquite Pasture [unlabeled] is the southwest most pasture, borders Company Pasture).

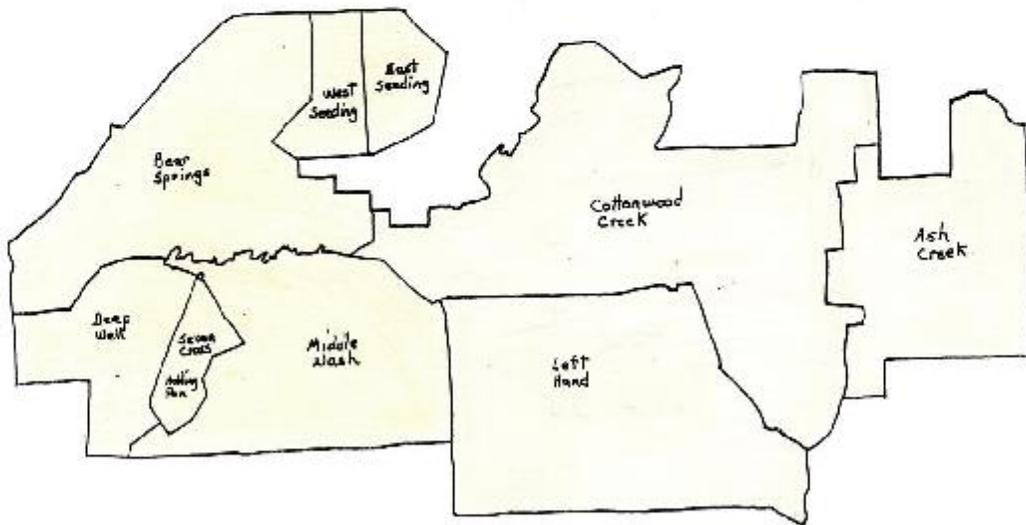


SPEAR RANCH

PASTURE MAP

WEST PORTION

EAST PORTION



## 18.0 Appendix IX. Ecological Sites.

### **ECOLOGICAL SITE CHARACTERISTICS**

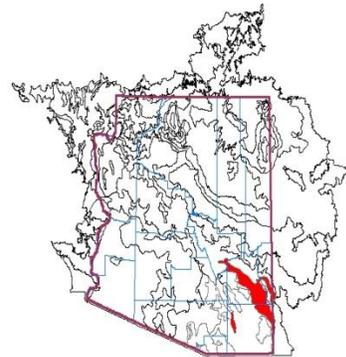
**Site Type:** Rangeland

**Site Name:** Sandy Loam Upland 8-12" p.z.

*Prosopis glandulosa var. torreyana* / *yucca elata* - *ephedra fasciculata* / *muhlenbergia porteri* - *bouteloua eriopoda*  
(honey mesquite / soaptree yucca - desert Mormon tea / bush muhly - black grama)

**Site ID:** R041XB215AZ

**Major Land Resource Area:** 041-Southeastern Arizona Basin and Range

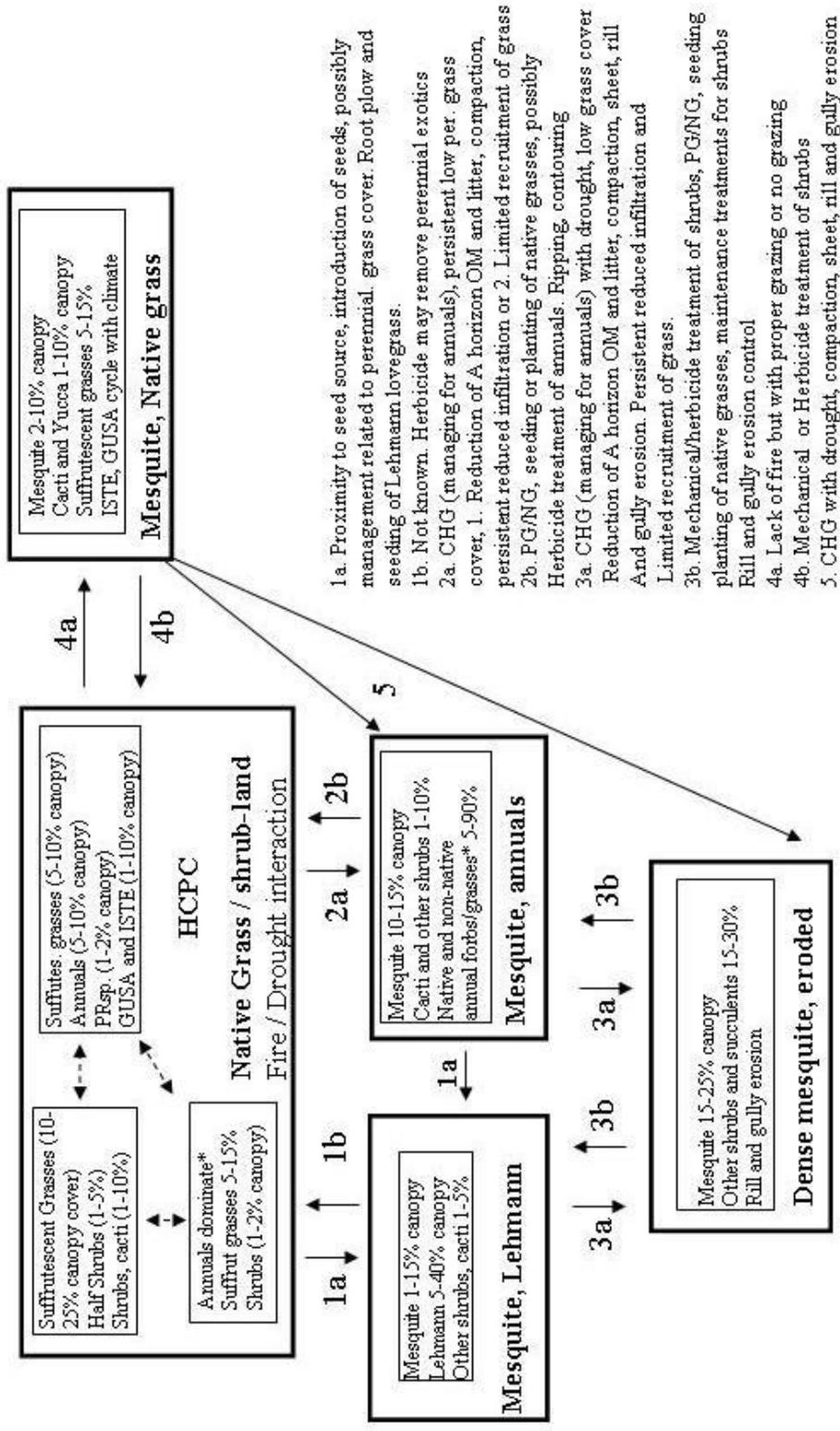


### **Plant Communities**

#### **Ecological Dynamics of the Site**

State and Transition, Sandyloam Upland 8-12" p.z.

# MLRA 41-2 (8-12"), Sandy Loam Upland



- 1a. Proximity to seed source, introduction of seeds, possibly management related to perennial grass cover. Root plow and seeding of Lehmann lovegrass.
- 1b. Not known. Herbicide may remove perennial exotics
- 2a. CHG (managing for annuals), persistent low per. grass cover, 1. Reduction of A horizon OM and litter, compaction, persistent reduced infiltration or 2. Limited recruitment of grass
- 2b. PG/NG, seeding or planting of native grasses, possibly Herbicide treatment of annuals. Ripping, contouring
- 3a. CHG (managing for annuals) with drought, low grass cover
- 3b. PG/NG, seeding or planting of native grasses, maintenance treatments for shrubs
- 4a. Lack of fire but with proper grazing or no grazing
- 4b. Mechanical or Herbicide treatment of shrubs
- 5. CHG with drought, compaction, sheet, rill and gully erosion

CHG - continuous heavy grazing  
PG/NG - proper grazing, no grazing  
PR.sp. - mesquite, ISTE - burroweed, GUSA - snakeweed  
Suffrutescent grasses - bush rubly, black grama, threeawns

\*Native annuals dominant, may be patches of some non-natives

UNITED STATES DEPARTMENT OF  
AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION (Old Format Report)

**ECOLOGICAL SITE CHARACTERISTICS**

**Site Type:** Rangeland

**Site Name:** Limy Upland 8-12" p.z.

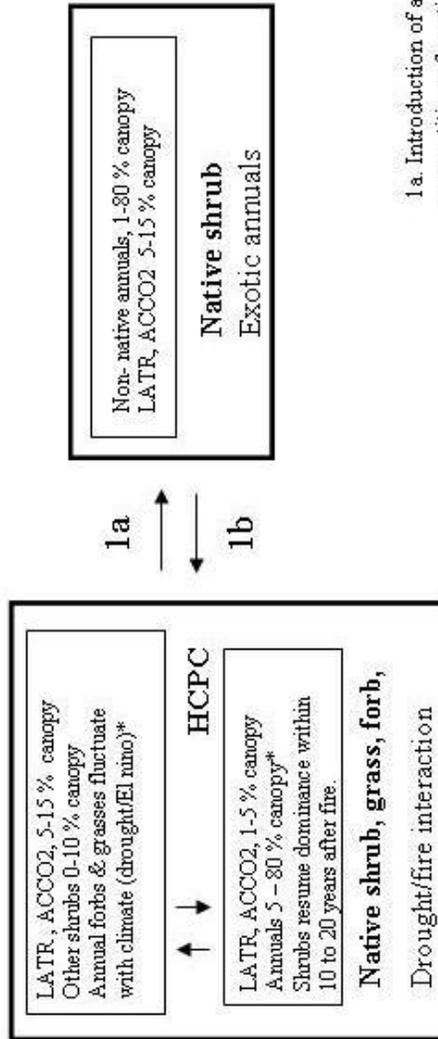
*/ larrea tridentata / muhlenbergia porteri - aristida*  
( / creosote bush / bush muhly - threeawn)

**Site ID:** R041XB208AZ

**Major Land Resource Area:** 041-Southeastern Arizona  
Basin and Range



# MLRA 41-2 (8-12''), Limy Upland



1 a. Introduction of a seed source of non-natives. CHG, Possible competition of exotics with native species of forbs or grasses.  
 1b. Unknown

\*Native annuals dominant, may be patches of some non-natives

CHG - continuous heavy grazing  
 PGNG - proper grazing, no grazing  
 LATR - creosotebush, ACCO2 - whitethorn

State and Transition, Limy Upland 8-12" p.z.

**Historic Climax Plant Community**

This plant community is dominated by creosote bush. Annual grasses and forbs are an important part of the plant community in wet seasons. Perennial grasses and forbs are minor components in the potential plant community. Cryptogams are common on this site, often colonizing areas with low gravel covers.

19.0 Appendix X. Cultural report for White House, East and West Spear Allotments.

Form AZ-811C-5  
(January)

UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT - ARIZONA STATE OFFICE  
CULTURAL RESOURCE COMPLIANCE DOCUMENTATION RECORD

**Project No:** AZ 410 09 024      **Project Name:** Ten Year Grazing Permit and Renewal for White House Ranch, Spear Ranch east, Spear Ranch west, Allotments 4634, 4640 and 4641

EA, Job or Case File No.:

Institution: BLM

Cultural Resource Use Permit No:

**Inventory Method:**     Existing Data Review     Class II     Class III

**Eligibility Recommendation (for sites located): 1**

Not-eligible sites (list site numbers): 1  
AZ CC:1:136(ASM) White House Ranch

Eligible sites (list site numbers): 1  
AZ CC:1:137(ASM)

**Effect Recommendation (only on eligible sites from above):**

No Historic Properties Affected                       Adverse Effect

No Adverse Effect

**Treatment Recommendations:** (check and attach full description and map(s) as needed):

Avoidance (by project redesign/cancellation, etc.)

Physical or administrative protection measures

Standard stipulations

Special stipulations

Data recovery (collection, excavation, detailed recording, etc.)

**Consultation:**

Covered under PA, no further consultation required with SHPO or ACHP

Consultation required:  SHPO     Advisory Council     Native Americans

**Comments:**

**Attachments:** See Map

Signed (by archaeologist):  
Daniel L. McGrew

Date: June 2, 2009

## **20.0 Appendix XI. Utilization.**

Utilization measurements are completed at the end of the growing season (SRM, 1989; Interagency Technical Reference, 1999; Smith et al. 2007). The growing season for warm season grasses in southeastern Arizona is typically July, August and September. The White House Allotment is a shrub-annual grass/forb plant community. It is difficult to collect util. data on shrubs. Soluble cell contents (ADF / NDF), protein, sugars, and photosynthetic machinery are lost after the grass plant goes dormant. Winter rains and cool season grasses would need to be in play for spring utilization measurements.

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